

# OFF THE HOOF

**KENTUCKY BEEF CATTLE NEWSLETTER NOVEMBER 1, 2021**



University of Kentucky  
College of Agriculture,  
Food and Environment  
Cooperative Extension Service

Cooperative Extension Service  
University of Kentucky

**Beef IRM Team**

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## Timely Tips

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

### Spring-calving cow herd

- If you need to replace cows, consider buying bred heifers in some of the Kentucky Certified Replacement Heifer sales that are being held across the state this month.
- Extend grazing for as long as possible to decrease the amount of stored feed needed.
- Evaluate body condition of cows. Sort thin (less than body condition score 5) cows away from the cow herd and feed to improve their condition. Two and three-year olds may need extra attention now. These cattle can use the extra feed/nutrients.
- Dry cows in good condition can utilize crop residues and lower quality hay now (but don't let them lose any more body condition). Save higher quality feed until calving time. Keep a good mineral supplement with vitamin A available.
- Contact your herd veterinarian to schedule a pregnancy diagnosis for your cows if you have not already done so. Pregnancy diagnosis can also be accomplished using blood sampling. Several diagnostic labs will analyze the blood samples for pregnancy. Culling decisions should be made prior to winter feeding for best use of feed resources. Consider open, poor-producing, and aged cows as candidates for culling.
- A postweaning feeding period will allow you to put rapid, economical gains on weaned calves, keep them through the fall “runs” and allow you to participate in Kentucky CPH-45 sales. Consider this health and marketing program which is designed for producers which are doing a good job of producing high quality feeder calves.

- Replacement heifers require attention during the winter, too. Weaned heifer calves should gain at an adequate rate to attain their “target” breeding weight (2/3 of their mature weight) by May 1.

### **Fall-calving herd**

- Continue to watch fall-calving cows. Catch up on processing of calves including identification, castration, and vaccinations.
- Cows that have calved need to go to the best pastures now! Help them maintain body condition prior to breeding in December.
- Vaccinate the cows while they are open and prior to the breeding season. Move cows to accumulated pasture or increase feed now. It is best to vaccinate cows 30 days before the breeding season begins.
- Start the breeding season in late November or early December for calving to begin in September. If you are using AI and/or estrous synchronization, get your supplies together now and schedule your technician. Don’t forget Breeding Soundness Evaluations (BSE) on your bulls. Make final selection of replacement heifers now.

### **General**

- Have your hay supply analyzed for nutritive quality and estimate the amount of supplementation needed. Consider purchasing feed now.
- Take soil tests and make fertility adjustments (phosphate, potash, and lime) to your pastures.
- This is a good time to freeze-brand bred yearling heifers and additions to the breeding herd.
- Graze alfalfa this month after a “freeze-down” (24 degrees for a few hours).
- Don’t waste your feed resources. Avoid excessive mud in the feeding area. Hay feeding areas can be constructed by putting rock on geotextile fabric. Feed those large round bales in hay “rings” to avoid waste. Concrete feeding pads could be in your long-range plans.

## **Recent and Upcoming On-line Beef Education Opportunities**

*Beef IRM Team, University of Kentucky*

*ROWLI*

*Timely Topics – Beef Extension Crew*

*BeefBits Podcast*

*The Whole Herd – Dr Lehmkuhler and guest Dr. Bullock*

*The Rock Ag Podcast*

*Pregnancy Diagnosis of Beef Cattle – Host, Garrard Coffey with guest Dr. Anderson*

*Beef Bash Videos*

*Temperament and Growth – Dr. Eric Vanzant*

*Hands-on Opportunities for Students – Dr. Bullock*

*Hay and Supplement Calculator – Dr. VanValin and Laurent*

*Selenium and Female Reproduction – Dr. Phil Bridges*

*Feeding Stillage/Feeder Designs – Dr. Lehmkuhler*

To access this and other excellent beef educational content, visit our Facebook Page (facebook.com/KyBeefIRM) and/or on the Department of Animal & Food Science YouTube page ([https://www.youtube.com/channel/UCu4t18Zo2E\\_4\\_DBBELPjPMg](https://www.youtube.com/channel/UCu4t18Zo2E_4_DBBELPjPMg)). Subscribe to the AFS YouTube

page and click the notifications bell to receive a notification whenever we publish new beef education content. Beef Bits can also be accessed on the podcast website ([https://www.podbean.com/media/share/pb-meqic-e6f8f1?utm\\_campaign=u\\_share\\_ep&utm\\_medium=dlink&utm\\_source=u\\_share](https://www.podbean.com/media/share/pb-meqic-e6f8f1?utm_campaign=u_share_ep&utm_medium=dlink&utm_source=u_share)).

## **Punch your feed ticket**

*Jeff Lehmkuhler, PhD, PAS, Extension Professor, University of Kentucky Preparing for*

Last week Dr. Bullock and I attended an evening program. One of the sponsors was a local feed company in which the owner had just taken over the company in January. Many of our communities have one of these local feed mills or dealerships. My brother and I both were fortunate to have had the opportunity from the Lubbers family to work in one of these feed mills while in school. This is one of the factors that sparked my interest in animal nutrition and helped set a path for my future career.

