

# OFF THE HOOF

KENTUCKY BEEF CATTLE NEWSLETTER, OCTOBER 15, 2020



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

Cooperative Extension Service  
University of Kentucky

Beef IRM Team

Published Monthly by UK Beef IRM Team and edited by Dr. Les Anderson, Beef Extension Specialist, Department of Animal & Food Science, University of Kentucky

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## Beef Bash 2020 Available On-line

*Dr. Darrh Bullock, Extension Professor, Dr. Katie VanValin, Assistant Extension Professor, and Ben Crites, IRM Coordinator, University of Kentucky*

Beef Bash 2020 was produced on October 1<sup>st</sup>. In this virtual field day of Beef Bash, Beef Extension Specialists and researchers from the University of Kentucky shared their current research projects and “how-to” demonstrations from the field. We also took a virtual tour of the new University of Kentucky Research and Education Center in Princeton, KY. All videos are available on the University of Kentucky Animal & Food Science YouTube channel ([https://www.youtube.com/channel/UCu4t18Zo2E\\_4\\_DBBELPjPMg](https://www.youtube.com/channel/UCu4t18Zo2E_4_DBBELPjPMg)).

For questions, please contact any of the 2020 Beef Bash committee members; Dr. Darrh Bullock ([dbullock@uky.edu](mailto:dbullock@uky.edu)), Dr. Katie VanValin ([katie.vanvalin@uky.edu](mailto:katie.vanvalin@uky.edu)) or Ben Crites ([benjamin.crites@uky.edu](mailto:benjamin.crites@uky.edu)).

## Weaning 101 Workshop – a Virtual Weaning Program

*Jeff Lehmkuhler, Associate Extension Professor, Beef Specialist, University of Kentucky*

Check out our new virtual Weaning 101 Workshop! This video series launched September 9th and a new video will be uploaded each week. See the schedule for more details!

## WEANING 101 WORKSHOP

VIRTUAL WEANING PROGRAM

NEW VIDEO SERIES

– Covering aspects of weaning calves on-farm!

VIDEOS LAUNCHED EACH WEEK FROM  
SEPTEMBER 9 TO OCTOBER 21

VIDEOS POSTED EACH WEEK TO THE UK BEEF IRM AND KBN FACEBOOK PAGES  
AND YOUTUBE CHANNELS

### SCHEDULE

Week 1: Preparing for Vaccination, *Mr. Dan Miller*

Week 2: Preconditioning Calves, *Dr. Michelle Arnold*

Week 3: Weaning Options & Feeding Considerations, *Dr. Jeff Lehmkuhler*

Week 4: Feeder Cattle Grading, *Mr. Kevin Laurent*

Week 5: Economic Considerations for Preconditioning, *Dr. Kenny Bardine*

Week 6: Infrastructure Overview for Weaning Calves, *Dr. Steve Higgins*

Week 7: Traceability and Value Added Marketing, *Mrs. Becky Thompson*

Week 8: Incorporating Technology, *Dr. Katie VanValin*

This program has been approved by GOAP to fulfill the educational requirements for CAIP. However, contact your county Extension office to ensure your local county CHIP committee will accept the program.



## **Beef Minutes**

*Katie VanValin, Assistant Extension Professor, Beef Specialist, University of Kentucky*

New episodes of Beef Minutes are available on our social media sites.

Episode 10- Prussic acid in Johnson Grass - Teutsch

Episode 11- Beef Bash Recap - VanValin (coming out 10/15).

Beef Minutes will be published on our Facebook Page (facebook.com/KyBeefIRM) and 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)).

## **Beef Bits Podcast**

*Jeff Lehmkuhler, Associate Extension Professor, Beef Specialist, University of Kentucky*

UK Beef Extension is publishing BeefBits, a 45- minute long podcast on hot topics in the beef industry.

Episode 5. *Frisky Fall* - Host Dr. Jeff Lehmkuhler is joined by during this episode by his colleague Dr. Les Anderson, Extension Professor and beef cattle specialist. We discuss aspects of reproductive management to ensure reproductive efficiency.

Links can be found on the UK Beef IRM Facebook page (facebook.com/KyBeefIRM) and 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)).

