

OFF THE HOOF

KENTUCKY BEEF CATTLE NEWSLETTER DECEMBER 3, 2020



University of Kentucky
College of Agriculture,
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Cooperative Extension Service

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University of Kentucky

Beef IRM Team

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Timely Tips

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

Spring Calving Herd

- Be sure that weaned heifer calves are on a feeding program that will enable them be at about 65% of their mature weight before the start of the breeding season. Rations should be balanced to achieve gains sufficient to get heifers from their current weight to that “target” weight.
- Body condition is important, plan an adequate winter program for cows to be at least body condition score 5 (carrying enough flesh to cover the ribs) before the calving and breeding season. This will help them to breed early in the spring. Thin cows should be fed to regain body condition prior to winter. Don't let cows lose weight/condition. Supplementation will most likely be needed. Find low cost supplemental feeds to meet the nutrient needs of cattle.
- Divide the herd into groups for winter feeding -
 - weaned heifer calves
 - first-calf heifers, second-calvers and thin mature cows
 - the remainder of the dry cows which are in good body condition
 - herd sires
- Begin feeding the lowest quality forage to dry cows which are in good condition during early winter and save the best hay for calving time or for weaned calves.
- Order and number ear tags for next year's calf crop this winter. It is also a good time to catch up on freeze branding and replacing lost ear tags.

Fall Calving Herd

- Get breeding supplies together, if using estrous synchronization and/or A.I.

- Have Breeding Soundness Evaluation (BSE) performed on bulls (even if you used them this spring).
- The fall breeding season starts. Breeding can best be accomplished on stockpiled fescue pasture; otherwise, cows with calves should be fed 25-30 pounds of good quality hay or its equivalent. Supplement with grain, if needed, and minimize hay waste. **DON'T ALLOW THESE COWS TO LOSE BODY CONDITION PRIOR TO OR DURING THE BREEDING SEASON.** It is easy to wait too long to start winter feeding. Don't do it unless you have stockpiled fescue.
- Nutrition level of cows during the first 30 days after conception is critical. Pay attention.
- Observe performance of bulls during breeding season. Watch cows for return to estrus, if you see several in heat, try to determine the cause and consider changing bulls.

General

- Complete soil testing pasture to check for fertility and pH.
- Consider putting down geotextile fabric and covering with gravel in feeding areas before you begin hay feeding to minimize waste of expensive hay. Or, perhaps, construct concrete feeding pads for winter feeding areas.
- Monitor body condition and increase feed, if needed, for all classes of cattle.

Recent and Upcoming On-line Beef Education Opportunities

Beef IRM Team, University of Kentucky

Beef Minutes November 19. Managing Fall Buttercup – Teutsch
December 3. Minimizing Hay Feed Losses – VanValin

Beef Bits Podcast Episode 7. **Befriend a Butcher Part II** with Drs. Lehmkuhler and Rentfrow

ROWLI Beef Webinar November 24. **Structures and Working Facilities** – Morgan Hayes and Josh Jackson, BAE Extension

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). 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-megic-e6f8f1?utm_campaign=u_share_ep&utm_medium=dlink&utm_source=u_share).

Having Your Cake....

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

My colleagues and I like to rib each other about which discipline is more important in beef production- nutrition, genetics, health, or reproduction. Of course, I argue that reproductive efficiency is the most important because reproductive rate drives gross revenue. But we all know it's not that simple. All disciplines need to be managed and blended to optimize reproductive potential.

Have you ever baked a cake? I am not a baker, but to make a great cake one needs to have eggs, sugar, flour, butter, milk, and flavorings (chocolate is my favorite). These ingredients mixed in the proper proportions can make an incredible product; a moist, flavorful cake. Adjust or ignore any of the key ingredients and the ability

to make a delicious cake is greatly impacted. No flour, no cake. No sugar, and the cake tastes awful. No flavoring and, again, a cake that is not satisfying. Alter any of the ingredients or even the amount used, and the cake can be unsatisfying. To make a GREAT cake, it takes the right ingredients, mixed in the correct amount by a careful practitioner.

