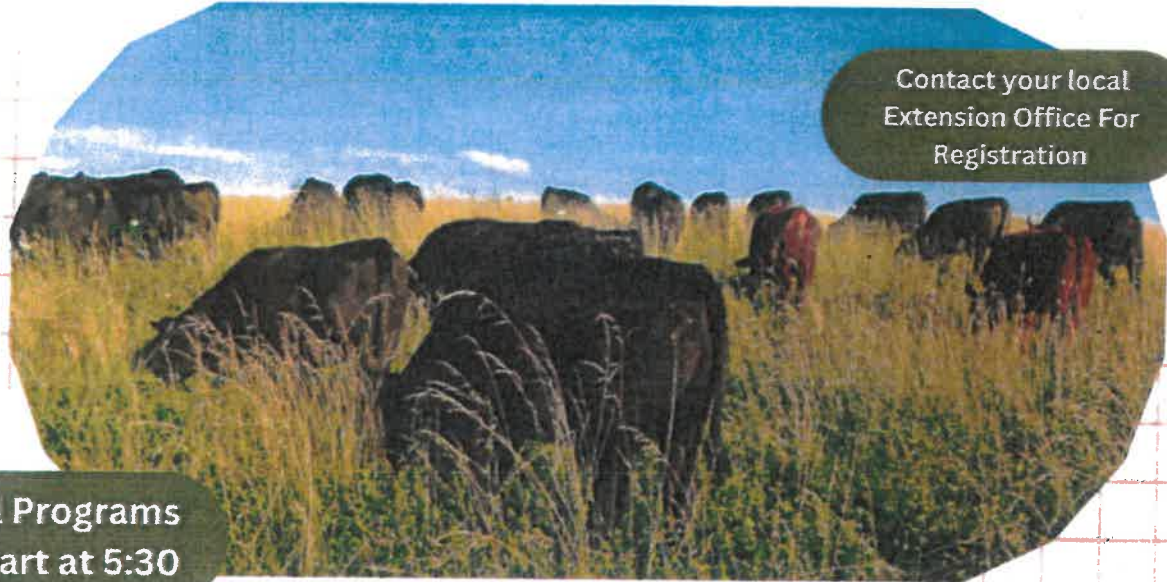


STRATEGIES TO REDUCE FERTILIZER USE ON EASTERN KY CATTLE FARMS



Contact your local Extension Office For Registration

All Programs Start at 5:30

- **Using Legumes to get the Nitrogen Cycle Working**
- **Feeding Hay to Recycle Nutrients**
- **Clipping Weeds to Enhance Fertility**
- **Having an Appropriate Stocking Rate**
- **Implementing Basic Rotational Grazing Without Perfect Infrastructure**

Sarah Fannin, County Extension Agent
 Ag & Natural Resources
 P.O. Box 35
 West Liberty, KY 41472
 Phone (606) 743-3292 Fax (606) 743-3184

Locations and Dates:

- **Feb. 19, 2024** Clay County Extension Excel Center 86 Muddy Gap Rd., Manchester, Ky 40962
- **Feb. 20, 2024** Knott County Extension 149 Parks. Rd. Hindman, Ky 41822
- **Feb 21, 2024** Lee County Extension 259 Industrial Park Rd. Beattyville, Ky 41311
- **Feb. 22, 2024** Morehead State University Farm 25 MSU Farm Rd. Morehead, Ky 40351

Guest Speaker: Dr. Greg Halich,
Associate Extension Professor with the Department of Agriculture Economics
University of Kentucky



OFF THE HOOF

Cooperative Extension Service
University of Kentucky
Beef IRM Team



KENTUCKY BEEF CATTLE NEWSLETTER FEBRUARY 6, 2024

Each article is peer-reviewed by UK Beef IRM Team and edited by Dr. Les Anderson, Beef Extension Specialist, Department of Animal & Food Science, University of Kentucky

