

OFF THE HOOF

KENTUCKY BEEF CATTLE NEWSLETTER, SEPTEMBER 2, 2021



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 Cows

- Bulls should have been removed from the cow herd by now! They should be pastured away from the cow herd with a good fence and allowed to regain lost weight and condition. It is a good time to evaluate physical condition, especially feet and legs. Bulls can be given medical attention and still have plenty of time to recover, e.g., corns, abscesses, split hooves, etc. Don't keep trying to get open spring cows bred – move them to fall calving or sell them when they wean this year's calf. If you don't have a bull pen and want to tighten up the calving season, remove the bull and sell him. Plan on purchasing a new bull next spring.
- Repair and improve corrals for fall working and weaning. Consider having an area to wean calves and retain ownership for postweaning feeding rather than selling "green", lightweight calves. Plan to participate in CPH-45 feeder calf sales in your area.
- Limited creep feeding can prepare calves for the weaning process since they can become accustomed to eating dry feed. This will especially benefit those calves which you are going to keep for a short postweaning period – like the CPH-45 program. It's time to start planning the marketing of this year's calf crop.
- Begin evaluating heifer calves for herd replacements – or culling. Each time you put them through the chute you can evaluate them for several traits, especially disposition. Consider keeping the older, heavier heifers. They will reach puberty before the onset of the breeding season and have higher conception rates.

- This has generally been a reasonably good year for pastures, but many parts of the state are starting to get a bit dry. Evaluate moisture condition and consider stockpiling some fescue pastures. It's not too late to apply nitrogen for stockpiling fescue if moisture conditions have improved.
- Stresses associated with weaning can be minimized by spreading-out other activities commonly associated with weaning – like vaccinations, deworming and, perhaps, castration and dehorning (which should have already been done!). Therefore, this month is a good time to do a “preweaning” working of cows and calves.
- When planning the preweaning working, consult with your veterinarian for advice on animal health products and procedures. One procedure that can be done now is pregnancy checking cows. Early pregnancy diagnosis will allow time to make culling decisions prior to weaning time. Feeding non-productive cows through the winter is a costly venture so pregnancy diagnosis is one of the more sound business decisions a producer can make.

Fall-Calving Cows

- Fall-calving should start this month. Get your eartags ready. Cows should be moved to a clean, accessible pasture and be watched closely. Tag calves soon after they are born and record dam ID and calf birthdate, etc. Castration is less stressful when performed on young animals and calves which are intended for feeders can be implanted now, too.
- If you haven't started calving quite yet, then it's time to get ready. Be sure you have the following:
 - record book
 - eartags for identification
 - iodine solution for newborn calf's navel
 - calf puller
 - castration equipment
- Watch for those calves which may come early and be prepared to care for them.
- Be on guard for predators – especially black vultures.
- Move cows to best quality fall pasture after calving. Stockpiled fescue should be available to these cows in November-December to meet their nutritional needs for milking and rebreeding.
- Start planning now for the breeding season. If using AI, order supplies, plan matings and order semen now.

Stockers

- Calves to be backgrounded through the winter can be purchased soon. A good source is Kentucky preconditioned (CPH-45) calves which are immunized and have been preweaned and “boosted”.
- Plan your receiving program. Weanling calves undergo a great deal of stress associated with weaning, hauling, marketing, and wide fluctuations in environmental temperature at this time of year. Plan a program which avoids stale cattle, get calves consuming water and high-quality feed rapidly. Guard against respiratory diseases and other health problems.

General

- Always keep a good mineral mix available. The UK Beef IRM Basic Cow-Calf mineral is a good choice.