If you think about it, reproduction or reproductive rate is the cake and genetics, nutrition, the health program, etc are all essential ingredients. One of the most essential ingredient is nutrition. Nutrient availability (quality and quantity) impacts body condition score which governs reproduction. If adequate nutrients are not available, the female will struggle to initiate estrous cycles and reproductive rate is low.

Genetics play a key role too. The size and milking ability of your animals need to match the quality/quantity of the nutrients you are providing. Bigger/growthier animals that milk more require additional nutrients and their ability to produce a calf will be greatly reduced if they are not provided adequate nutrients.

Another essential ingredient in reproductive success is health. Abortifacients abound and high reproductive rates are only possible if cattle are immune. Vaccinations are a necessity and the ability of females to mount the immune response is dependent upon nutritional status, including the mineral program.

So, my colleagues and I are all correct. Just like baking, achieving a high reproduction rate requires every ingredient to be controlled. Just enough body condition, a pinch of vaccine, and genetics with the proper flavor. I guess I know why I studied reproduction. I love cake!

Hay Quality: Beyond Proximate Analyses

Jeff Lehmkuhler, PhD, PAS, Associate Extension Professor

My forage colleagues and I seem to get bombarded with questions on forage quality and interpreting forage test results this time of year. The timing coincides with folks starting to feed hay and looking at developing supplementation programs for the cattle receiving the forage. Getting the forage tested for nutrient content is the first step.

Proximate analysis allows for separating a forage/feed into various macronutrient categories and was initially developed by German researchers in 1860. The components measured in the Weende analysis included: moisture, ash, crude protein, crude lipid, crude fiber and calculated nitrogen-free extracts. Crude fiber was replaced by the neutral and acid detergent fiber analyses developed by Dr. Peter VanSoest in the 1960's to improve energy estimates of feedstuffs for ruminants as some of the cell wall is degraded by the rumen microbes. I am always in awe of the progress researchers have made in the nutrition field beginning with feed composition analyses more than 150 years ago.

The laboratory process provides us with some insight on the feed quality, but the energy estimates don't always mimic the biological performance of a feedstuff. However, the laboratory analyses are useful in developing feeding programs. As an example, knowledge on the crude protein content of a forage can help avoid rumen nitrogen deficiencies ensuring microbial fermentation is optimized. I encourage everyone to test stored forages that will be fed this winter to help in developing supplementation strategies.

Forage test results can tell us a lot about a feedstuff. However, when we think about hay quality, we must go beyond the laboratory analyses. I see many forage test results each year, but that is where it stops. I don't get to physically see the forage, touch it, smell it. I know what you are thinking, here he goes again off on some Ivory Tower academia discussion. Actually, I want to share two different real-world situations from this fall with you

to hopefully drive home the notion that managing the hay making process is as or more important than the chemical component of the hay.

The first farm situation involves alfalfa hay, the queen of forages. Not many beef operations produce alfalfa or alfalfa/grass mix hay for beef cattle. This may be due to the cost of production, fertility, soil type or other factors. Let me set the stage. The operation weaned calves and were providing grass hay and grain supplement. The calves received grass hay the first month after weaning. A spot check of their weight taken after a month post-weaning revealed calves averaged 569 pounds with an average daily gain of 3.2 pounds. Now, these calves were eating the hay aggressively and some of the weight gain was a result of gut fill. However, the calves were doing well, eating and gaining. Exactly one week later, weights were taken again. On average, the calves weighed 548 pounds. They had lost an average of 21 pounds in 7 days! Yes, this would be an average daily gain of -3 pounds per day. Calves were coughing excessively; one calf was showing symptoms of respiratory distress five weeks post-weaning. What happened?

I did what I do in situations where weight losses like this occur. First, I checked the waterers. They were not fouled by manure and had a bit of feed/hay in them but not bad. I then looked at the hay. Bingo! This was alfalfa hay, not grass hay, that was offered the first four weeks. In September, a last cutting of alfalfa was taken and baled. However, weather conditions changed and forced the alfalfa to be baled before it was dry enough to store as dry hay. The farm ran out of the grass hay that had been fed after 4 weeks and put in this alfalfa hay which now was about six weeks since being baled. Mold was found throughout the bales and some areas were black. A general forage test wouldn't have provided this type of information. We would have seen the moisture percentage being high giving us suspicion that it may have been moldy, but in a lot of situations it would have been overlooked. By attempting to salvage a few bales of hay, the calves lost weight, got sick and cost the operation.