My rambling here is because of the recent Beef Bash information I shared, recent farmer meetings, and a string of emails regarding feed prices. My previous feed mill experience also plays a role having seen so many feed tickets. Two weeks ago, I asked a group of producers what they were paying for feed. They said that a bag of corn was \$7-\$8. Talking about prices on a “bag” unit or 50 pounds is normal for many of our beef operations buying feed for weaned calves or supplementing cows. There are 40 bags weighing 50 pounds in a ton. When you have unloaded as many semis of bagged feed as my brother and I did, you quickly memorized this as you had to count each stack of 10 bags as you wheeled 500 pounds down the ramp matching sure your unloaded inventory matched the billed amount.

The challenge of talking in bag units is that it can be difficult to relate to the feed prices in market reports. For instance, the Kentucky Ag Market Report lists prices for corn based on what elevators are buying corn for and not the price feed mills are selling corn to farmers. I would be asked to call the local Co-Op and find out what they were paying for corn, so Mr. Lubbers knew what to pay for corn hauled in to the mill to be competitive and how much to mark up the corn sold as feed.

If a local feed mill was buying corn locally for \$5.60 per bushel and selling it for \$7.00 per 50-pound bag, the price per ton would be \$200 for the purchase price and \$280 per ton back out the mill. This price difference is a 40% markup to cover shrink, storage, bagging, insurance, labor, and other business-related costs. However, when you just look at \$5.60/bu versus \$7/bag perhaps you think a little over a dollar difference is not a big deal.

We made a lot of different custom mixes for farmers. This intrigued me when I worked at the mill. One farmer would come down the steep hill with his old Johnny Popper pulling a cart of spelt. How many of you can say you have seen spelt? Others would back up with a truck load of ear corn for us to grind, some mixes we would have to grind hay into while others would be a simple mix of corn and a protein pellet.

Sorry for the tangent, I suppose age is catching up to me as I share too much of my past. Let’s talk about these local feed mill receipts. Many of you probably know how to read these, but others may not. The table below is a representation of a “ticket” or receipt used by many of the local feed dealers. The ticket includes how much, what was purchased/mixed, the price per unit and total amount.

Looking at the table, what feedstuff has the highest price listed? Soybean is listed at \$30 and would be the highest price listed. This sparks the first common question, can I cut out the bean meal? The simple answer is yes. You can't simply replace the soybean meal with a 1:1 swap with more distillers grain as soybean meal has about twice as much protein. To maintain the same protein level in the mix, we must add roughly 50 pounds of distillers grain and decrease another feed such as corn by 25 pounds along with removing the soybean meal.

The second highest priced feed is the mineral at \$24. Since this is the only source of minerals and vitamin supplementation, there is not another feed listed that can be used as a substitute. Plus, when looking at the "Amount" column, the mineral is only \$4.80 which is less than the soybean meal at \$7.50. This should raise a red flag. How come there is more than twice as much soybean meal and the "Price" listed is higher by \$6 but the amount is not more than twice as expensive?

	Quantity	Description	Price	Amount
1	500 #	Ground corn	14.50	72.50
2	250 #	Distillers grain	12.50	31.25
3	100 #	Rolled Oats	0.50	50.00
4	100 #	Cottonseed hulls	11.50	28.75
5	25 #	Soybean meal	30.00	7.50
6	10 #	Mineral	24.00	4.80
7	15 #	Molasses	0.35	5.25

This is where not knowing the "unit" used to price the feed gets one in trouble. So, how do we determine the unit? Unit can be found by dividing the value in the "Amount" column by the value from the "Quantity" column. Next, divide the value in the "Price" column by your previous answer to get the unit. For soybean meal, the unit is found by dividing \$7.50 by 25 pounds which is \$0.30 per pound. By dividing the price per unit of \$30 by \$0.30/lb, the dollars cancel leaving 100 pounds as the unit used in the "Price" column. Let's do the same thing for the mineral. The "Amount" column for mineral is \$4.80 divided by the "Quantity" of 10 lb which is \$0.48 per pound. Whoa wait a second, the mineral cost is more per pound than the soybean meal! Let's finish to find the unit by dividing the price of \$24 by \$0.48/lb to get 50 pounds as the unit used in the "Price" column. Point – The mineral actually costs more than the soybean meal when pricing based on a common unit, price per pound or if you want to multiply by 2000 to get price per ton.

I want to continue to drive home the importance of understanding how to read these tickets. Let's determine the unit and price per ton for both the cottonseed hulls with a listed price of \$11.50 and dried distillers grains listed at \$12.50. Again, quickly looking at just the "Price" column, one may be pondering if less distiller grains and more cottonseed hulls could be used. For cottonseed hulls, the amount is \$28.75 divided by the quantity of 100 lb equals \$0.2875 per pound. Dividing the price \$11.50 by \$0.2875/lb equals 40 pounds which seems like an odd number. Due to the low density and bulkiness, cottonseed hulls are marketed in 40-pound bags. To get the price per ton, multiply \$0.2875/lb by 2,000 lb/ton which cancels out the pound units leaving \$575 per ton. In late August, we bought a bag of

cottonseed hulls for the students to use in a starter diet for beef class and the price was equivalent to \$480/ton. This is the cost of feedstuff with a nutritional value about the same as wheat straw.