## **Reaching Out While Locked In Beef Webinar Series Continues Through the Fall**

*Darrh Bullock, Extension Professor, University of Kentucky*

During these unprecedented times of limited meeting size and social distancing it has been difficult to conduct in person educational programs at county Extension offices. To help facilitate beef producer education and stay in touch with Kentucky's beef farmers we are continuing our online webinar series through the fall. This is an opportunity for you to learn new concepts, refresh yourself on some common practices, receive CAIP education credit and stay up to date on what's happening in the beef industry. We have included speakers from many areas within the UK College of Agriculture, Food and Environment, as well as, invited speakers on special topics of interest. If you already receive the invitations for the series then you don't need to do anything, you will continue to get the invitations on the morning of the webinar. If you have not registered, please send an email to [dbullock@uky.edu](mailto:dbullock@uky.edu) with you name and county and put Beef Webinar on the Subject line. Here is the remaining schedule for this fall:

October 13, 2020

**Organizing for the Breeding Season** – Les Anderson, Professor

October 27, 2020

**Preparing for Winter Feeding** – Katie VanValin, Assistant Professor

November 10, 2020

**Winter Feeding Structures** – Steve Higgins, Director of Environmental Compliance

November 24, 2020

**Structures and Working Facilities** – Morgan Hayes, Assistant Professor and Josh Jackson, Assistant Professor

## **Is it really all about the money? Doing the last best thing.**

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

“It’s all about the money.” “Follow the money trail.” These are common statements we have all heard and said whenever we are trying to explain people’s actions or motives. Whether it’s the latest political scandal or something as simple as why the local Walmart doesn’t carry a certain item anymore, following the “money trail” will usually yield the answer.

So, is it always about the money? Folks in agriculture work every day to produce food, fiber and fuel and hopefully make a profit doing so. Are they just doing it for the money? Sure, profit is extremely important and necessary for agriculture to be sustainable. But honestly there are easier ways to make a living. What about us as beef producers? Why do we raise cattle? Why do we battle the mud, worry about drought, get out in the cold and snow to warm a newborn calf? Why do we do it? I think we would all agree it is not just about the money. We do this because we love it.

Personally, my wife and I chose to be part timers, raising stocker calves and a few show pigs, to help raise our 5 kids. I will say, the calves and pigs did a pretty good job on the first four, but the jury is still out on that last one. Daniel rocked our world with his arrival back in 2006 and is now 14 starting the 8<sup>th</sup> grade. He loves Duroc hogs, football, hunting and fishing, in no particular order. Recently, a friend of mine asked when I was going to quit fooling with cattle and hogs. I told him when they are finished raising Dan. I admit, I lied to my friend. I will always have to raise something or feed something. It’s simply in my blood. I think the same can be said for most of us in this industry. We love raising our families in this way of life. We love raising cattle and producing beef. We take great pride in the job that we do, the quality of our calves, and the way we treat the land.

During one of the breakout sessions in the recent BEEF extension education meetings we were discussing how we could get better participation in CPH-45 and preconditioning sales and a good friend of mine, Brandon Oliver, made an interesting comment that has stuck with me. He said that he appreciated all our efforts over the years to estimate the net added returns per head by participating in CPH-45, but maybe a better message would be to promote weaning and preconditioning as the last best thing we as cow-calf producers can do for our calves before we sell them. The last best thing. You know, I think Brandon is right.

Over the years I have spent countless hours crunching sale numbers and feed costs and reporting on the economic merits of weaning and preconditioning and I can honestly say the numbers don’t lie, 85% of the time it will put dollars in your pocket to wean and precondition before selling and that’s a very good thing to know and document. But what value do we place on doing the right thing for our calves before we relinquish ownership to the next person in the chain. Brandon’s father, Ramon Oliver was one of a core group of Trigg County producers that helped Dr. Roy Burris start the CPH program back in the early 80’s. If you talk to any of those producers such as Ramon or Tommy P’Pool or Bobby Hyde to name a few of these pioneers, they will tell you that every year was not an economic win, but what was consistent was that every year they were doing the “last best thing” for their calves.

So, I challenge all Kentucky cow calf producers to do “the last best thing” for your calves this fall by weaning and preconditioning before you sell. Who knows, it might just make you some money.

## Cyanide poisoning and nitrate toxicity – Do you know the difference?

*Dr. Jimmy Henning, Extension Professor, Livestock Forage Specialist, University of Kentucky*

Some aspects of forage management are just confusing enough that the same questions come up every year. Take the forage disorders, cyanide poisoning and nitrate toxicity, for example. Questions on these disorders come up anytime the forage sorghum species are grazed and especially in the fall as light frosts predicted. This article gives a quick reminder about these two forage disorders of cattle. (Cyanide toxicity is also called prussic acid toxicity or poisoning).