The second situation involves cover crop harvested for hay. When cut at boot stage cover crop forages, generally cereal rye in this area, can have decent quality. Rye can be tricky though as it matures early and fields that are poorly drained make it a challenge to get rye harvested in early spring. The farm manager thought the hay would be decent quality in the 10-12% protein range and mid 50's for TDN. This hay was being fed to lightweight backgrounding calves and getting calves to eat was an issue. After getting the forage test results, the hay was notably lower in quality than expected being only 7% crude protein. This category of animal is stressed from weaning, shipping, commingling and will often have low intakes the first few days after arrival. These light-weight calves are also in a lean phase of growth needing additional protein for muscle accretion. The diet was formulated assuming the hay is 11% protein, but the hay only contained 7% protein. Since the requirement for protein in these light-weight calves is 14-16%, the diet for these calves was protein deficient. This deficiency can reduce immune response and lower performance. Further, the NDF and ADF levels would suggest the hay was cut a bit mature. Lastly, upon inspection of the hay, it was also baled too wet due to weather. Some bales heated and caramelized which would lower protein and energy. Other bales were moldy and had black areas within the bales. When you are managing stressed light weight calves, it is critical that the calves want to eat, not that they are forced to eat what is provided. Calves of this type need soft-leaved second/third cutting grass hay that is mold free. Was it just the hay? No there were other management factors that were involved as well, however, the forage test alone would not reveal the mold issues.

Forage testing for nutrient content is always recommended to help develop feeding programs. However, be certain to consider anti-quality issues such as mold that could impact animal performance. Weather is always going to be a challenge when making hay. It is important to realize the potential trade-off of wet forage at baling to get the hay up versus the risk of increased growth of fungi and molds. These molds and fungi can have detrimental impacts on intake and animal performance. As a backgrounder in Oklahoma told our group when

we visited his operation, don't force your cattle to be Hoover vacuums cleaning up everything in the bunk even if it is half rotten feed. Rather manage the feeding program to provide them something that is palatable which they want to eat to ensure optimal health and performance. Have a great holiday season and stay healthy this year.

Getting the Most out of Stockpiled Grass

Chris Teutsch, Associate Extension Professor, UK Grain and Forage Center of Excellence

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

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

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

Save pastures with primarily tall fescue for later grazing. Tall fescue is by the best grass for stockpiling in terms of maintaining its nutritive value as you head into winter. So, graze pure stands last.

Strip graze tall fescue. As mentioned above, limiting access to stockpiled forage can significantly increase grazing days per acre. Strip grazing usually starts at the water source and then uses a single strand of electrified polywire to allocate only enough forage for the predetermined time period. It could 1, 2, 3, or more days. The shorter the time period the better utilization you will get. Since pastures are not actively growing during the winter months, you can start at your water source and no back fencing is needed.

Expert Tip: When strip grazing, never take your forward fence down until the back fence (new one) is up. If you do, the cows will be on the other side of the pasture!

To many producers that have not strip grazed, the idea of moving a temporary fence two or three times a week or even once a week can seem overwhelming. However, once you are set up it really goes pretty fast and the pay backs are huge—a free day of feed every time you move the fence. Is it less work than feeding hay? Probably not less, but just different and the pay back is much better.