Timely Tips - Dr. Les Anderson, Beef Extension Professor, University of Kentucky

Spring Calving Cow Herd

- Study the performance of last year's calf crop and plan for improvement. Plan your breeding program and consider a better herd sire(s). Select herd sires which will allow you to meet your goals and be willing to pay for superior animals.
- Consider vaccinating the cows to help prevent calf scours.
- Keep replacement heifers gaining to increase the probability of puberty occurring before the start of the spring breeding season.
- Start cows on the high magnesium mineral supplement soon. Consider protein supplementation if hay is less than 10% crude protein. If cows are thin, begin energy (grain) supplementation now. Cows must reach a body condition score of 5 before calving to maximize their opportunity for reproductive success. Supplementation now allows adequate time for cows to calving in adequate body condition score.
- Get ready for the calving season! See that all equipment and materials are ready, including obstetrical equipment, record forms or booklets, ear tags, scales for obtaining birthweights, etc. Prepare a calving area where assistance can be provided easily if needed. Purchase ear tags for calves and number them ahead of time if possible. Plan for enough labor to watch/assist during the calving period.
- Move early calving heifers and cows to pastures that are relatively small and easily accessible to facilities in case calving assistance is needed. Keep them in good condition but don't overfeed them at this time. Increase their nutrient intake after they calve.

Fall Calving Cow Herd

- Provide clean windbreaks and shelter for young calves.
- Breeding season continues. Keep fall calving cows on accumulated pasture as long as possible, then start feeding hay/grain/supplement. Don't let these cows lose body condition!
- Catch up on castrating, dehorning and implanting.

General

- Feed hay in areas where mud is less of a problem. Consider preparing a feeding area with gravel over geotextile fabric or maybe a concrete feeding pad. Bale grazing is an option for producers to help control mud while spreading nutrients across pastures.
- Increase feed as the temperature drops, especially when the weather is extremely cold and damp. When temperature drops to 15°F, cattle need access to windbreaks.

- Provide water at all times. Cattle need 5 to 15 gallons per head daily even in the coldest weather. Be aware of frozen pond hazards. Keep ice "broken" so that cattle won't walk out on the pond trying to get water. Automatic waterers, even the "frost-free" or "energy-free" waterers can freeze up in extremely cold weather. Watch closely.
- Consider renovating and improving pastures with legumes, especially if they have poor stands of grass or if they contain high levels of the fescue endophyte. Purchase seed and get equipment ready this month.

Managing Mud: Strategies for Reclaiming Disturbed Areas

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

Hoof damage from livestock during the winter months can result in almost complete disturbance of desired vegetation and soil structure in and around heavy use areas. Even well-designed hay feeding pads will have significant damage at the edges where animals enter and leave. Highly disturbed areas create perfect growing conditions for summer annual weeds like spiny pigweed and cocklebur. Weed growth is stimulated by lack of competition from a healthy and vigorous sod and the high fertility from the concentrated area of dung, urine, and rotting hay. The objective of this article is to describe two approaches to revegetating these areas.



Figure 1. Excessive rainfall and high livestock concentration in and around hay feeding areas can result in almost complete disturbance.

Regardless of the reclamation strategy that is employed, it is important to create an environment that will allow seeds to germinate quickly and uniformly, resulting in rapid canopy closure. This will help to inhibit weed seeds from germinating. Creating this environment starts with making sure that soil fertility is in the medium to high range, soil pH is 6.0 to 6.4, and preparing a fine, but firm, seedbed.

Plant cool-season grasses and legumes.

The first strategy is to seed cool-season grasses or a mixture of grasses and legumes in the spring. While this is commonly done, results are usually less than spectacular in most years. Seedlings are normally delayed until late spring or early summer. Consequently, seedlings do not have time before the hot summer months set in. The second reason is that summer annual weed pressure is usually very high. Summer annuals weeds like foxtail, goosegrass, spiny pigweed, cocklebur, and others actively compete with cool-season seedlings for light and water, often causing stand failures.

If a spring planting of cool-season grasses and legumes is attempted, there are several things that can be done to enhance, but by no means guarantee, success. These are listed below.

- *Plant adapted forage species.* Plant forages that are well adapted to Kentucky and the soils and drainage found on your farm. Tall fescue, red clover, and ladino clover are, by far, the best adapted and most versatile forage species for pastures in the Commonwealth. If this area is

disturbed again, then investment in novel endophyte tall fescue varieties is not recommended. Information on the best adapted varieties for Kentucky can be found on the [University of Kentucky Forages webpage](#).

- *Consider leaving legumes out of the mix.* While legumes are an important part of grassland ecosystems, herbicide options for controlling weeds in grass-legume mixtures are limited. Leaving legumes out will allow you to apply selective herbicides to control broadleaf summer annual weeds. For specific herbicide recommendation, you can visit with your [local Extension Agent](#).
- *Use the high end of the recommended seeding rate.* Seeding rates are normally given as a range (Table 1). For spring seedings, make sure and use the high end of this range. Rapid canopy closure is critical to suppressing summer annual weeds.