To finish our comparison with the dried distillers grains, the amount listed of \$31.25 is divided by 250 pounds from the “Quantity” column which is \$0.125 per pound. The unit used in the price column is 100 pounds found by dividing the listed price \$12.50 by \$0.1250/lb. We already know that the cost per pound is drastically less than the cottonseed hulls and the price per ton is then \$250. So, pondering how to increase the cottonseed hulls and lowering distillers grains was taking us down the wrong trail.

To wrap up, the other aspect is comparing feeds on a cost per unit of nutrient. To do this we will compare the two protein feeds in the table, soybean meal and distillers grains. Table values list soybean meal at 50-52% crude protein on a dry matter basis and dried distillers grains at 28-30%. If we assume 10% moisture in these feeds, the crude protein content as-fed would be  $52 \times 0.9 = 47\%$  and  $28 \times 0.8 = 25\%$ . On an as-fed basis, 2000 pounds per ton multiplied by the crude protein percentage ( $47/100$  and  $25/100$ ) will tell one the pounds of protein per ton. In this example, there would be 940 and 500 pounds of crude protein per ton, respectively for soybean meal and distillers grain. Dividing the cost per ton by the pounds of protein per ton equals the cost per pound of protein. Above we found the prices were \$600 and \$250 per ton for soybean meal and distillers grains, respectively. The cost per pound of protein is calculated to be \$0.64 for soybean meal and \$0.50 for distillers grains.

After taking the time reading this lengthy article, I hope that you have a better understanding of how to read those feed tickets. You may want to punch yourself for or the feed ticket for maybe having a more expensive feed that may be needed. However, understanding the cost of feeds and working with your nutritionist should provide you an opportunity to evaluate your feeding programs and develop feeding cost effective feed mixes to meet the needs of your livestock. Chat with your local feed dealer, county agent or nutritionist to evaluate options for your feeding program.

## **FAQs about Cyanide or “Prussic Acid” Poisoning in Ruminants**

*Dr. Michelle Arnold, UK Veterinary Diagnostic Laboratory*

Usually within the month of October when the first frosts are expected in KY, the questions begin regarding the risk of prussic acid poisoning from Johnsongrass (*Sorghum halepense*) after frost and when is it “safe to graze again”. Prussic acid, cyanide, or hydrocyanic acid are all terms relating to the same toxic substance. Hydrogen cyanide was first isolated from a blue dye (Prussian blue) and because of its acidic nature, it became known by the common name “prussic acid”. No matter which name is used, cyanide is one of the most rapid and deadly toxins that affects cattle.

***Where does the cyanide come from in a plant?*** Certain plants contain compounds called “cyanogenic glycosides” which are not toxic by themselves but only when the plant is damaged. These cyanogenic glycosides and the enzymes necessary to convert them to free cyanide gas are separated in different locations within the plant cells. *Sorghum* species including Johnsongrass, sorghum, sudan grass and hybrid sorghum-sudan contain the cyanogenic glycoside “dhurrin”. When plant cells are damaged, the plant enzymes can reach dhurrin and cleave it, releasing cyanide gas (abbreviated as HCN). Dhurrin concentrations are highest in the leaves, particularly new growth. Peak concentrations occur in the first

week after germination, declining markedly once the plant reaches approximately 2 ft in height. Regrowth (for example, after a light frost) contains extremely high dhurrin concentrations.

***Why is Johnsongrass and other Sorghum species only risky at certain times of the season but safe in others?*** The cyanogenic glycosides are used by the plant as protection from grazing animals, insects, and parasites when the plant is most vulnerable. The cyanogenic “potential” of plants is affected by the type (species and variety) of the plant, weather, soil fertility and stage of plant growth. Cyanide poisoning of livestock has been associated with *Sorghum* species including johnsongrass, sorghum-sudangrass, and other forage sorghum; *Prunus* species (e.g., wild cherry, black cherry, and chokecherry); elderberry (*Sambucus* spp); serviceberry (*Amelanchier alnifolia*); and less frequently arrowgrass (*Triglochin* spp), white clover (*Trifolium repens*), birdsfoot trefoil (*Lotus* spp); and many others.

Certain environmental conditions reduce protein synthesis within a plant but nitrate conversion to amino acids continues and these form the “building blocks” of cyanogenic glycosides. Obviously factors that damage the plant such as crushing, wilting, freezing, herbicide treatment, drought, insects, and plant disease will reduce growth and protein synthesis. However, cool, cloudy days and moist growing conditions, high nitrogen fertilization, high soil nitrogen: phosphorus ratio, and low soil sulfur can also increase the cyanogenic potential. Application of herbicides such as 2,4-D have been shown to increase the cyanogenic potential of plants and potentially increases palatability.

Highest cyanide potential occurs when these plants are growing rapidly after a period of retarded growth such as after drought or frost. The early stages of plant growth, especially young, rapidly growing areas and areas of regrowth after cutting also contain high levels of cyanogenic glycosides. The risk of poisoning decreases as forages mature. Leaf blades are higher risk than leaf sheaths or stems, upper leaves are higher risk than older leaves, and seed heads are considered low risk.