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

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

Metaphylaxis FAQ's

Dr. Michelle Arnold, UK Veterinary Diagnostic Laboratory

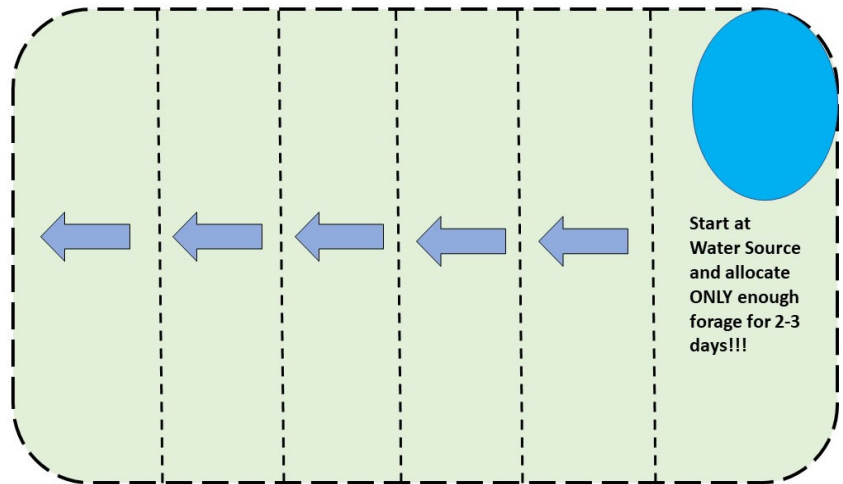


Figure 2. Strip grazing stockpiled grass is accomplished by starting at the water source and allocating only enough pasture

Bovine Respiratory Disease (BRD) results from the mixture of host (calf) susceptibility, pathogens (viral and bacterial) and the environment to cause disease. *Mannheimia haemolytica*, *Pasteurella multocida*, *Histophilus somni* and *Mycoplasma bovis*, the most common bacteria in bovine bronchopneumonia, are opportunists that get in the lungs when the calf's built-in defenses are down due to respiratory viruses and stress. Abrupt weaning, commingling, transportation, castration and dehorning, bad weather, overcrowding, and poor quality air and water are known to compromise a calf's immune system. A persistently-infected (BVD-PI) calf in a pen results in continuous exposure of the pen mates to the BVD virus and a constant reduction in their white blood cells needed to fight sickness. Lightweight calves, especially those weaned on the truck on the way to the sale, that are not eating and drinking, are also at exceptionally high risk for disease and death. Metaphylaxis is one proven method to decrease sickness, death, development of chronic calves, and will hopefully improve performance.

What is "metaphylaxis"? Although this term can have a variety of different meanings, the most common one is the treatment or mass medication of an entire group of purchased feeder calves with an antibiotic upon arrival to the farm or feedlot. Some definitions also include that metaphylaxis is meant to eliminate or minimize an expected outbreak of disease, usually BRD.

How does a producer, along with his or her veterinarian, decide whether to use metaphylaxis on a group of calves? The use of too many antibiotics in food producing animals is a big concern due to antibiotic resistance development in human medicine. The decision should be made carefully. Base the decision on the risk of disease developing in that group as well as management factors such as the availability of skilled labor to identify, pull, and treat calves early during disease, and facilities to treat them in. If the risk is very high (10-20% or more will be pulled and treated) mass treatment is generally recommended to get an antibiotic on board before the bacteria have irreparably damaged the lung.

If metaphylaxis is chosen, should it be given as soon as calves arrive at the farm? The general rule of thumb is to either treat the calves on arrival or when 10% have been pulled and treated, signaling that an outbreak is likely. Timing is crucial when dealing with respiratory disease in calves. Viruses (IBR, BVD, PI3 and BRSV), stress, dehydration and other factors will damage the lung defense mechanisms and allow bacteria in the tonsils and lymph nodes to go down the trachea and into the lungs. The average time for viruses to do their damage is at day 3 after exposure then bacteria come in typically 3-5 days behind the viruses. The critical point to

understand is the battle for the lungs must be won in the first 10-14 days after exposure or admit defeat. This brings up the next set of questions: when were the calves first “exposed” to respiratory viruses and do they have any vaccination protection? As an example, unweaned calves that were rounded up and taken to the sale barn the night before the sale may have 24+ hours of bawling, walking in a dusty pen, coughing and breathing on each other and the cattle in the adjacent pens, drinking from watering troughs that are shared with other cattle or perhaps they won’t drink at all. Many (most) of these calves will not have received a respiratory vaccine prior to sale and their dams probably did not either. At the sale, these calves are then mixed and matched with others to make load lots so now the stress of commingling is added to the mix of risk factors. By the time the calves reach their final destination, they may have accumulated 24-48 hours of exposure or sometimes much more. The bottom line is to always consider how long it has been since that calf left his or her normal routine; the longer this time, the sooner you need to mass treat. In addition, if castration and multiple vaccines are given at arrival, this adds another layer of difficulty in the fight against respiratory disease. On the other hand, calves purchased that were weaned and preconditioned probably do not need metaphylaxis on arrival but could need it later if a respiratory break begins.