- *Plant as early as possible.* Spring seeded cool-season forages should be planted starting in early to mid-March. Early plantings will have more time to emerge and form a canopy that can shade summer annual weeds. Early planted grass seedlings will also have additional time to develop a root system that can sustain the new planting during the summer months.

Table 1. Seeding rates for perennial cool-season forage species planted ALONE or in a MIXTURE.

| Species | Seeding Rate (lb/A) | |
|----------------------------|---------------------|--------------|
| | Alone | In a Mixture |
| Tall fescue | 20-25 | 10-15 |
| Orchardgrass | 15-20 | 6-8 |
| Perennial Ryegrass | 20-25 | 10 |
| Kentucky Bluegrass | NR [†] | 4-6 |
| Red clover ^{††} | NR | 6-8 |
| White clover ^{††} | NR | 1-2 |

[†]NR, not recommended

^{††}Do NOT include red and white clover if herbicides will be used to control broadleaf weeds.

- *Plant in two directions.* If drilling, cut seeding rates in half and plant in two directions. This will aid in obtaining quicker canopy closure, helping to reduce the germination of weed seeds.
- *Use a shallow seeding depth.* Small seeded cool-season forages should not be planted deeper than ½ inch. Make sure to check and recheck your seeding depth. Seeding deeper than ½ inch will delay emergence, result in uneven stands, and in many cases cause complete stand failure.
- *Control broadleaf weeds in cool-season grasses.* Once seedlings have four collared leaves, some herbicides can be applied. Always consult and follow label directions. For the most up to date information on using herbicides on new seedings, contact your [local Extension Agent](#).
- *Clip or flash graze new stands.* Summer annual weeds compete very aggressively for light, water, and nutrients with cool-season grass seedlings. If not controlled, plantings will likely fail. The most effective control of competition is to flash graze paddocks before weeds get well established. Flash grazing is accomplished by placing a large number of animals in small areas for a short period of time. This reduces selective grazing and increases grazing uniformity.

Plant warm-season annual grasses The second strategy involves planting a summer annual grass in late spring or early summer. This strategy has a much higher probability of success than planting cool season grasses in late spring. Summer annual grasses, especially sorghum-sudangrass or sudangrass, have very rapid emergence and canopy closure. This will prevent summer annual weeds from germinating and provide forage for grazing or harvesting during the summer months (Figure 2).

Perennial cool-season grasses can then be reseeded under more ideal conditions in late summer or early fall.

The following tips will help to enhance your chances of success when using warm season annual grasses.

- *Plant adapted summer annuals species.* Always plant forages that are well adapted to Kentucky and the soils and conditions on your farm. Summer annuals that can be used to reclaim hay feeding areas include sudangrass, sorghum-sudangrass, pearl millet, and crabgrass. A description of these species can be found in [AGR-229, Warm Season Annual Grasses in Kentucky](#).



Figure 2. Sorghum-sudangrass (left) formed a quick canopy that was able to shade out summer annual weeds compared with forage (right).

- *Use the high end of the seeding rate.* Seeding rates are normally given as a range. (Table 2). Make sure and use the high end of this range. Even with summer annuals, rapid canopy closure is critical for reducing unwanted weed competition.
- *Plant after soil warms.* For summer annual grasses to germinate and rapidly emerge, soil temperatures at planting should be at least 60 degrees F. This should allow plenty of time to let hay feeding areas dry out and to get them smoothed up prior to planting. If there is a delay in planting the summer annuals after final tillage, it may be a good idea to do one more pass of light tillage to disturb any weed seedlings that may have germinated.
- *Control broadleaf weeds.* Once warm-season annual grasses are established, some herbicides can be applied to control summer annual broadleaf weeds. If cool-season perennials are to follow in the fall, make sure and check the label for reseeding restrictions prior to application. Always consult and follow label directions. For more information on using herbicides on summer annual grasses, contact your [local extension agent](#).
- *Grazing summer annual grasses.* Allow taller growing summer annuals like sorghum-sudangrass and pearl millet to reach a height of 18-24 inches before grazing and stop grazing at 8-10 inches. Regrowth can be stimulated by applying 40-60 lb N/A after each grazing but the last. Crabgrass can be grazed once it reaches a height of 6 to 8 inches. Cattle should be pulled off once it has been grazed to a height of 3 to 4 inches. Detailed management recommendations on for individual summer annual species can be found in [AGR-229, Warm Season Annual Grasses in Kentucky](#).