- Do not give up on fly control in late summer, especially if fly numbers are greater than about 50 flies per animal. You can use a different “type” of spray or pour-on to kill any resistant flies at the end of fly season.
- Avoid working cattle when temperatures are extremely high – especially those grazing high-endophyte fescue. If cattle must be handled, do so in the early morning.
- Provide shade and water! Cattle will need shade during the hot part of the day. Check water supply frequently – as much as 20 gallons may be required by high producing cows in very hot weather.
- Plan the winter-feeding program. Take forage samples of hay you will feed this winter. Request protein and TDN analysis so that supplemental feed needs may be estimated. Don’t wait until you run out of feed in February to purchase extra feed. Plan to minimize hay storage and feeding losses because feed is too expensive to waste.
- If you have adequate moisture, stockpiling fescue might be a viable option. Nitrogen application to fescue pastures can be made now and allow them to grow and accumulate until November, or when other sources of grazing have been used up. To make best use of this pasture, put fall-calvers, thin spring-calvers, or stockers on this pasture and strip graze.
- Don’t graze sorghum or sudan pastures between the first frost and a definite killing frost because of the danger of prussic acid poisoning. Johnsongrass in stalk fields can also be a problem after a light frost. Grazing can resume after the sorghum-type grasses have undergone a killing frost and dried up.

Recent and Upcoming On-line Beef Education Opportunities

Beef IRM Team, University of Kentucky

Beef Minutes

Grazing Johnson Grass – Dr. VanValin and Dr. Teutsch
Heifer Development Series – Dr. Katie VanValin
 – VanValin, Bullock, Crites
 – Dr. Katie VanValin

BeefBits Podcast

Some Fun & Forages – Dr. Lehmkuhler and guest Dr. Teutsch
Introduction to Silvopastoral Systems – Dr. Lehmkuhler with guest Dr. Gabe Pent, Virginia Tech
Cutting up over corn silage – Dr. Lehmkuhler and guest Dr. Amaral-Phillips from UK’s Dairy group.

Beef Book

<http://www2.ca.uky.edu/agc/pubs/ID/ID108/ID108.pdf>

To access this and other excellent beef educational content, visit our Facebook Page ([facebook.com/KyBeefIRM](https://www.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-meqic-e6f8f1?utm_campaign=u_share_ep&utm_medium=dlink&utm_source=u_share).

Beef Bash Lexington 2021!

Beef IRM Team, University of Kentucky

The University of Kentucky and the Kentucky Cattlemen's Association are busy planning a fall educational event with something for everyone. Circle Thursday, October 14th on your calendar and join us at the UK C. Oran Little Research Station in Versailles for an afternoon with the cows, grass, and fellowship.

We have hosted Beef Bash at the UKREC in Princeton since 2008. For those of you that have not been able to attend, our goal is to have a more "user-friendly" field day – more interactive and less structured. You can come and go as you please, attend various demonstrations of your choosing, look at cattle exhibits, visit with commercial exhibitors, visit with other producers, or study various educational exhibits. Your choice. The name "Beef Bash" implies that we want you to have an enjoyable time while you learn.

Educational Opportunities. You can see our cattle operation which provides animals for beef research. Education opportunities will abound and will be scattered throughout the entire research station. Many stations will host researchers from the across CAFE will be share their research and it relevance to the Kentucky Beef Industry. ANR Agents will share successful beef programming ideas and their impact on beef productivity. Extension Specialist will discuss state educational programming and impact. Finally, we will discuss the management program or our cow herd, our goals, plans, and procedures.

Commercial exhibits. A large tent in the staging area will house commercial exhibits and serve as the focal point of all activities. You can visit with various company representatives as you please and make plans for purchasing products for weaning calves or wintering the cow herd. Information on many new products will be available. Take your time and visit a while.

Hands-on Demonstrations. Various "how-to" demonstrations will be conducted throughout the day. You can attend those that interest you and ask questions in a less formal environment. Examples of demonstrations may include bull selection, estrous synchronization technology, ration balancing, freeze-branding, alternative fertilizers, fencing and water, etc. We'll spend more time "doing" and less time speech making.

Social: Visit with the leadership of the Kentucky Cattlemen's Association and the University of Kentucky. The Dean and Associate Deans of the UK College of Agriculture are planning to attend and look forward to visiting with you. Bring any prospective agriculture students, especially those interested in Animal and Food Sciences with you. Extension Specialists and researchers from across the College will, of course, be available to visit and answer questions. We want to hear from you and get to know you.

KCA will be represented with leaders from across the state, especially the western part. This event has been a fantastic opportunity for KCA leadership to interact not only with UK personnel but also with other industry leaders. Come and visit with other cattlemen from across the state and be a part of making KCA the voice for all Kentucky cattle producers.