Which antibiotic is best for metaphylaxis? First and foremost, there are only a handful of antibiotics approved for metaphylaxis. Excede®, Nuflor®, Draxxin®, Zactran®, Zuprevo®, Micotil®, Advocin® and Baytril® are allowed for BRD “control”. The decision on which one to use and how long to wait before pulling cases should be made with the veterinarian who prescribed it. The conventional wisdom used to be to treat all calves first with the cheapest broad-spectrum antibiotic (such as LA 300) then move to stronger and more expensive drugs each time the calf is pulled. The problem with this method is that by the time a producer reaches for one of the high-powered drugs, it is too late and the damage to the lung is already done. Getting an antibiotic labeled for control of BRD gets a proven, effective drug into the lung tissue while there is still time before the severe inflammation keeps the drug from getting to its destination.

Why do some calves respond to metaphylaxis while others have to be pulled and treated again? It is easy to see why successful treatment of bronchopneumonia is not simply a matter of grabbing a bottle of the latest and greatest antibiotic, shooting it in the sick calf and waiting for the magic bullet to take effect. Instead, full recovery is a joint effort between the calf’s immune system and the selected drug to stop the growth of bacteria and destruction of lung tissue. Antibiotics are designed to hold the bacteria “in check” and give the calf’s immune system time to gear up and effectively fight the disease. Treatment failure may be due to calf factors including overwhelming stress, concurrent infection with BVD, or nutrition-related factors such as trace mineral deficiencies or subacute ruminal acidosis. Sound nutrition and management, especially around weaning, will substantially increase the response to antibiotics. Calves vaccinated 2-3 weeks pre-weaning against respiratory viruses are known to respond faster and better to antibiotic therapy if needed. A good environment with plenty of space, clean water and bunk space reduces stress. Quick identification and removal of PI calves is through a simple, inexpensive ear notch skin test. Trace mineral deficiencies can be addressed immediately with an injectable trace mineral while calves are transitioning to a trace mineral mix. Keeping high quality, leafy, green, palatable grass hay available is the best way to start them eating. Treatment failure due to human errors may include poor timing, use of the wrong drug, improper dose or route of administration, or mishandling the drug itself. The most common error, by far, is failure to recognize a sick calf. Timing is crucial; if calves are treated early during disease, almost any antibiotic will work. Conversely, if calves are treated late during the disease, nothing will work. In addition to timing, dosage is crucial because antibiotics work by different mechanisms. Figure 1 graphically displays the difference between antibiotics that are considered “time dependent” (effectiveness depends on exposure to the drug for a certain length of time) versus “concentration dependent” (bacteria must be exposed to a high concentration of the drug). If label directions are not followed and only a partial dose is administered or perhaps a second dose is required but not given, the drug is unlikely to work effectively because it cannot reach the necessary minimum target concentration. Selection

of the best antibiotic class or “family” is an equally important success factor. Figure 2 is an illustration of the mechanisms antibiotic classes use against bacterial cells. Beta-lactams (penicillin, Excede®, Naxcel®, Excenel®) cripple production of the bacterial cell wall that protects the cell from the external environment. Aminoglycosides and Tetracyclines (LA-300®, Biomydin®, and many others) interfere with protein synthesis by shutting down the machinery in the ribosome needed to build proteins. Macrolides (Draxxin®, Micotil®, Zactran®, Zuprevo®, Tylan®) and Chloramphenicol derivatives (Nuflor®) also interfere with protein synthesis although at a different location on the ribosome. The Fluoroquinolones (Baytril®, Advocin®) block genetic replication by interfering with DNA and RNA synthesis. Why is this information important? If a calf requires retreatment, selection of an antibiotic from a different class will attack the bacteria through a different route and often improves treatment response. Another good example is treatment for *Mycoplasma bovis*, a bacterium frequently found in chronic pneumonia cases. It has no cell wall so treatment with a Beta-lactam (such as penicillin or Excede®) will prove absolutely useless. A veterinarian is well-trained in antibiotic selection and is the best source of information when choosing therapy. Another issue that may affect success is mishandling the product; an antibiotic that gets too hot or freezes will inactivate the drug in most cases. Sometimes treatment failure is not a “failure” but rather an inability to recognize recovery. A calf that is eating, drinking and looks better after treatment but still has a slight fever often just needs time to fully recover since fever is one of the last clinical signs to disappear.