Table 2. Seeding rates for commonly planted summer annual grasses in Kentucky†.

| Species | Seeding Rate (lb/A) |
|--------------------|---------------------|
| Sorghum-sudangrass | 30-40 |
| Sudangrass | 15-20 |
| Pearl millet | 15-20 |
| Crabgrass | 4-6 |

†A small amount of crabgrass, 2-3 lb/A, can be seeded with the taller growing summer annual species to fill in thin spots in the stand that may develop

- *Haying summer annual grasses.* Allow taller growing summer annuals to reach a height of 30 to 40 inches before mowing. This will optimize yield and forage quality. If regrowth is desired, do not mow closer than 6 inches. Apply 40 to 60 lb N/A after each cutting, but the last. Crabgrass should be cut for hay at the late boot-stage. Care should be taken to not mow crabgrass closer than 3 to 4 inches. With the taller, thicker stemmed species, a crimping mower-conditioner will help the crop dry to safe baling moistures, although this may take some time. Ideally, summer annuals should be conserved as chopped silage or baleage.
- *Reseeding cool-season grasses in the fall.* Pastures with summer annuals should be sprayed with a non-selective herbicide in late summer to control any remaining summer annual grass and any weeds that have germinated. Use a no-till drill to plant cool-season grasses into the killed pasture area. More information on forage establishment can be found in AGR- 64: Establishing Forage Crops.

For more information on renovating pastures and no-till seeding techniques visit UK Forage Extension website at <http://forages.ca.uky.edu/> or contact your local extension office.

FEATURED VIDEO

This month's featured video is Assessing and Repairing Damaged Pastures by Chris Teutsch. This presentation was given at the Red Hill Farms, Lafayette, TN on March 15, 2019.

FEATURED PUBLICATION

This month's featured publication is: AGR-255, Strategies for Reclaiming Hay Feeding Areas by Chris D. Teutsch and Kelly M. Mercier, Plant and Soil Sciences. UK Cooperative Extension Service, Lexington. It can be accessed by clicking on the link or visiting your local extension office.

FORAGE MANAGEMENT TIPS

| |
|--|
| ✓ Strip graze remaining stockpiled tall fescue. |
| ✓ Frost seed 6-8 lb/A of red clover + 1-2 lb/A of ladino clover onto closely grazed pastures. |
| ✓ Consider applying 40-50 lb N/A in mid to late February to some pastures to stimulate early growth. |
| ✓ Service and calibrate no-till drills. |
| ✓ Apply any needed lime and fertilizer according to soil test results. |

Winter is Here – What's your Action Plan?

Dr. Michelle Arnold, DVM – Ruminant Extension Veterinarian (UKVDL)

Winter presents multiple challenges for cattle and those who care for them including cold temperatures, wind, snow, freezing rain, and mud. Unfortunately, drought conditions in the spring and summer significantly reduced the quality and quantity of hay available to feed this winter, exacerbating the difficult conditions. It is important for beef cattle producers to devise a “winter weather action plan”

with the goal of maintaining cattle health, comfort, and performance despite what Mother Nature sends to KY. Many telephone conversations with veterinarians and producers confirm cattle are losing body condition this winter and some are dying of malnutrition. The cloudy, wet weather with regular bouts of rain and temperatures hovering right above freezing has resulted in muddy conditions that require diets substantially higher in energy just to maintain normal body temperature. At the UKVDL, we are beginning to see cattle cases presented to the laboratory for necropsy (an animal "autopsy") with a total lack of fat stores and death is due to starvation. This indicates winter feeding programs on many farms this year are not adequate to support cattle in their environment, especially aged cattle, cows in late pregnancy or early lactation, or their newborn calves, even though bitter cold has not been much of a factor.

The "lower critical temperature" (LCT) is the threshold outside temperature below which the animal's metabolic rate must increase to maintain a stable internal body temperature. If temperatures fall below the LCT, the amount of energy necessary just to keep the animal in equilibrium, known as the "maintenance requirement", increases, leaving less nutrients available for growth and production. If maintenance requirements for energy and protein are not met through the diet, cattle will utilize body fat stores first to meet the need and will lose body condition. The LCT is not the same for all cattle; what an animal can tolerate depends on her body condition score, hair coat condition (wet/dry/muddy), and wind chill.