But first, you have to take a test. What follows is taken from an exam given to juniors, seniors and graduate students who took the UK Forage Management and Utilization class. Ready? Okay, here you go:

Please indicate whether the description below is true of cyanide or nitrate toxicity. In some cases either choice will be correct. (Answers below the ‘quiz’).

- Dissipates in hay
- A problem when leaves of freshly frosted johnsongrass or young tender regrowth of sorghums is grazed
- Causes suffocation
- Never a problem with pearl millet
- Usually detoxified by the ensiling process
- Can be avoided by waiting until sorghums are 24 inches tall before grazing
- High rates of nitrogen and drought



*Will this plant kill cattle? This tender regrowth of forage sorghum can be very toxic to cattle if grazed in quantity. Often confused with nitrate toxicity, cyanide toxicity is a potential problem with all sorghum species, including johnsongrass.*

So, what do you think? Easy? Hard? My students had a bit of a problem with it the first time (just might have been the instructor, I am afraid). Here are the answers and some explanations.

*Dissipates in hay:* Cyanide. Cyanide is released as a gas as sorghums (sudangrass or sorghum sudangrass or johnsongrass) dry out during haymaking.

*A problem when leaves of frosted johnsongrass or tender regrowth of sorghums is grazed:* Cyanide. In both cases these forages will have high levels of cyanide-producing compounds in their leaves. When consumed by ruminants, cyanide is released in the rumen. Please note that cyanide risk can be **several times greater** in johnsongrass than the sorghums; some estimate it to be three to five times as toxic. Toxicity with johnsongrass is most frequent in freshly frosted forage, and especially in the new growth that may start after a non-killing frost, like the photo above.

*Causes suffocation:* Cyanide and nitrate. Both of these toxic chemicals react with the oxygen transport in the blood. Blood from ruminants exposed to high nitrates will be brown. Cyanide toxicity causes the blood to be bright red.

*Never a problem with pearl millet:* Cyanide. Pearl millet does not contain cyanide-generating compounds like the sorghums. For this reason, many prefer pearl millet over the sorghums for supplemental grazing.

*Usually detoxified by the ensiling process:* Both cyanide and nitrate. Significant amounts of cyanide and nitrate are either evolved as a gas (cyanide) or metabolized during ensiling (nitrates). Generally, the ensiling process will detoxify forage that would be harmful if consumed fresh. If nitrate toxicity is a concern, collect a sample after a month of ensiling and test for nitrate concentrations. Although nitrate toxicities are infrequent, it always pays to be prudent and test.

*Can be avoided by grazing sorghums after they reach 24 inches:* Cyanide. Young plants of the sorghums have high concentrations of the cyanide-generating compound dhurrin. Concentrations of this compound are diluted as sorghums grow to 24 inches.

*High rates of nitrogen and drought:* Nitrate. When heavily fertilized with nitrogen (usually above 80 lb N/A) and under drought stress, the sorghums AND pearl millet (and many other plants) can accumulate toxic levels of nitrate in their stems. The concentration of nitrate is higher near the soil and gets lower as you move up the stem. UK ag agents have access to test strips that can indicate if high levels of nitrate are present in stems. If this quick test is positive for nitrate, submit a sample for analysis to measure actual concentrations present.

How did you do? Pretty well, I hope. As you might imagine, there is much more information available on the production of summer annuals, and toxicities of cyanide and nitrate. To learn more, please see UK publications AGR 229 “Warm Season Annual Grasses in Kentucky”, ID 220 “Cyanide Poisoning in Ruminants” and ID 217 “Forage-related Cattle Disorders: Nitrate Poisoning.”

Happy Foraging.