Strategic and correct use of antibiotics will continue to be of importance for the cattle industry from this point forward. Metaphylaxis is one method to head off a likely respiratory break, especially in highest risk calves. In addition, careful attention to timing of treatment, drug selection, dose, and handling of the product will reduce the human factors that contribute to treatment failure. Calf factors including

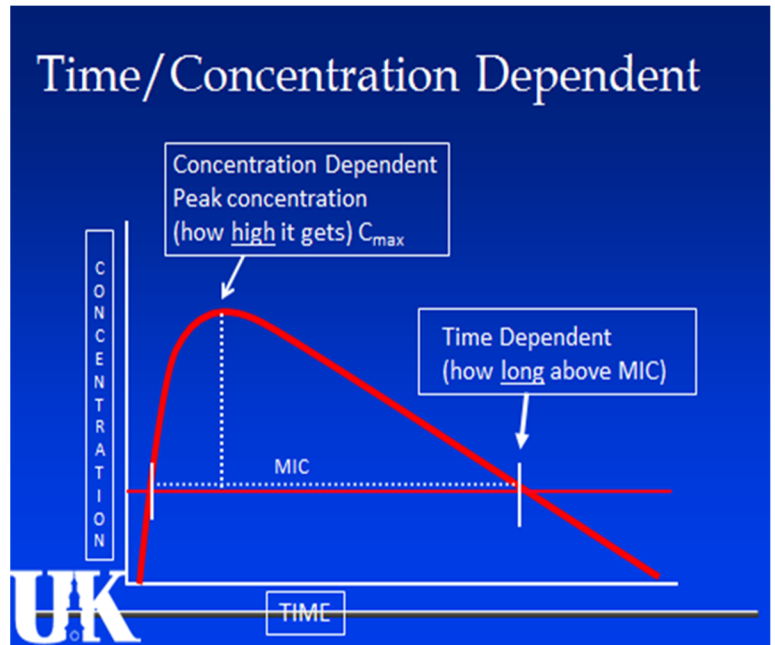


Figure 1: The “MIC” is the “minimum inhibitory concentration” or the minimum level of the drug needed to fight bacteria.