Make plans now to spend some time with folks who are interested in the same things that you are – improving our position in the beef industry. Mark October 14th on your calendar and bring a neighbor. The last couple of years have been extremely stressful for everyone, but we'll keep moving forward with meaningful research and continue to build an even stronger cattlemen's organization.

Registration begins at 8:30 a.m. EST, with programs and tours starting at 9 a.m. EST. A lunchtime meal will be made available to purchase. No preregistration is required. Participants will receive a free pair of cotton-knit gloves. Of course, this in-person event is subject to change to due the COVID surge induced by the delta variant.

For more information, please contact Dr. Les Anderson (859)-257-2856 or les.anderson@uky.edu.

Tips for Stockpiling Tall Fescue for Winter Grazing

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

Feeding hay during the winter months is the single highest expense for cow-calf producers in transition zone states like Kentucky. In many cases it can make up more than 60% of the total cow-calf budget. While dry hay is the cornerstone of most winter-feeding programs, grazing stockpiled cool-season grasses in late fall and winter can reduce feed costs by more than 50% per day per cow. The following tips will help to optimize your stockpiling program.



Choose a strong tall fescue sod in a field that is well drained. To get the maximum yield response to nitrogen applications you will need a healthy stand of tall fescue. Choosing a field that is well-drained will help to ensure that the stockpile can be grazed with minimal pugging damage during the wet winter months.

Clip or graze pastures that will be stockpiled to 3-4 inches prior to applying nitrogen. Clipping pastures removes old growth and increases the forage quality of the stockpiled grass.

Apply 60-80 lb of nitrogen per acre in mid to late August. Applying nitrogen too early can stimulate summer annual weed growth, while applying nitrogen too late decreases dry matter yield.

Allow growth to accumulate until mid-December before grazing. If limited grazing is available, feed hay during this accumulation period rather than the winter months.

Graze stockpiled pastures that contain legumes first. Legumes deteriorate at faster rate than grass and should be grazed first to minimize losses.

Strip graze tall fescue to maximize grazing days. Allocating only enough stockpiled grass for 2-3 days will increase grazing days per acre by more than 30%.

Frost seed legumes on grazed areas. Closely grazed stockpile provides an excellent opportunity to establish legumes in grass dominated pastures. Broadcasting the seed as the pasture is being grazed can enhance soil-seed contact and increase overseeding success.

For more information on stockpiling for winter graze, please visit your local Cooperative Extension, Natural Resources Conservation Service, or Soil and Water Conservation District office.

Preparing for Weaning and Beyond

Dr. Michelle Arnold, UK Veterinary Diagnostic Laboratory

Preconditioning programs for feeder cattle have long been recognized by the beef industry as a way for cow-calf operators to add credibility and, therefore, value to their annual calf crops. These programs prepare the calf for the known stressors ahead associated with weaning, transportation, and commingling that make calves more likely to get sick with bronchopneumonia, also known as Bovine Respiratory Disease (BRD). Most preconditioning programs recommend starting vaccinations 2-3 weeks prior to weaning because it allows sufficient time to develop protection before natural exposure to the BRD “bugs”. At minimum, preconditioning programs require two rounds of viral vaccine (at least one must be modified-live vaccine or “MLV”) and Clostridial (blackleg) vaccinations, a *Mannheimia haemolytica* toxoid (“Pasteurella” shot), deworming, castration of bull calves and healed, heifers guaranteed not pregnant, and a minimum of 45-60 days weaned. Some programs require producers to use products manufactured by only one pharmaceutical company. In addition, weaned calves are expected to know how to eat from a feed bunk and drink from a fountain or tank but should not be over-conditioned or “fleshy”. Buyers prefer weaned calves that have been properly fed and with documented vaccinations and parasite control compared to similar quality non-vaccinated and non-weaned calves, which can translate to price premiums that vary in size depending on the market that day. Additional information on weaning strategies can be found in the Extension fact sheet ID-258 Weaning Beef Calves <http://www2.ca.uky.edu/agcomm/pubs/ID/ID258/ID258.pdf>.