Forage Doctor Column, Farmer’s Pride  
September 24, 2020 for October 1, 2020 Issue

## **Blackleg: Frequently Asked Questions**

*Dr. Michelle Arnold, UK Veterinary Diagnostic Laboratory*

1. What is “blackleg”? This is a rapidly fatal disease of cattle, typically calves 6-12 months of age, caused by the bacterium *Clostridium chauvoei*. Sheep may also be affected. In a majority of cases, affected calves are simply found dead in the pasture with no symptoms of disease. It usually affects calves in good nutritional condition (the “fattest and slickest”) within a group. As the bacterium grows, it emits a toxin (poison) that kills the muscle cells, typically in the hindquarters or thigh muscles. Most animals will die within 12-24 hours of the onset of disease so clinical signs of lethargy, severe lameness, and muscle swelling are often missed. The swollen muscle starts out hot and painful but quickly becomes cold and insensitive as the muscle dies. The bacterium also produces gas that builds up under the skin, causing the skin to feel similar to “bubble wrap” and makes a crackling, rattling sound known as “crepitation” when pushing the skin down over the affected area.
2. Where is the blackleg organism found? The organism that causes blackleg, the bacterium *Clostridium chauvoei*, is characterized as a “Gram-positive, anaerobic, spore-forming rod”. This description is important because it describes why and how the bacterium survives for long periods in the soil and the



trigger that causes it to be deadly. Clostridial organisms are anaerobes which means they like to live and grow where there is no oxygen. In order to survive where there is oxygen, they change to a spore form. A “spore” is a protective form of the bacteria that allows it to survive unfavorable conditions and also enables it to spread. The spore form is found in both soil and water as well as in the digestive tract of living and dead animals. Spores are very resistant to environmental factors and disinfectants. Older studies confirmed the organism can survive as a spore at least 11 years in better soils. Spores can only germinate and grow, known as changing to the “vegetative state”, when there is little oxygen present. This vegetative bacterial form produces the toxin (poison) called Toxin A, considered to be responsible for the destruction of both skeletal and cardiac (heart) muscle cells and death.

3. How do cattle get infected? Although blackleg is one of the oldest and most widely recognized causes of death, the way the disease works is still not fully understood. It is believed that cattle ingest the spores which are then absorbed through the intestines and into the bloodstream where they get distributed to multiple tissues, including skeletal and heart muscles. Once there, the white blood cells called “macrophages” engulf them and the organism can survive months to years within these cells without affecting the animal. However, when the oxygen level drops within the muscle cell, for example due to injury and bruising, the spores germinate, and the vegetative bacteria grow and produce the deadly toxin.
4. Does it only affect the thigh musculature? No, the disease affects both skeletal muscle and cardiac (heart) muscle and is frequently found in both the leg and the heart. Of the skeletal muscles, the thigh (hindquarters) is most common but it may be found in the front legs, along the back (lumbar area), brisket, neck, diaphragm, and tongue or in multiple muscles.
5. Why the name “blackleg”? The toxin produced by the bacteria causes muscle necrosis (death) resulting



Figure 1: Photo of hindlimb muscle affected with blackleg. Note the red to black discoloration.

in dark red to black discoloration of the affected muscle (see Figure 1). When cut, the affected muscle has a characteristic odor of rancid butter. Diagnosis is easily made at necropsy and the bacteria type can be confirmed with several different tests.

6. Does it only occur in young calves? Blackleg is commonly thought of as a disease of calves 6-12 months of age on pasture. However, it can occur in very young calves (1-2 months of age) or even in adult cattle if non-vaccinated or if adults were only vaccinated once as calves.

7. Does it only occur in cattle on pasture? It most commonly affects pastured cattle because they consume spores present in the soil. However, it can

occur in housed cattle when feed is contaminated with soil that contains the spores. A very large outbreak in Norway where 72 housed cattle died within 12 days was traced to round bale silage with heavy soil contamination.

8. If there is no history of blackleg on the farm, does that mean there will never be a case there? Blackleg is, in a word, unpredictable. It may suddenly appear on farms where it was never known to exist or has been absent for decades. On the flip side, areas or places where blackleg is common may go many years between cases even without adequate vaccination.