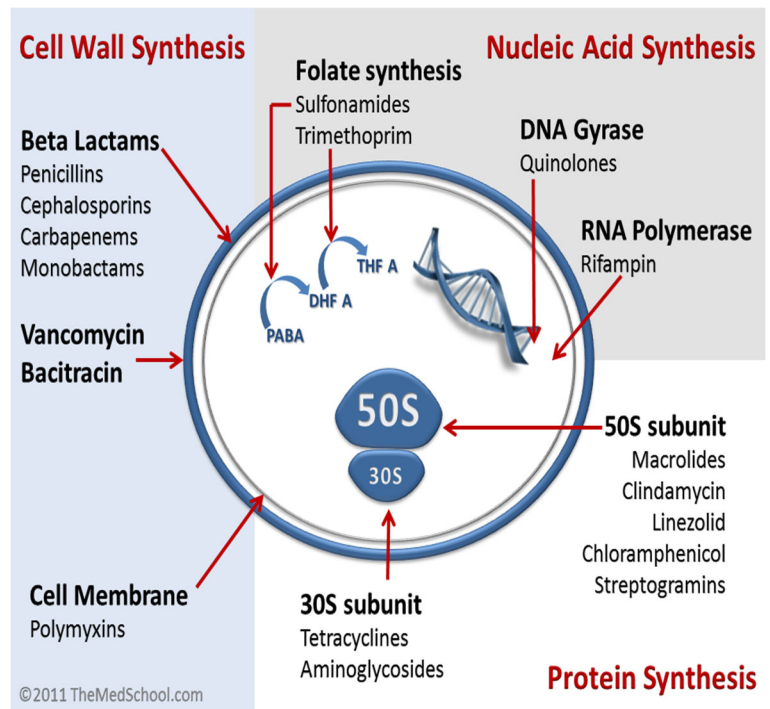


Figure 2: Drawing of a bacterium illustrating the ways different “classes” of antibiotics fight against them. By Kendrick Johnson (Own work) [CC BY-SA 3.0 (<http://creativecommons.org/licenses/by-sa/3.0>)], via Wikimedia Commons

overwhelming stress, infection with BVD, environmental or nutrition-related disorders must also be addressed in order for the calf's immune system to work with the antibiotic to stop disease progression.

Slaughter Cow Markets

James Mitchell, Livestock Marketing Specialist, University of Arkansas

As the fall concludes, livestock market analysts have been closely following feeder cattle markets. This time of year corresponds to when most spring-born, fall-weaned calves are sold. In last week's Cattle Market Notes, Dr. Kenny Burdine made several important points about the November cattle on feed report. We will come back to one of those points that he made shortly.

In addition to feeder cattle markets, the fall is also an important time of year for slaughter cattle markets as many cattle producers across the country make culling decisions. Because of this, an update on slaughter cow markets is warranted. The first figure provides prices for 85-90% lean slaughter cows sold in AR, KY, and MS. The most recent available data is for the week ending November 22, 2020. For that week, average slaughter cow prices were \$38.79/cwt, \$42.49/cwt, and \$35.38/cwt for AR, KY, and MS, respectively. These prices correspond to a 13%, 0%, and 3% week-over-week change.

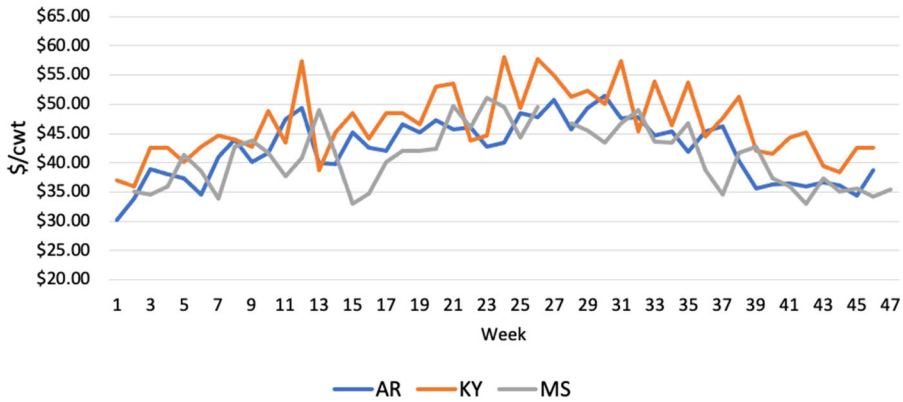
Cull cow prices tend to reach a seasonal low point in the fall. Still, 2020 cull cow prices remain above 2019 levels. Specifically, cull cow prices for the week ending November 22, 2020, were 19%, 14%, and 0% above 2019 prices for the same week for AR, KY, and MS, respectively. More broadly, in AR and KY, Sep-Nov prices averaged 6% and 10% above 2019 prices. In MS, Oct-Nov prices averaged 7% above 2019 prices.

Regional beef cow slaughter has also averaged well-above 2019 in parts of the country. In region 6, which corresponds to AR, LA, NM, OK, and TX, Sep-Nov beef cow slaughter has averaged 11% above 2019 slaughter for the same period. Region 4, which refers to AL, FL, GA, KY, MS, NC, SC, and TN, beef cow slaughter has more closely tracked 2019 this fall. Region 4 Sep-Nov beef cow slaughter has averaged 1% below 2019 slaughter.