The importance of preparing calves properly before weaning cannot be emphasized enough when it comes to health. Prevention of disease, especially BRD, is far more effective and less expensive than treatment but it requires the protective antibodies to be in place before leaving the farm and before the inevitable exposure to the respiratory viruses and bacterial pathogens that cause disease. “Stress” is a known factor that negatively affects a calf’s immune system and plays just as important a role in disease development as the infectious pathogens (“bad bugs”). However, research has shown that there are 2 distinct types of stress; acute (short-term) lasting less than 24 hours and chronic (long-term) lasting 24 hours or more. Acute stress is actually believed to be a “good thing” because it revs up the immune system and increases resistance to infection and response to vaccines. Conversely, chronic stress causes immune dysfunction due to the excess production of cortisol which reduces the ability of white blood cells to do their job fighting disease-causing organisms. Calves properly vaccinated and retained on the farm at least 60 days after weaning are known to have less sickness and health costs at the feedlot, provided their nutritional needs, including critical trace minerals, were fully met.

It is important to understand that the cow-calf sector of the beef industry single-handedly holds the keys to successful reduction of BRD and antibiotic use throughout the feeding period and all the way to slaughter. First and foremost, proper nutrition and vaccination of the mature cow herd is the foundation for a healthy calf crop. “Fetal programming” is an emerging topic of importance as researchers are

starting to understand the critical steps involved in fetal immune system development that only occurs during pregnancy. Secondly, vaccinations against the viral and bacterial agents involved in BRD, when given to nursing calves while still on the home farm, are strong weapons against future disease challenge. Vaccinations given to healthy calves while still “on the cow” induce acute or short term stress that enhances the antibody response in healthy animals. There are 3 distinct times a cow-calf producer should give vaccines to completely precondition their calves; at “branding” (1-4 months of age), pre-weaning (2-3 weeks prior to separation from dams) and after weaning (once the stress is over, typically 10 days to 2 weeks post-weaning, but prior to leaving the farm). The Animal and Plant Health Inspection Service (APHIS) veterinary website echoes the need to vaccinate healthy animals; it specifically states that licensed cattle vaccines “... are typically shown to be effective in healthy animals. A protective immune response may not be elicited if animals are incubating an infectious disease, are malnourished or parasitized, are stressed due to shipment or environmental conditions, are otherwise immunocompromised, or the vaccine is not administered in accordance with label directions.” https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/veterinary-biologics/CT_Vb_licensed_products

Although we live in an age with state-of-the-art cattle respiratory vaccines and potent antibiotics specifically formulated for bronchopneumonia, BRD sickness and death rates continue to climb year after year. Indeed, there is little incentive for a producer with a small herd to implement a pre-conditioning program and a majority of cow-calf operations are small and typically run a bull year-round. But these calves will eventually leave the farm and enter stocker or backgrounder operations as “high risk calves”, meaning they are lightweight, unweaned (or weaned on the trailer on the way to the yards), never or poorly vaccinated and most are trace mineral deficient. At the auction barn they are mixed or “commingled” with similar calves from multiple farms then sold, allowing virus transmission to begin prior to delivery to the stocker/backgrounder facility or feedlot. After arrival and a brief rest period, these calves are usually processed through the chute and receive multiple vaccines, deworming and the bulls are castrated. These calves experience chronic stress causing immune dysfunction and will typically break with respiratory disease within the first 2 weeks after arrival. It is estimated that 60-70% of calves marketed through sale barns are considered high risk.

If considering implementing a preconditioning protocol, talk to your veterinarian first to develop a comprehensive vaccination plan and find a marketing program to promote this extra effort. For additional help with vaccine selection and marketing, most pharmaceutical companies offer “cookbook” preconditioning programs using their products:

Zoetis “Selectvac” <https://www.selectvac.com/cattle-vaccination-program.aspx>

Boehringer Ingelheim “Market Ready” https://www.bi-vetmedica.com/species/cattle/keep_calves_healthy/KCH_Market_Ready.html#get-started

Merck “PrimeVac” https://www.merck-animal-health-usa.com/pdfs/cattle/primeVac_brochure.pdf

Elanco “Cattle Vaccine Promise” for product support <https://www.elanco.us/products-services/dairy/cattle-vaccines>

The following is a protocol including the minimum requirements for most calf preconditioning programs but be aware that certain marketing programs may have additional requirements. Some preconditioning programs are now requiring vaccines to be given to the dams as well as the calves. At the end of Off the Hoof, there is an up-to-date listing of available vaccines and dewormers and their manufacturers to help

with product selection. The products listed are in no particular order and are not to be considered as endorsements by the University of Kentucky. In addition, the list is not “all- inclusive” as there are too many products on the market to list them all.