***How much cyanide is considered dangerous?*** The lethal dose of cyanide is in the range of 2 to 2.5 mg/kg body weight. Forages can be tested for cyanide content. Hay, green chop silage or growing plants containing >220 ppm cyanide on a wet weight basis are very dangerous and <100 ppm is considered safe. On a dry weight basis, >750 ppm is considered hazardous, < 500 ppm is considered safe and suspect in between.

Conflicting information is available with regards to risk of cyanide in hay. A study from 2012 investigating methods to prepare sorghum for cyanogenic analysis found that whole leaves or entire plants can be harvested and dried then analyzed later, so air drying plants did not decrease dhurrin concentrations during storage. However, the enzyme beta-glucosidase which converts dhurrin to cyanide was significantly decreased during drying. Bottom line- hay is rarely hazardous if adequately cured but should be tested if the cyanide risk was high when cut. Ensiling plants will significantly reduce the cyanogenic glycoside content.

***How does cyanide attack the animal’s system?*** As ruminants consume these plant materials, hydrogen cyanide gas that is released in the rumen is quickly absorbed into the bloodstream. In addition, the rumen microflora contain enzymes that, in the presence of water, are also capable of converting cyanogenic glycosides in plants to free cyanide gas. Under conditions of low-level exposure, cattle can detoxify cyanide to thiocyanate which is excreted in the urine. If large quantities of cyanide are absorbed

rapidly enough, the body's detoxification mechanisms are overwhelmed, and the animal soon dies. Rumen pH is an important factor in determining rate and amount of HCN released in the rumen. The enzymes are more active at a higher pH of 6.5-7 so cattle on grass or hay diets are at higher risk than those on grain diets. Consumption of water, either before or after grazing, also increases the HCN risk. Animals that are most at risk are hungry and/or have not had time to adapt to these plants as they may tolerate higher amounts over time.

***What does an animal with cyanide poisoning look like?*** Affected animals may begin showing signs of poisoning within 15-20 minutes and rarely survive more than 1-2 hours after consuming lethal quantities of cyanogenic plants. Death may be sudden without symptoms. If seen alive, cattle may exhibit rapid labored breathing, frothing at the mouth, dilated pupils, muscle tremors, and staggering prior to death. There may be a "bitter almond" smell to the breath but the ability to detect this smell is genetically determined in people, so this is an unreliable sign. The mucous membranes are bright red in color due to oxygen saturation of the hemoglobin but may become more cyanotic (blue) at the end of life.

***How is cyanide poisoning diagnosed?*** History, clinical signs, and detection of cyanide in rumen contents support a diagnosis of cyanide poisoning. Cyanide is rapidly lost from animal tissues unless collected within a few hours of death and sealed in airtight containers. Liver, muscle (heart, especially the ventricular myocardium), whole blood, and rumen contents should be collected in airtight containers before shipment to a laboratory capable of performing cyanide analysis. Personal protective equipment should be worn when gathering samples from the animal. Minimal lethal blood concentrations are approximately 3 mcg/ml or less. Perhaps most important in the diagnosis of cyanide poisoning is to identify plants in the area accessible to the animals and determine if they are likely to contain cyanogenic glycosides. Cyanide concentration determinations in suspect plants can be performed if samples are collected and immediately sent on ice overnight to a diagnostic laboratory. Some diagnostic laboratories prefer samples to be frozen immediately after collection and prior to shipment.

***Is there an effective treatment?*** Treatment can be attempted if affected animals are discovered quickly, but often animals are found dead. Contact a veterinarian immediately if cyanide poisoning is suspected. The intravenous administration of sodium thiosulfate by a veterinarian is an effective treatment for cyanide poisoning although this compound has been difficult to find in recent years. The dose can be repeated after a few minutes if the animal does not respond. Administering 0.5-1.0 liter of a diluted vinegar solution (one gallon of vinegar diluted in 3 to 5 gallons of water) via stomach tube can lower rumen pH, reducing the production of hydrogen cyanide, however, stress of handling may exacerbate signs and possibly lead to the animal's death. Most animals that survive treatment recover fully.

***What can be done to prevent cyanide poisoning in cattle?***

1. Graze sorghum, sorghum crosses, or Johnsongrass plants only when they are at least 18-24 inches tall. Young rapidly growing plants or regrowth have the highest concentrations of cyanogenic glycosides, especially in the newest leaves and tender tips. Do not graze plants with young tillers. Do not turn out hungry animals in high-risk pastures because they may consume forage too rapidly to detoxify the cyanide released in the rumen. Animals should be turned out to new pasture later in the day as potential for cyanide release is highest in the morning.
2. Do not graze plants during drought periods when growth is severely reduced or the plant is wilted or twisted. Drought increases the chance for cyanide because slowed growth and the inability of the

plant to mature favors the formation of cyanogenic compounds in the leaves. Do not graze sorghums after drought until growth has resumed for a minimum of 4-5 days after rainfall.