There are both supply and demand-side factors that have likely contributed to what we have seen play out this year in slaughter cow markets. Beef cows are an input for ground beef production. We have witnessed periods of higher demand for ground beef this year with an uncertain eating environment due to COVID-19. At the same time, COVID-19 stressed processing capacity, and market-ready cattle were kept on feed longer. As a result, as Dr. Burdine discussed last week, average dressed weights have been above 2019 average dressed weights. Specifically, last week's article points to harvest steer weights that averaged 6% above 2019 this spring. A by-product of heavier dressed weights is more 50/50 trimmings, which requires more lean trimmings for blending to make ground beef at a target lean content. This has likely resulted in higher processor demand for slaughter cows, which might contribute to higher beef cull cow prices coupled with lower dairy cattle slaughter in 2020. Drought conditions and the impacts of COVID-19 on cattle prices are likely supply-side contributors.

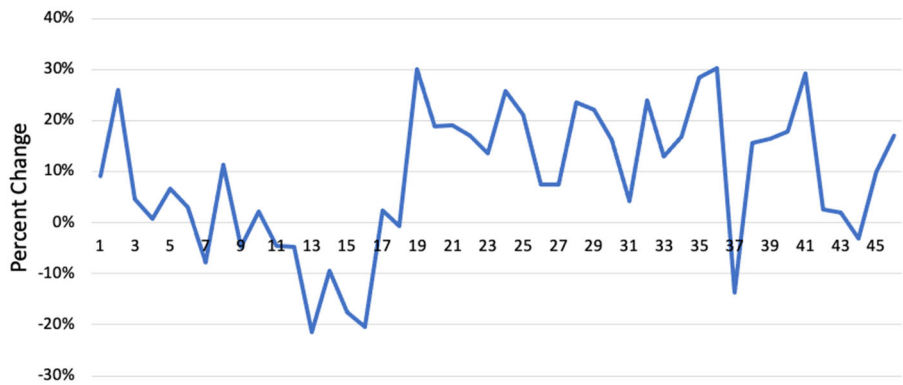
To conclude, it will be interesting to see what the January cattle inventory report reveals about the beef cow herd.

2020 Slaughter Cow Prices
85-90% Lean, Weekly



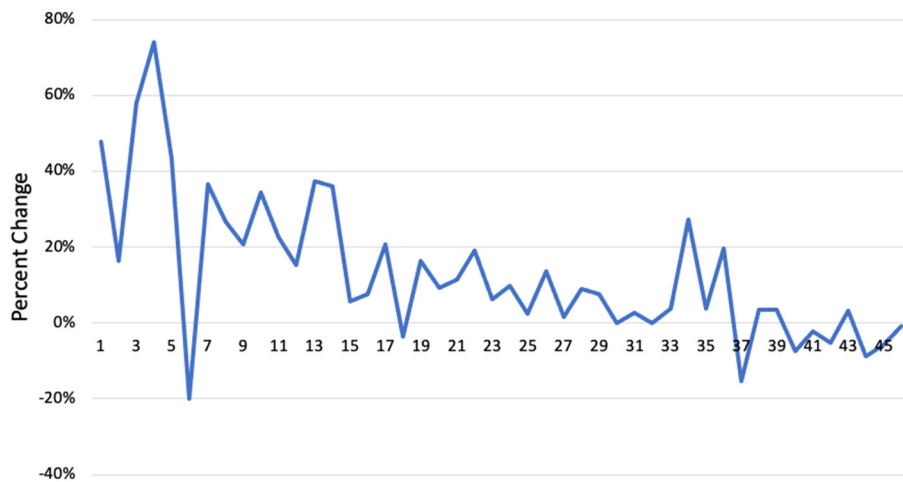
Source: USDA-AMS

2020 versus 2019 Region 6 (AR, LA, NM, OK, TX)
Weekly Federally Inspected Beef Cow Slaughter



Source: LMIC

2020 versus 2019 Region 4 (AL, FL, GA, KY, MS, NC, SC, TN)
Weekly Federally Inspected Beef Cow Slaughter



Source: LMIC