“Two Rounds Viral Vaccines”

- a. First round contains the respiratory viruses (IBR, BVD, PI3, BRSV) in either a killed or modified live viral (MLV) vaccine preparation.
 - Best Time to Administer First Round: 2-3 weeks prior to weaning
 - Best Type of Vaccine: Modified Live (MLV)- (List D1)
Warning: Only use modified live vaccines *in calves nursing pregnant cows* if the dams were vaccinated with MLV within the last 12 months. The virus vaccines replicate in the newly vaccinated calf and can be spread to the pregnant dam, increasing the risk of abortion if the dam is not adequately vaccinated (always check vaccine label for specific requirements).
 - If this requirement is not met, a killed vaccine (List D2) should be used or wait until the calf is weaned to begin the program.
 - 2nd Best Option to Administer First Round: “At” weaning (after stress is over). Use MLV (List D1)
 - What you actually see on the label of a respiratory virus vaccine:
Bovine Rhinotracheitis-Virus Diarrhea-Parainfluenza 3-Respiratory Syncytial Virus Vaccine (See Figure 1 for label examples)
- b. Second Round-Booster according to label directions. Use MLV (List D1)
- c. A combination product containing both MLV viral vaccine and *Mannheimia haemolytica* (“Pasteurella”) vaccine may be used instead as the 1st or 2nd round. See “Live Product with Pasteurella” option below for further explanation.
- d. Virus vaccines may also contain *Histophilus somni* bacterin or “Somnus”. Killed virus vaccine + Somnus (List D2B) and MLV vaccine + Somnus (List D1B) are both available.

“Two Rounds of Blackleg”

- There are many 7 or 8-way Clostridial vaccine products available (List D5). Most require a two shot series, administered 2-3 weeks apart for protection. A few vaccines also contain tetanus toxoid (important if banding bull calves).
- Blackleg vaccines may be found in combinations with Pinkeye Vaccine (List D5B), with *Histophilus somni* bacterin “Blackleg + Somnus” (List D5C), or with *Mannheimia haemolytica* toxoid “Blackleg + Pasteurella” (List D5D)
- What you typically see on the label for a 7-way blackleg vaccine:
Clostridium chauvoei-septicum-novy-sordelli-Perfringens Types C & D Bacterin-Toxoid

“A ‘Pasteurella’ shot-calves must get at least one round”

- This is actually a *Mannheimia haemolytica* toxoid (List C3). Some of these products also contain a *Pasteurella multocida* bacterial extract.
- Best Time to Administer: 2-3 weeks prior to weaning. Safe in all nursing calves.
- Read the label! Available in many combinations so be careful when selecting products.

- What you see on the label: *Mannheimia haemolytica* toxoid (may also say “*Pasteurella multocida*” “bacterial extract” or “bacterin”). See Figure 2 for a label example.

“Live Product with Pasteurella” option

- A *Mannheimia haemolytica* toxoid and MLV Respiratory Virus Vaccine Combination product (List C4) can be given to meet the “Pasteurella” vaccine requirement and the MLV viral vaccine requirement with just one injection. Merck and Zoetis also offer this combination by administration of an intranasal vaccine and an injectable vaccine manufactured to be given at the same time.
- Best Time to Administer: 2-3 weeks prior to weaning
- Warning: Only use modified live vaccines in calves nursing pregnant cows if the dams were vaccinated with MLV within the last 12 months because of the risk of abortion (always check vaccine label for specific requirements).
- If this requirement is not met, wait until the calf is weaned to use this product.
- What you actually see on the label:
Bovine Rhinotracheitis-Virus Diarrhea-Parainfluenza 3-Respiratory Syncytial Virus-*Mannheimia haemolytica* (\pm *Pasteurella multocida*) Vaccine. (see Figure 2 Example)

“Deworming-must include product and date”

- Deworming with an endectocide (List D6A) will control internal and external parasites, usually 30 days or slightly longer (LongRange is an extended duration product of 120+ days).
- A drench anthelmintic or ‘white dewormer’ (List D6B) is given by mouth and has a short duration but very effective clean-out of internal parasites. An insecticide is often required for external parasite (lice/flies/ticks) control as well.
- Giving newly weaned calves both types of dewormers at the same time, a white dewormer by mouth (List D6B) and an endectocide by either injection or pour-on (List D6A), is a tremendously effective combination to remove internal parasites, control external parasites, and prevent reinfection for a 30 to 40-day period.