3. **Do not graze potentially hazardous forages when frost is likely (including at night). Frost allows rapid conversion to hydrogen cyanide within the plant. Do not graze for at least two weeks after a non-killing (>28 degrees) frost. Grazing after a light frost is extremely dangerous and it may be several weeks before the cyanide risk subsides. Do not graze after a killing frost until plant material is completely dry and brown (the toxin is usually dissipated within 72 hours).**
4. Do not allow access to wild cherry leaves. After storms or before turnout to a new pasture, always check for and remove fallen cherry tree limbs.
5. If high cyanide is suspected in forages, do not feed as green chop. If cut for hay, allow to dry completely before baling. Allow slow and thorough drying because toxicity can be retained in cool or moist weather. Delay feeding silage 6 to 8 weeks following ensiling. Sorghum hay and silage usually lose > 50% of prussic acid during curing and ensiling. However, these feeds should be analyzed before use whenever the forage likely had an extremely high content prior to cutting.
6. Forage species and varieties may be selected for low cyanide potential. There are wide differences among plant varieties. Some of the sudangrasses, such as Piper, are low in cyanide.
7. Test any suspect forages before allowing animal access. A rapid field test is available that can provide on-site results. Contact your county Agricultural Extension Agent for further information.

## **Don't Let "Feed Price Sticker Shock" Paralyze your Management**

*Kevin Laurent – Extension Specialist, Department of Animal and Food Sciences, University of KY*

The ancient Greek philosopher Heraclitus once said, "The only constant in life is change" and boy have things been changing lately. Given all the negativity that seems to catch the headlines, there has been some positive changes in the cattle markets. The late summer price rise in heavy feeders is historically normal. What's not so normal is heavy feeder prices have held their ground and, in some cases, strengthened as we have entered the fall runs. This contraseasonal move in the market is good news for beef producers, especially for folks backgrounding or preconditioning calves this fall and winter. This recent market move along with a generally favorable market outlook was a one of several areas that Dr. Kenny Burdine covered in his keynote presentation at the recent Stockmanship and Stewardship School in Bowling Green, KY. However, as good and informative as this presentation was, the one statement my good friend Kenny made that stuck with me the most was when he warned producers not to fall victim to "feed price sticker shock" when making management decisions. We all know that feed prices are higher this fall than they were this time last year. But what we need to remind ourselves is that the biology of our cows has not changed since last year, meaning that we still need to provide balanced nutrition for desired outcomes. So how do we overcome "Feed Price Sticker Shock" and avoid management paralysis?

**Inventory your feed resources and test your hay/forage.** With current feed prices, if there was ever a time to test your hay it is this year. Many county extension offices provide this service free of charge. Once you get those results back, plug the numbers into the UK Beef Cow Forage Supplement Tool [forage-supplement-tool.ca.uky.edu](http://forage-supplement-tool.ca.uky.edu) to determine what supplement you will need. You may find that some of your poorer hay will still meet the needs of a dry cow in mid gestation. Those are the cows you just weaned. Consider closing some gates and feeding weaned dry cows hay now and saving stockpiled forage for closer to calving. Most years stockpiled fescue will test 10-12 % protein and 60-62% TDN



well into February or even March. Those numbers will maintain a lactating cow with little to no supplement.

**Maintain body condition and supplement cows if needed.** Make sure cows are in body condition score 5-6 by calving time. This means no visible backbone, hooks/hip bones or middle ribs. Supplementing hay this fall and winter and having cows in proper condition at calving will result in stronger calves at birth and higher quality colostrum. After calving, continue to meet nutritional needs. For spring calving herds, the February/March period can be the most challenging time to maintain body condition. Use any available stockpiled fescue and/or supplement hay diets with the proper concentrates.

**Don't try and make it on hay alone.** Obviously if your hay is good enough to maintain body condition you can just feed hay. But we know most of the time our hay is not sufficient to get this done. Let's use a 30 cow herd and a decent hay that tested 9% protein and 54% TDN on a dry matter basis for an example. We know that lactating cows need a diet that is roughly 11% protein and 60% TDN to maintain condition. We plug the hay numbers into the UK Beef Cow Forage Supplement Tool and it recommends either 4 lbs of dried distillers or 5-6 lbs of 50:50 soyhull:gluten. So, what will that cost? Let's say feed is \$300 per ton. If we feed 5 lbs for 60 days (February/March) that will cost \$45/cow or \$1350 total. Remember how you manage prior to and after calving also affects breed back rate and the 2023 calf crop which could be the highest value calves we have sold in recent years. Proper feeding may be the difference between a 70% 2023 calf crop and a 90% 2023 calf crop. In a 30 cow herd, that could be a difference of 6 additional higher value calves to sell in the fall of 2023. The \$1350 you spend on supplement this winter could reap huge dividends in 2023.

**Don't abandon preconditioning and backgrounding programs.** Currently price spreads between unweaned bawling calves and weaned value added calves has narrowed dramatically. Average prices for the week of 10/17/21-10/23/21 for medium and large 1-2 525-575 lb steers were \$154.11 – \$146.35, whereas 675 to 825 value added steers ranged from \$153.13 – \$151.58. With this value of gain, preconditioning and backgrounding budgets still look favorable even in the face of higher feed costs. Remember, calves need to gain to make these programs work. Feeding at 2% body weight of a 14-16% protein concentrate feed is still the best practice for the 60-90 day preconditioning programs. Recent closeouts from PVAP participants with the highest returns over expenses were the ones who put 150 lbs or more of weight gains on calves prior to sale.