Cattle have two important defenses against cold, the hair coat and fat cover. The hair coat grows longer in winter and offers considerable insulation to conserve heat and repel cold. Fat cover serves as insulation beneath the skin. For an animal in average body condition with a fluffed up, dry, heavy winter coat in place, the LCT may go as low as 18° F in sunny conditions without wind. However, a thin cow with the same winter hair coat in the same weather conditions may experience cold stress at 32° F. Under wet conditions, especially if an animal's coat cover is muddy, the LCT rises dramatically, particularly if there is no protection from the wind. If the same average body condition cow with a dry hair coat and an LCT of 18° F gets wet, her hair coat no longer insulates but conducts warmth away from the body through evaporation, raising her LCT to 60° F or higher. Thinner cattle with less fat have less insulation under the skin so more heat is lost, especially when lying on wet, cold ground without bedding. If producers are not supplementing cattle with adequate energy **AND** protein sources, hay of poor nutritional quality will not provide sufficient nutrition to meet the animal's basic requirements. This will result in depletion of body fat stores, followed by breakdown of muscle protein, and finally death due to insufficient nutrition. The producer may first notice a cow getting weak in the rear end and may mistake this for lameness or sore hooves. Later she is found down, unable to stand and death follows shortly after. Multiple animals may die within a short period of time during extreme weather events.

At necropsy, the pathologist finds a thin animal with no body fat stores but the rumen is full of bulky, dry forage material (poor quality hay). Even the small seam of fat normally found on the surface of the heart is gone, indicating the last storage area in the body for fat has been used up. Despite having had access to free choice hay, these cattle have died from starvation. Although hay may look and smell good, unless a producer has had the hay tested for nutritional content, he or she does not know the true feed value of that harvested forage. **It is often difficult for producers to bring themselves to the realization that cattle can starve to death while consuming all the hay they can eat.** The answer to poor quality hay is not just to offer more of the same! There is a limit to rumen capacity; cattle are expected to eat

roughly 2-2.5% of their body weight in dry matter but this may fall to 1.5% on poor quality hay. Inadequate crude protein in the hay (below 7-8%) means there is not enough nitrogen for the rumen microflora ("bugs") to do their job of breaking down fiber and starch for energy. Digestion slows down and cattle eat less hay because there is no room for more in the rumen. Many producers purchase "protein tubs" varying from 16-30% protein to make up for any potential protein deficiencies but fail to address the severe lack of energy in the diet. In the last 60 days of pregnancy, an adult cow requires feedstuffs testing at least 50-55% TDN (energy) and 8-9% available crude protein while an adult beef cow's needs in the first 60 days of lactation increase to 60-65% TDN and 10-12% available crude protein. Cold weather and mud will increase the energy requirements, especially when cattle are forced to walk in deep mud and lie on wet ground.

In addition to malnutrition in adult cattle, inadequate nutrition and weight loss severely affect the developing fetus in a pregnant cow. "Fetal programming" of the immune system of the developing calf during pregnancy will not progress correctly without sufficient nutrients and trace minerals. A weak cow may experience dystocia (a slow, difficult birth) resulting in lack of oxygen to the calf during delivery, leading to a dead or weak calf. Calves born to deficient dams have less "brown fat" so they are less able to generate body heat and are slower to stand and nurse compared to calves whose dams received adequate nutrition during the last 100 days of pregnancy. Poor colostrum quality and quantity from protein and energy-deficient dams will not support calf survival and performance. One study looking at diets during pregnancy found at weaning, 100% of the calves from the adequate energy dams were alive compared to 71% from the energy deficient dams. The major cause of death loss from birth to weaning was scours, with a death loss of 19% due to this factor.

Trace mineral supplementation is another area of concern, as copper and selenium levels in liver samples analyzed from many cases throughout KY are often far below acceptable levels. Additionally, grass tetany/hypomagnesemia cases will occur in late winter and early spring if lactating beef cattle are not offered a free-choice, high magnesium trace mineral continuously until spring. Primary copper deficiency can cause several disorders, including poor heart muscle function, sudden death, anemia, lameness, coarse hair coat, hair coat color changes, diarrhea, and fertility problems. Low selenium concentrations can be associated with a wide variety of problems including skeletal and heart muscle abnormalities, sudden death due to heart damage, suppression of the immune system, a variety of reproductive issues, and reduced growth. The absence of these vital nutrients is a major risk factor for disease development. Selenium deficiencies in adult cows will lead to later reproductive problems of delayed conception, cystic ovaries and retained placentas.