When All Else Fails, Read the Feeding Instructions

Jeff Lehmkuhler, PhD, PAS, Extension Professor, University of Kentucky

This is the time of year when calves are starting to come to market. Backgrounders and fall stocker programs are buying lightweight feeders for their operations. Some operations in consultation with their veterinarians may have obtained a veterinary feed directive (VFD) for medicated feed to help in the prevention or treatment of bovine respiratory disease (BRD). Medicated feeds are a tool in the toolbox and managers should familiarize themselves with the use of such tools.

A common feed medication is chlortetracycline (CTC). This feed grade antibiotic can be used for a variety of disorders. The feed additive is labeled for use for the control of anaplasmosis, reduction of liver abscesses, control of bacterial pneumonia associated with shipping fever (i.e. BRD) and treatment of bacterial enteritis caused by *E. coli*. Would it surprise you to learn then that there are different target doses for the control or treatment of these disorders?

For the control of bacterial pneumonia in feeder calves, the approved label dose is 350 mg/hd/d. “Control” is essentially the dose to help calves to avoid serious infection whereas “treatment” is the dose to treat active infections in sick calves. The approved treatment dose for feeder calves is 10 mg/lb of body weight. If a 500-pound calf were to be treated for bacterial pneumonia with chlortetracycline, the total CTC dose would be 5,000 mg/d which is **14-fold higher** than the control level. This is why it is important to consult with your veterinarian about incorporating medications into your feed. Feed manufacturers will include key information on the feed tag of medicated feeds. The active ingredient or medication level will be listed near the top. This is essential in calculating the amount to feed to achieve the desired dosage. Additionally, the instructions will provide information on feeding recommendations and rates.

Many of you have probably fed or heard about bloat prevention blocks. These blocks contain poloxalene which aids in breaking frothy foam formation in the rumen when cattle are grazing fresh legumes. To be effective in the prevention of bloat, cattle must consume the appropriate dose daily. Well, how do you know the appropriate dose? By reading the feeding instructions on the label for a certain block product, it says that cattle must consume 0.8 ounces per 100 lb of body weight. For a 1,400-pound beef cow, she would need to consume 11 ounces or 0.7 pounds a day. Additionally, feeding recommendations on the product label states provide 1 block for every 5 head. If the group has 30 cows, then you should provide 6 blocks at a time. Why? Cattle are going to come to the blocks as a herd and the boss animals are going to get their share. The dominant cows will prevent the other animals from consuming the blocks they are licking. Having several blocks available will provide more timid cows the opportunity to consume their daily dose to prevent bloat.

Protein tubs are popular supplements. Not all protein tubs are made the same. Some may be medicated, some may have additional fat, a few are made for stress and some are made from coproduct feeds rather than molasses. Other differences can be whether salt is part of the mixture of ingredients. Tubs that do not contain salt will often have on the feeding directions to offer free-choice salt in addition to the tub. Not providing salt when the label recommends to do so could result in challenges with target intakes.

When you are getting ready to supplement your cattle, take the time to read the feed tag. Pay attention to the feeding instructions. If you are considering a medicated feed, discuss your options and goals with your veterinarian and obtain a VFD if needed. There are many feed additives that are additional tools for us in maintaining animal health and performance. Learn how to effectively use these tools to get the most out of them.

August Hay Production Estimates

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

This month, I wanted to discuss an aspect of USDA’s August Crop Production report that seldom gets much attention. August is when we get our first estimates of the size of the hay crop across the country. Needless to say, this has implications for winter feed supply and cost for cattle operations. Like any estimate, a lot can still happen in the growing season, but it does provide some perspective on what can be expected from hay supplies this winter.