**Finally, try and stay positive.** There is lots of negativity out there so try and filter the negative and concentrate on the good. Its times like these that challenge us to do a little better and rethink some of our habits and practices. Market dynamics are good so let's negotiate our way through these high input times so we can be there to reap the benefits of better prices and times.

## **The Real Cost of Limiting Nutrients**

*Les Anderson, Extension Professor, Beef Extension Specialist, University of Kentucky*

Fall is here and all cow-calf producers need to assess the body condition score (BCS) of their herd. Spring-calving cows are nearing weaning time and the fall is the most economical time to put weight back on. Now is also a key time to manage BCS score in fall-calving cows. Most realize the link between body condition score and reproductive rate but what is the economic impact of allowing BCS to decline? Each year producers faced the decision of how much money should I put into my cows? Can I

afford to feed them? So, what is the cost of letting your cows get thin? What is more cost effective; reducing costs by limiting nutrition to your cows and living with reduced reproductive performance or feeding your cows to perform?

Let's use a real-world example from a herd I worked with several falls ago. The farm we will discuss had 100 fall-calving cows. I first visited the farm in August of that year and the average body weight of these cows was 1320 lbs. at a BCS of 5. These cows calved in good condition, averaging a BCS of a nearly 6. However, lack of rain resulted in limited pastures and the producer began to feed hay approximately September 1<sup>st</sup>, which coincided with the onset of calving. The hay was below average in quality (TDN of 48, CP of 7%). Money was tight for this operation, so they made the decision NOT to supplement these cows. Assuming that these cows were average lactating cows and that they would consume about 27 pounds of hay (as fed) daily, the hay provided only 82% of their maintenance energy needs and would result in a loss of one BCS in about 57 days. This producer decided to synchronize and AI his cows. I came back on November 21<sup>st</sup> when the timed AI was performed, the average BCS had decreased, as predicted above, averaging a strong 4. Remember each BCS equals about 75 pounds, so these cows were losing weight rapidly. After the insemination, the bulls were turned out for 60 days then removed. The cows were diagnosed for pregnancy about 90 days after the insemination and their average BCS was a weak 4 so the cows likely lost another 35+ pounds of body weight. Reproductive performance was terrible as only 29 conceived to the AI, 31 conceived via natural service, and 40 were OPEN!

This example seems exaggerated, but this occurred on a farm and is a real-world example of what can happen when cows aren't supplemented correctly after calving. As Kevin mentioned in the previous article, if feed costs rise, can you afford not to feed your cows? What is more economical; no supplementation and reduced reproduction or supplementation to meet nutrient needs. To help determine this let's first look at our losses. In the above scenario, 40 cows were examined as open. Of these, let's assume 7 would have been open regardless so 33 calves were lost due to the reduced input management. Let's say these 33 calves (17 steers, 16 heifers) would have weaned at 525 pounds (550 for steers, 500 for heifers) so we lost 17,350 pounds of product. If the producer would have sold those calves that spring, they would have averaged about \$145.19 cwt (average price for steers and heifers). The lost income would be about \$25,190 (173.5 x \$145.19).

Allowing the cows to lose weight likely also increased the cost per AI pregnancy. Our data from thousands of properly conditioned cows suggested that typically we achieve a 60% conception rate to AI and 92-93% overall pregnancy rate. The cost per cow to perform the insemination totaled approximately \$40 (\$10 CIDR, \$13 GnRH & PG, \$5 technician, \$12 semen) per cow or \$4,000 total. The reproductive failure basically doubled the cost per pregnancy from \$67 ( $\$40/.60$ ) to \$138 ( $\$40/.29$ ) making it impossible for this operation to recoup the cost of the AI.

What would it cost to supplement these cows to maintain their weight for this period? To meet their nutrient needs, these cows would need about 12 pounds of our soyhull/corn gluten supplement mixed at a ratio of 2:1 assuming a 1:1 substitution of supplement for hay intake. The Real Cost of Limiting Nutrients

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

Fall is rapidly approaching and all cow-calf producers need to assess the body condition score (BCS) of their herd. Spring-calving cows are nearing weaning time and the fall is the most economical time to put weight back on. Now is also a key time to manage BCS score in fall-calving cows. Most realize the link between body condition score and reproductive rate but what is the economic impact of allowing BCS to decline? Each year producers faced the decision of how much money should I put into my cows? Can I afford to feed them? So, what is the cost of letting your cows get thin? What is more cost effective; reducing costs by limiting nutrition to your cows and living with reduced reproductive performance or feeding your cows to perform?