9. Is blackleg associated with a certain weather pattern or season? Most cases occur during or after periods of high rainfall or after movement of soil such as building or cleaning out a pond. Flooding may spread the spores and water saturated soil is thought to have less oxygen which may induce germination of the spores and multiplication. Soil excavation is believed to bring more spores to the soil surface. Blackleg cases are seen throughout the year in Kentucky.
10. Are the available vaccines effective? Vaccination against *C. chauvoei* is cheap, easy and close to 100% effective in preventing blackleg if given prior to exposure and according to label directions. One dose of blackleg vaccine given to a newborn calf is not enough to be protective because they cannot mount an effective immune response. However, good quality colostrum from the dam will protect the calf from disease up to 3-4 months of age until vaccination is effective. Most blackleg vaccines require a two-shot series administered 3-4 weeks apart. One product, Alpha 7 (Boehringer Ingelheim) only requires one dose but calves vaccinated under 3 months of age must be re-vaccinated at weaning or 4-6 months of age to be protective. All blackleg vaccines recommend an annual booster.
11. Do adult cattle need a blackleg vaccine? This is a common question with no definitive answer. Certainly the incidence of blackleg decreases dramatically after 24 months of age but it still occurs. Since the spores may lie dormant in an animal for years, the potential remains for disease in poorly vaccinated adults. One thing is certain, annual vaccination of adult cows will improve the antibodies produced and delivered in colostrum so longer, stronger protection is provided to her calves at birth.
12. Is blackleg vaccine considered a killed or live vaccine? Neither! Clostridial vaccines are usually labeled as “toxoids” or “bacterin-toxoids” because the antibodies produced by the vaccine actually neutralize the deadly toxin produced by the growing bacteria rather than the bacteria alone.
13. Why are blackleg vaccines called 7- or 8-way vaccines and is one better than the other? There are several diseases in cattle caused by different Clostridial species so the antigens are all typically included in the blackleg vaccine. *Clostridium chauvoei* is the causative agent for blackleg while *Cl. novyi* is the agent in Black Disease (infectious hepatitis), *Cl. septicum* in malignant edema, *Cl. sordelli* in gas gangrene and *Cl. perfringens* Types C and D in various types of enterotoxemia. An 8-way vaccine contains an additional agent, *Cl. haemolyticum*, that causes “Red Water” disease in cattle but is not found in KY and considered unnecessary for cattle here. One important Clostridial disease, tetanus, is due to *Cl. tetani* but it is found in very few blackleg vaccines. Covexin 8 and Calvary 9 (Merck) are examples of blackleg vaccines that contain a tetanus toxoid.
14. What about the blackleg vaccines combined with other agents such as pinkeye? Blackleg vaccines are found in many different combination products including with pinkeye, *Histophilus somni* (commonly known as “somnus”), and Zoetis makes a combination blackleg and “pasteurella” vaccine called “One Shot Ultra 7”. All these vaccines are considered effective if used according to label directions, meaning a booster is given if indicated.

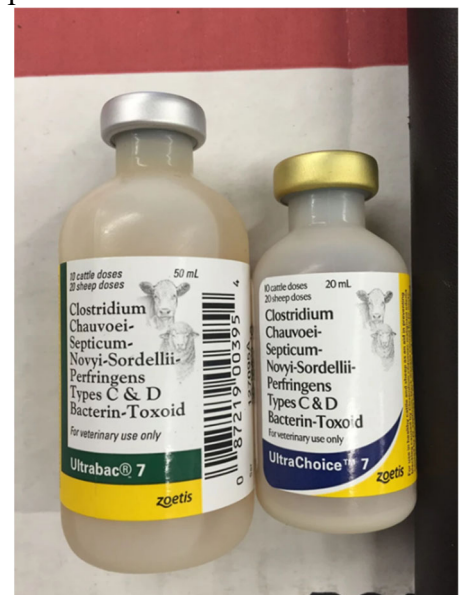


Figure 2: Make sure the vaccine has *Clostridium chauvoei* on the label for blackleg protection.

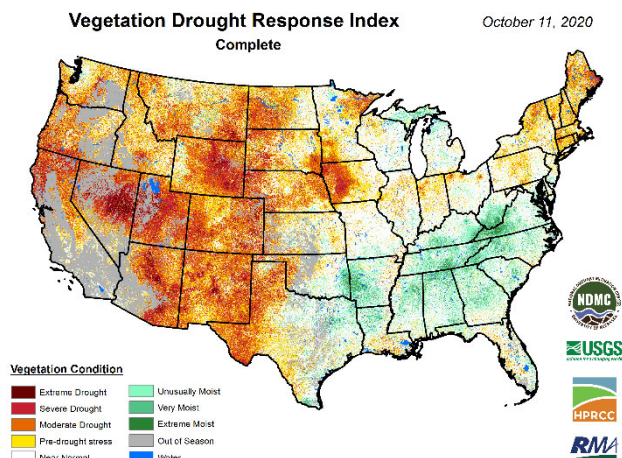
## Is This A Year To Hold Calves?