USDA breaks hay up into two broad categories – Alfalfa and Alfalfa Mixtures and All Other Hay. Both are important, but it tends to be the All Other Hay category that has the most winter feeding implications

for cow-calf operations. At the national level, All Other Hay production is estimated to be down by about 3.8% due to fewer harvested acres and lower yields. However, national data seldom tell the full story because hay markets tend to be very localized. Because hay is extremely expensive to transport, wide value differences can be seen across regions. That is very likely to be the case this year as we have some parts of the country dealing with severe drought.

In the table below, I have hand-picked some state production estimates from this report. You will notice I grabbed some representative states from the south and a couple from the drought stricken northern plains. South Dakota really stands out, which is estimated to see a 46% decrease in non-alfalfa hay production this year. While lower acreage is a small factor, this decrease is largely driven by an expected 41% drop in yield. A similar story can be told in Montana, where harvested acreage was actually estimated to be up slightly, but production is expected to be down by 38%. In the south, yield largely explains much higher production expectations in Texas and Alabama, but also explains lower production expectations in Arkansas and Mississippi. Both acreage and yield were estimated to be pretty flat in Kentucky.

The August Crop Production report serves as an important reminder of how different production can be across states and even within individual states. While it is worthwhile to consider winter hay needs anytime, it becomes more important as we move closer to the winter hay-feeding season. Estimates need to be made based on the anticipated number of head to be carried through winter and an estimated number of winter-feeding days based on current expectations for fall grazing. This can be compared to the quantity of hay that has already been put up and expected yields from any fall cuttings. In most cases, if producers feel they will need more hay, it is best to start planning early. Hay typically becomes harder to find, and more expensive, when it is sourced in the winter. And, it is always better to have a little extra hay come spring, than to run out a few weeks prior to grazing.

Hay Production Estimates in Selected States (2020 and 2021)

State	2020 Production (1,000 tons)	Est. 2021 Production (1,000 tons)	Change from 2020 to 2021
Alabama	2,325	2,700	+16%
Arkansas	2,667	2,451	-8%
Kentucky	4,920	5,040	+2%
Mississippi	1,625	1,386	-15%
Montana	1,728	1,067	-38%
South Dakota	2,125	1,150	-46%
Texas	9,065	10,500	+16%
United States	73,745	70,927	-4%

Source: USDA-NASS August Crop Production Report

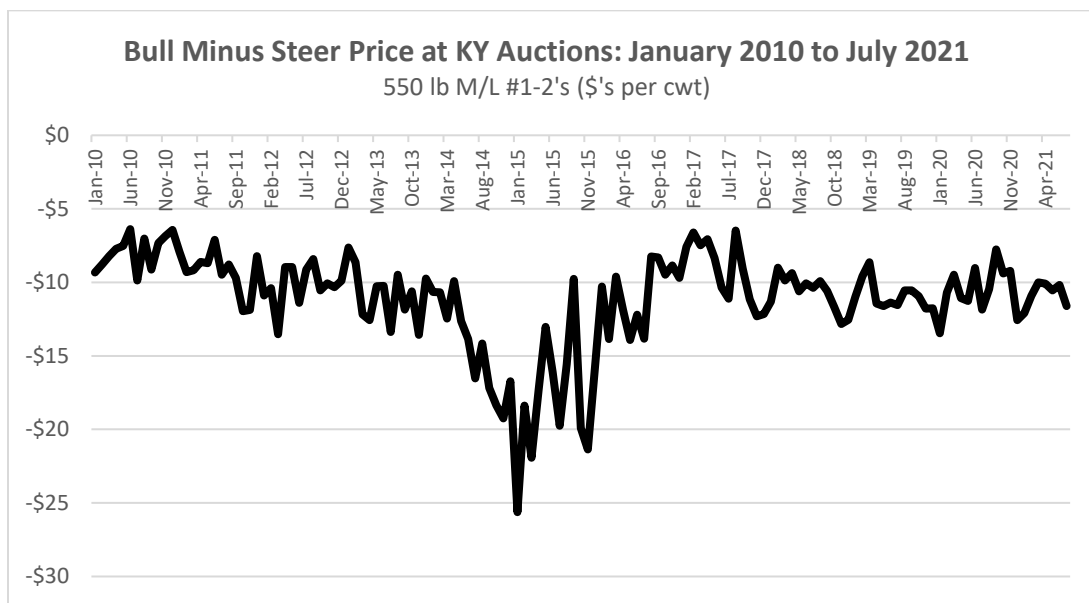
The Steer-Bull Price Differential: A Historical Perspective

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

In extension settings, I am often asked whether I think it pays for a cow-calf operator to castrate bulls and sell steers. Castration is not without cost as it requires time and facilities and does stress calves for a period of time. Like so many management decisions, there are numerous ways that one can look at this

decision and there is more to be considered than economics alone. But it had been about three years since I wrote an article on this topic, so I thought it was likely a good time to revisit it.