Let's use a real world example. The farm we will discuss had 100 fall-calving cows. The average body weight of these cows was about 1300 lbs. at a BCS of 5. These cows calved in good condition, averaging a BCS of a nearly 6. However, lack of rain resulted in limited pastures and the producer began to feed hay approximately September 1st, which coincided with the onset of calving. The hay was below average in quality (TDN of 48, CP of 7%). Money was tight for this operation so they made the decision NOT to supplement these cows. Making the assumption that these cows were average lactating cows and that they would consume about 27 pounds of hay (as fed) daily, the hay provided only 82% of their maintenance energy needs and would result in a loss of one BCS in about 57 days. This producer decided to synchronize and AI his cows. On November 21st when the timed AI was performed, the average BCS had decreased, as predicted above, averaging a strong 4. Remember each BCS equals about 75 pounds so these cows were losing weight rapidly. After the insemination, the bulls were turned out for 60 days then removed. The cows were diagnosed for pregnancy about 90 days after the insemination and their average BCS was a weak 4 so the cows likely lost another 30 pounds or so of body weight. Reproductive performance was terrible as only 29 conceived to the AI, 31 conceived via natural service, and 40 were OPEN!

This example may seem exaggerated but this scenario actually occurred on a farm and is a real-world example of improperly managing body condition score. The question then becomes which was the more economical management scheme; no supplementation and reduced reproduction or supplementation to meet nutrient needs. To help determine this let's first look at our losses. In the above scenario, 40 cows were examined as open. Of these, let's assume 7 would have been open regardless so 33 calves were lost due to the reduced input management. Let's say these 33 calves (17 steers, 16 heifers) would have weaned at 525 pounds (550 for steers, 500 for heifers) so we lost 17,350 pounds of product. If we would have sold these calves last week they would have averaged about \$145.19 cwt (average price for steers and heifers). Our lost income would be about \$25,190 (173.5 x \$145.19).

Allowing the cows to lose weight likely also increased the cost per AI pregnancy. Our data from thousands of properly conditioned cows suggested that typically we achieve a 60% conception rate to AI and 92-93% overall pregnancy rate. The cost per cow to perform the insemination totaled approximately \$40 (\$10 CIDR, \$13 GnRH & PG, \$5 technician, \$12 semen) per cow or \$4,000 total. The reproductive failure basically doubled the cost per pregnancy from \$67 (\$40/.60) to \$138 (\$40/.29) making it impossible for this operation to recoup the cost of the AI.

What would it cost to supplement these cows to maintain their weight for this period of time? To meet their nutrient needs, these cows would need about 12 pounds of our soyhull/corn gluten supplement mixed at a ratio of 2:1 assuming a 1:1 substitution of supplement for hay intake. The cost of our supplement averaged \$150 per ton for the feeding period which lasted from September 1st to bull

removal on February 1st or 123 days. So the cost of supplementation would be about \$11,070 (\$.075 per pound x 12 pounds x 123 days x 100 cows = \$11,070). If you back calculate, the break-even weaning weight for this level of supplementation is slightly less than 350 pounds.

So what is cheaper? What if we would have separated the thin cows and fed them to match their nutrient needs? What if we would have taken the \$4,000 we used for the AI and used it to purchase supplement? What if we had cut our hay earlier so that the TDN exceeded 55% (nutrient needs of the lactating cow) even though we would have made less hay?

We could ask several more questions. We could consider several more options. The decision to supplement is easy math. The time of this situation, the cost of our supplement averaged \$150 per ton for the feeding period which lasted from September 1<sup>st</sup> to bull removal on February 1<sup>st</sup> or 123 days. So, the cost of supplementation would be about \$11,070 (\$.075 per pound x 12 pounds x 123 days x 100 cows = \$11,070). If you back calculate, the break-even weaning weight for this level of supplementation is slightly less than 350 pounds.

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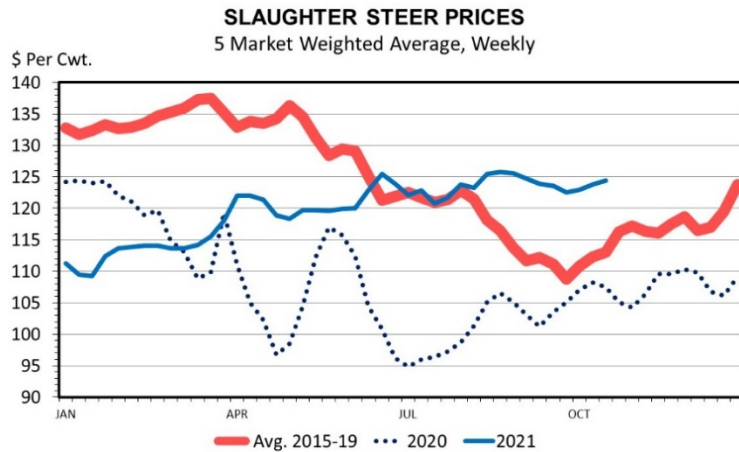
We could ask several more questions. We could consider several more options. The decision to supplement is easy math.