**Dr. Jeff Lehmkuhler, Associate Extension Professor**

This fall has provided us with another dry spell. The recent hurricane provided small amounts of precipitation to the Commonwealth, but much less than originally forecasted. Randomly selecting county Mesonet sites

across the state for the month shows precipitation levels of 0 to 1 inch. Even with the dry conditions, we are much better off than the Western and Plains states (see figure below). Dry conditions appear to be forcing producers in the west to sell calves. Last week, Nebraska feeder cattle marketed were reported at 28,584 compared to 15,475 the week before. Colorado had similar increases selling 11,903 feeders compared to 6,660 the prior week. Wyoming another state hit hard by the dry conditions followed the same pattern moving 12,198 feeders this past week compared to 7,673 the previous week. It is not clear if this is strictly due to the dry conditions, the seasonal marketing pattern of spring calving herds or a combination of the two. Yet, when looking at the feeder cattle marketings for Arkansas, Georgia and South Carolina, states in the green vegetation index area, numbers were steady showing no large increases from the previous week.

With the August cattle feedlot placements being above a year ago, drought conditions increasing cattle marketings and concerns over wheat pasture conditions, it would not be unexpected to see these factors impact fall feeder prices here in the southeast. I am not an economist so be sure to follow the markets and Dr. Burdine's market updates as well as other industry news as we move through the fall to make informed marketing decisions. Current situations may mean backgrounding calves this fall, if you have forage, could provide an opportunity to add weight and value to the calf crop.



Source: <https://droughtmonitor.unl.edu/ConditionsOutlooks/CurrentConditions.aspx>

For operations that have sufficient forage, pasture or stored forages, backgrounding calves post-weaning can increase calf values by adding weight and applying some basic management. Administering a preventative herd health protocol to calves will provide the opportunity to boost immunity before marketing and reduce the internal parasite burden. Feedlot closeout data reveals cattle entering the feedyard at heavier weights are less likely to get sick and mortality rates are lower. Backgrounding calves for a few months allows them to develop a stronger immune system following the stress of weaning.

Assembling calves that are similar in frame, weight, and coat color to make larger marketing lots adds value. Multiple marketing studies demonstrate as the number of head sold in a lot increases, buyers tend to pay more than for calves sold as singles or small lots (<5 head). If you have ample forage, this may be an opportunity to purchase calves to match your weaned calves to background and put together larger lot sizes.

There are several feeding strategies that one can consider for backgrounding calves. The key is that the diets provide the cattle with their required nutrients for the targeted rates of gains. Work with a nutritionist to develop a feeding program that will meet the nutritional needs and keep feed costs low. A backgrounding program should add frame, muscling and little fat. Overly fleshy calves will be discounted at marketing time. Consider implanting calves to shift more nutrients to lean gain and promote efficiency. Daily gain targets will depend on



frame and muscle scores as well as sex of the calves. Large-framed steers could be targeted at 2.7-2.8 pound per day gains while heifers would likely need to be 2.5-2.7. Medium framed calves should gain a bit slower to avoid getting them fleshy. Calves that are going to be held for a short feeding period can have higher daily gains than calves that are to be sold four to five months later. Feeding calves for 150 days at a rate of 2.8 pounds will result in excessively conditioned calves. Again, these are generalities and you need to evaluate the calves your feeding to determine the best target gain to avoid getting them over conditioned.

Often when backgrounding calves for short periods of time, 1-2 months, a diet will consist of 60-70% grain mix and 30-40% forage to provide the energy density needed to add weight and value to calves. As an example, a four-weight feeder calf may have a dry matter intake of 10-12 pounds per day. The grain mix offered daily would be 4-9 pounds and the balance forage. The level of grain will depend on the forage quality and targeted rate of gain. You can add weight to calves without grain allowing them to graze stockpiled forage or annual forages in the fall as well. The better quality the forages, the better the gains will be with most forages allowing 1-2 pounds per day without supplementation. Calves can also be managed on corn crop residues or stored hay with supplementation. The lower quality forage will not support high rates of gain, 0.5-0.7 lb/d, but these lower rates of gain can still be economical if the markets are trending upward. Be sure you are meeting the protein needs of the calves when grazing low quality forages and energy supplementation can be considered to increase daily gains.

Be sure to work through enterprise budgets and evaluate the profit potential. The value of gain and feed cost of gain needs to provide an opportunity to reach your profit targets. Consider your options for economic risk management as well to limit downside risk. Reach out to your county extension agent for more information on backgrounding beef cattle.