The best advice for producers is to be prepared for the inevitable winter weather rather than looking for answers while the snow is falling. Observe the current body condition of the herd and, if inadequate now, begin supplementing with grain to head off further weight loss. Know what you have to work with from an energy and protein perspective in your hay then supplement with enough feed to make up the deficits. Forage testing is simple, inexpensive and the results are easy to interpret. Contact your local cooperative extension service if you need assistance to get this accomplished. Providing shelter and windbreaks for cattle can help keep hair coats dry and limit the effects of wind chill. In times of extreme or prolonged cold, adjust feeding to provide additional energy.

Remember, energy AND protein are both crucial; **protein supplements will not fulfill energy requirements**. Adequate nutrition and body condition are not just important today but also down the road. Milk production, the return to estrus and rebreeding, and overall herd immunity are also impacted over the long term. Cattle should also always have access to a complete mineral supplement and clean drinking water. A trace mineral mix high in magnesium is necessary, especially in lactating cattle, beginning in January or early February through mid-May to prevent hypomagnesemia or “grass tetany”.

If you have hay test results, check out the UK Beef Cow Forage Supplement Tool (Figure 1) at <http://forage-supplement-tool.ca.uky.edu/>. Enter the values from your hay test and stage of production of your cows (gestation or lactation) to find a supplement that will work for you. The UK Beef Cow Forage Supplement Tool was produced by faculty in the UK Department of Animal and Food Sciences and serves as a tool to estimate forage intake and supplementation rates. Remember actual feed/forage intake and body condition should be monitored throughout the winter and early spring and each cutting of hay must be tested as values will not be the same from one cutting to the next.

Figure 1: The UK Beef Cow Forage Supplement Tool homepage.

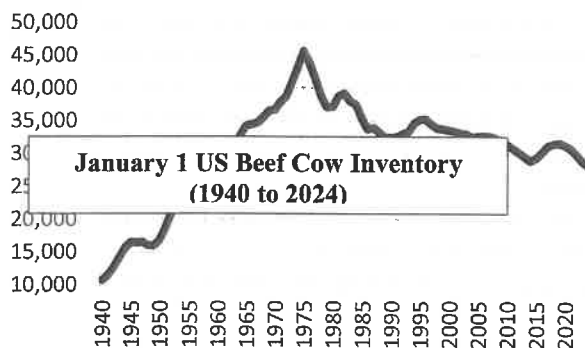


US Beef Cow Inventory Continues to Decline

Dr. Kenny Burdine, University of Kentucky

USDA-NASS released their January 2024 cattle inventory estimates on the afternoon of January 31st. Estimates came in pretty close to expectations and confirmed that the cowherd had continued getting smaller during the course of 2023. It was really a question of how much contraction had occurred. At the national level, inventory of all cattle and calves came in little less than 2% lower than January of 2023. It is also worth mentioning that this decrease is in addition to a downward revision to the January 2023 number of about 0.5%. While this large, aggregated number likely has the highest accuracy, it includes all types and classes of beef and dairy cattle, so I tend to focus on a few of the more specific estimates from this report each year.

The first number I always look at is the number of beef cows in production, which speaks to the likely size of the calf crop in the new year. Beef cow inventory was down 2.5% from 2023, which puts the beef cow herd at the smallest level seen since 1961. This was not a surprise given cow slaughter levels and heifer retention over the course of last year. This



places the US beef cowherd down 11% (3.4 million cows) from its recent high in 2019. The chart below tracks US beef cow inventory since 1940.

USDA also estimated that the number of heifers held for beef cow replacement was down by roughly 1.5%. This was also after a significant reduction to beef heifer retention from a year ago. On a percentage basis, this is a smaller decrease than what was seen from 2022 to 2023, but still suggests that beef cow numbers are likely to decline again during 2024. Of course, things can change quickly, and beef cow slaughter will have an impact as well. Historically, calf prices at levels seen in 2023 have brought heifer retention, but higher input costs, limited hay supply in some regions, and high interest rates are limiting producer desires to expand.

Source: USDA-NASS and Livestock Marketing
Information Center

The report also provided some perspective on the number of cattle on feed in the US. On a monthly basis, USDA estimates on-feed inventory for feedlots with one-time capacity exceeding 1,000 head. Despite a smaller supply of feeder cattle, on-feed inventories have been running above year-ago levels since October of last year. This was likely due to some early domestic placements, an increase in live cattle imports, more heifers on feed, and a longer number of days on feed in the latter part of 2023. Consistent with these monthly estimates, the annual cattle inventory report that came out on January 31st, placed total cattle on feed in the US 1.6% higher than January of last year. Comparing January 1 on-feed estimates in these two reports is always interesting and suggests that nearly 83% of total cattle on feed are being fed at these larger feedlots. That proportion has been increasing for some time and it is trend that I suspect will continue.