## **Does This Fall Calf Market Offer Post-weaning Opportunities**

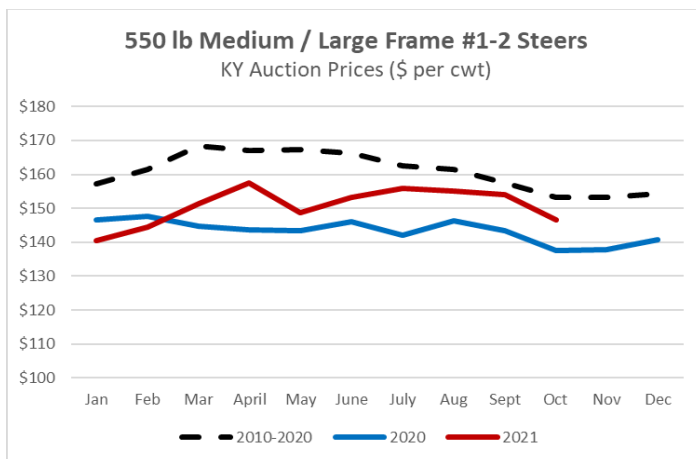
*Dr. Kenny Burdine, Livestock Marketing Specialist, University of Kentucky*

Fall is always a crucial time for cattle producers as so many spring born calves move through markets. International trade continues to be a bright spot and fed cattle prices have not yet pulled back, as they often do in the fall. Note the seasonal decrease that is usually seen from summer to fall in the red line on slaughter cattle chart below as compared to blue line for 2021. However, calf markets have not managed to avoid their seasonal decreases, as can be seen in the KY price chart below for 550 lb steer calves. Fundamentals continue to look encouraging for improved calf markets next year, but we are seeing calf prices pull back seasonally.

Calf prices make their lows in fall / early winter for several reasons. First, calf runs pick up as most spring calvers are selling weaned calves during this time. The timing on this is often weather driven, but usually happens in October / November. Secondly, changing weather patterns can create health challenges for calves, which tends to lower their market value. Based on local conversations, I do think this is an issue this year as well. Third, calf values become more impacted by feed-based programs once we move past the traditional grazing season. While wheat grazing operations are active placing calves in the fall / winter and some operations may have stockpiled pasture to start calves on, a large number of calves that move through markets in the fall are placed directly on feed. While this is very common, significantly higher feed prices this year are leading to a stronger preference for heavier feeders.



Source: USDA-AMS, Livestock Marketing Information Center



Source: USDA-AMS, author calculations

While declining calf prices in the fall are in no way unusual, I do want to point out something unique about market conditions right now. Calves that move through markets in the fall, and go into growing operations, are driven by the cost of growing those calves through winter and their expected value in the spring. There is no question that the cost of growing calves on purchased feeds will be higher this winter, but the value of heavy feeders is also expected to be very strong come spring. As I write this in late October of 2021, spring CME® feeder cattle futures are trading in the low-mid \$160's. Basis can be very different across the south, but I would encourage everyone to consider what a spring CME® futures price in the \$160's suggests about the likely price of an 800 lb steer is in their region for spring 2022. Using typical spring basis expectations, the market is currently suggesting that 800 lb steers in the spring may sell at a very similar price per cwt to a weaned steer this fall. This suggests very high value of gain on lbs that are added to calves this winter.

From my perspective, this has implications for cow-calf operators and winter

backgrounders. First, if cow-calf operators can wean calves on the farm and retain ownership of them for a period of time, this may be a good year to consider doing that. A lot of the southeast has been blessed with adequate rainfall and many areas have stockpiled forage available to add some inexpensive post-weaning gains to calves. However, there is potential that feeding programs may also look attractive this winter due to expected higher value of gain. Operators want to avoid feed price “sticker shock” and not make their decisions based on feed prices alone. While feed prices are high, and winter cost of gain will be higher than we have seen for a long time, this must be compared to the expected value of gain on those lbs that could be added. Markets evolve with changes in cost of gain, and we are seeing that occur this year. Spring CME® feeder cattle futures are suggesting a strong spring feeder market, and I think potential exists for good returns to growing programs this winter, despite current feed prices.

## **UK Beef Management Webinar Series**

*Darrh Bullock, Extension Professor, University of Kentucky*

Please join us for our Beef Management Webinar Series that meets via Zoom in the evening of the second Tuesday of each month. Registration is necessary, however, if you previously signed up for the ROWLI webinar series we conducted over the past 18 months or have already signed up for this webinar series then you do not need to re-register, you will automatically receive the invitation the morning of each presentation. If you need to register please send an email to [dbullock@uky.edu](mailto:dbullock@uky.edu) with Beef Webinar in the subject line and your name and county in the message. You will receive the direct link with a password the morning of each meeting. This invitation will directly link you to the site and you will be asked for the password which can be found just below the link. Each session will be recorded and posted for later viewing. All meeting times are 8:00pm ET/7:00pm CT. The following is the planned agenda to date:  
November 9, 2021

USDA Forage-Animal Production Research Unit Update, Dr. Michael Flythe and Dr. Brittany Harlow

December 14, 2021

Shooting the Bull: Answering all your beef related questions! – Roundtable discussion with UK Beef Specialists

January 11, 2022

Milk: Benefit or Burden – Dr. Darrh Bullock and Dr. Jeff Lehmkuhler

February 8, 2022

AFS Beef Research Update

Titles and speakers to be announced.

March 8, 2022

Shooting the Bull: Answering all your beef related questions! – Roundtable discussion with UK Beef Specialists