The Kentucky inventory estimates were not what I expected. After a 7% decrease during 2022, this most recent report estimated the size of the KY beef cow herd at 907 thousand head, a slight increase from January of 2023. Given the number of cows moving through auctions last year and observations from my Extension travels, I expected beef cow numbers in the Commonwealth to be lower. Kentucky was the only top 10 beef cow inventory state that saw an increase in cow numbers. While the Kentucky beef cow herd was estimated to be slightly larger in the new year, beef heifer retention was lower.

From a longer-term perspective, this most recent USDA report paints a picture of continued tight cattle supplies. The smaller beef cow herd means the 2024 calf crop is going to be smaller. Even if we did start seeing heifer retention occurring in the new year, those heifers would not wean calves 2025. From my perspective, the only way that we could see an increase in beef cow numbers next year would be from sharp reductions in cow culling. There are macroeconomic and geopolitical uncertainties that can impact these markets, but it appears that the supply picture will remain pretty bullish.

The USDA report is summarized in the table below and the full report can be accessed at:

<https://downloads.usda.library.cornell.edu/usda-esmis/files/h702q636h/6108x003v/kk91h696g/cat10124.pdf>

| | 2023 (1,000 head) | 2024 (1,000 head) | 2024 as % of 2023 |
|--|------------------------------|------------------------------|------------------------------|
| All Cattle and Calves | 88,841.0 | 87,157.4 | 98 |
| Cows and Heifers That Have Calved | 38,336.8 | 37,579.8 | 98 |
| Beef Cows | 28,939.3 | 28,223.0 | 98 |
| Milk Cows | 9,397.5 | 9,356.8 | 100 |
| Heifers 500 Pounds and Over | 18,760.7 | 18,483.0 | 99 |
| For Beef Cow Replacement | 4,929.6 | 4,858.3 | 99 |
| For Milk Cow Replacement | 4,073.6 | 4,059.2 | 100 |
| Other Heifers | 9,757.5 | 9,565.5 | 98 |
| Steers 500 Pounds and Over | 16,056.5 | 15,789.2 | 98 |
| Bulls 500 Pounds and Over | 2,029.0 | 2,020.7 | 100 |
| Calves Under 500 Pounds | 13,658.0 | 13,284.7 | 97 |
| Cattle on Feed | 14,195.8 | 14,423.3 | 102 |
| | | | |
| | 2022 (1,000 head) | 2023 (1,000 head) | 2023 as % of 2022 |
| Calf Crop | 34,439.5 | 33,593.0 | 98 |

**USDA
January 1,
2024 Cattle
Inventory
Estimates**
Source: NASS,
USDA

Minerals: Too Much of a Good Thing

Dr. Katie VanValin, Assistant Extension Professor, University of Kentucky

Minerals are an essential nutrient for beef cattle. This means like protein and energy, minerals must be supplied in the diet, however minerals make up a very small portion of the total diet. Many feedstuffs are deficient in one or more essential minerals which is why mineral supplementation is a critical component of meeting the nutritional needs of the herd. So, this begs the question, “if a little is good, isn’t more better?”. The truth is we can have too much of a good thing when it comes to minerals, and this can lead to serious and sometimes fatal consequences.

Sulfur

The sulfur requirement for beef cattle is 0.15%, with maximum tolerable concentrations of 0.3% in high concentrate diets (15% roughage or less), and 0.5% in high roughage diets (40% or greater roughage). By-product feeds including corn gluten feed and distillers grains can be high in sulfur content. According to the Nutrient Requirements of Beef Cattle (NASEM, 2016), sulfur content of corn gluten feed, dried distillers grains, and distillers solubles averaged 0.58%, 0.66%, and 0.82% S, respectively. Sulfur content of forages also need to be accounted for and can range between 0.15-0.20% S. Lastly, sulfur content of water can vary greatly from one source to the next but can also add to the total S intake of the animal. Thus, it is possible to overfeed sulfur if careful consideration is not taken when formulating the diets, especially when utilizing by-product feeds. When sulfur is fed above the

maximum tolerable concentrations, it is possible for cattle to develop sulfur toxicity which causes Polioencephalomalacia (PEM), a neurological disorder resulting in blindness, ataxia, seizures, and death.

By-product feeds can be a great asset to the feeding program, but care should be taken to avoid complications from over-feeding. Just because a feed ingredient is “free” or “cheap” does not mean we should be feeding as much as the cow wants to consume. Unfortunately, it is not all that uncommon to see rations with sulfur concentrations above maximum tolerable levels, and this is often caused by over feeding of by-product feeds.

Calcium and Phosphorus

Calcium and phosphorus requirements vary depending on stage of production, but in general the requirements of calcium compared to phosphorus are a 2 to 1 ratio. However, many concentrate feed stuffs such as corn or distillers grains actually have an inversed calcium to phosphorus ratio, meaning they are higher in phosphorus than calcium. Evaluating the calcium to phosphorus ratio of the diet is an important step, when developing a feeding program because when calcium in the diet is low and phosphorus is high, cattle are at risk of developing urinary calculi or stones. A simple solution is to feed a co-product balancing mineral product which will have higher levels of phosphorus and lower levels of calcium compared to a more typical or 2:1 cow-calf mineral.

Selenium

Initially, selenium was known for its toxic effects and negative impacts on human and animal health. It was not until 1957 that selenium was recognized as an essential nutrient, and research was conducted to understand the dietary selenium concentrations needed to prevent deficiency and toxicity in livestock. It was not until 1978 that the FDA approved feeding supplemental selenium to beef cattle. Mineral tags will often include verbiage stating that this product was formulated to provide 3 mg of selenium per head per day, which is the maximum level allowed by the FDA. This means that for a free-choice mineral product with a target intake of 3 oz. per head per day the selenium concentration shall not exceed 35.2 ppm, and for a target intake of 4 oz. per head per day selenium concentrations shall not exceed 26.4 ppm.

Regulations on the selenium content of mineral supplements, help to prevent selenium toxicity, and instead we often talk more about selenium deficiency. In Kentucky and other parts of the southeast it is not uncommon for forages to be deficient in selenium, making a good mineral program that includes selenium an important management practice. However, other parts of the world have areas where selenium concentrations in plants can be quite high, resulting in selenium toxicity. For this reason, selenium is another example of a mineral where a little is good, but more is not always better.

Minerals have many complex interactions with one another, which can make understanding and developing mineral requirements difficult. At the same time, it is possible to overfeed certain minerals in the diet which can result in serious complications. For this reason, it is recommended to work with a nutritionist to develop a feeding program to meet the needs of your herd while minimizing the potential for negative or unintended complications. For most herds a good quality, complete free-choice mineral is a great starting point for ensuring the mineral needs of the herd are being met, but if concentrates or by-product feeds, a co-product balancing mineral might be recommended. For questions regarding mineral supplementation, reach out to your local county extension office.

Sarah Fannin, County Extension Agent
Ag & Natural Resources
P.O. Box 35
West Liberty, KY 41472
Phone (606) 743-3292 Fax (606)743-3184

**FEBRUARY 26TH
6:00PM AT THE BREATHITT COUNTY
EXTENSION OFFICE**

DINNER PROVIDED

CARBON CREDITS FOR WOODLAND OWNERS



Jordan M. Shockley, Ph.D.
Associate Extension Professor –
University of Kentucky

Topics to be covered:

- *What is driving carbon markets
- *Structure of carbon markets
- *Current carbon programs
- *How much I will get paid
- *Concerns from an economist

**Please call your local
extension office to**

**register:
Breathitt
Knott
Lee
Morgan**



Jacob J. Muller, Ph.D.
Assistant Professor of
Hardwood Silviculture and
Forest Operations Extension

Topics to be covered:

- *Why we are concerned about carbon
- *How carbon is stored in our woodlands
- *What wood landowners can do to increase their
carbon-storing potential
- *And working with a forester

**Cooperative
Extension Service**

Agriculture and Natural Resources
Family and Consumer Sciences
4-H Youth Development
Community and Economic Development

MARTIN-GATTON COLLEGE OF AGRICULTURE, FOOD AND ENVIRONMENT

Educational programs of Kentucky Cooperative Extension serve all people regardless of economic or social status and will not discriminate on the basis of race, color, ethnic origin, national origin, creed, religion, political belief, sex, sexual orientation, gender identity, gender expression, pregnancy, marital status, genetic information, age, veteran status, physical or mental disability or reprisal or retaliation for prior civil rights activity. Reasonable accommodation of disability may be available with prior notice. Program information may be made available in languages other than English. University of Kentucky, Kentucky State University, U.S. Department of Agriculture, and Kentucky Counties, Cooperating. Lexington, KY 40506



Disabilities
accommodated
with prior notification.