When examining historical prices, it is difficult to argue that there is not a price advantage to selling steers. Sure, there will be times when a group of bulls will outsell a group of steers, but I view those times as the exceptions, rather than the norm. Sometimes those exceptions may be due to quality or lot size differences. Other times it may be as simple as a buyer needing to fill out a load of bulls and bidding the price of a group up beyond what would have been expected. But, going back to January of 2010, there has not been a single month when the average price of 550 lb bulls exceeded that of 550 lb steers. The figure below plots this data by month from January 2010 to July 2021. The bull discount got very wide at times during 2014 and 2015, but otherwise has been running in a range of \$7 to \$14 per cwt. Over that entire period, the bull discount averaged \$11.12 per cwt.



A logical follow up question would involve the likely weaning weight differences between steers and bulls. In the figure above, I tracked the price differential at the same sale weight. On a 550 lb calf, that \$11.12 per cwt historical price difference amounts to a little more than \$60 per head, but also ignores potential weight differences between the two. I like to frame this discussion by asking how much more a bull calf would have to weigh at weaning to make up for that difference. To answer this question, we have to understand the value of additional lbs (value of gain) and not confuse this with sale price. Price slide refers to the decrease in price per cwt that occurs as the weight of cattle increases. Because of price slide, the value of additional lbs is typically less than the sale price. This is a key concept in cattle marketing that impacts most all decisions that producers make. I will walk through a quick illustration.

The average price of a 550 lb bull calf from 2010 to 2020 in Kentucky auction markets was \$150 per cwt or \$825 per head. If the price slide in the market were \$10 per cwt, for each 100 lb increase in the bull's weight, his price would decrease by \$10 per cwt. So, if a bull weighed 600 lbs, rather than 550 lbs, his price would have been \$145 per cwt (\$5 per cwt less) and his total value would be \$870. This is \$45 more dollars than the 550 lb bull, which means that those additional pounds were worth roughly \$0.90 each. At that rate, the bull's weight would need to exceed the weight of the steer by 67 lbs to

make up for the roughly \$60 difference in value from the price discount. As price slide increases, the value of additional lbs decreases. Using a larger price slide of \$15 per cwt would make the value of those additional lbs worth only about \$0.60, which would mean that the bull would need to outweigh the steer by roughly 100 lbs for his value to be comparable. Similarly, a smaller price slide would result in higher values of gain and fewer additional lbs needed to offset the price differential.

This discussion is quickly summarized in the table below. In the table, I work through these calculations for price slides of \$5, \$10, and \$15 per cwt. Ordinarily, I would not include a price slide as low as \$5 per cwt for calves, but we are in a unique market right now with relatively high feed costs. Generally speaking, high feed prices tend to result in smaller price slides as preference shifts towards the placement of heavier feeder cattle into feedlots. Conversely, price slides for calves will typically be larger in the spring when grass demand supports lighter calf prices. Price slides also tend to increase as overall price levels increase. For example, we saw price slides exceed \$20 per cwt during 2014 and 2015 when calf prices exceeded \$2 per lb. So, the table below is largely for illustration purposes, but provides a framework from which producers can make similar calculations based on calf prices and price slides in any market.

Price Slides and Value of Additional Weight

	\$5 / cwt price slide	\$10 / cwt price slide	\$15 / cwt price slide
Value of 550 lb bull, initial price of \$150 per cwt	\$825 per head	\$825 per head	\$825 per head
Value of 600 lb bull	\$885 per head	\$870 per head	\$855 per head
Value of each additional lb	\$1.20	\$0.90 per lb	\$0.60 per lb
Lbs needed to add \$60 of value per head	50 lbs	67 lbs	100 lbs

Finally, I would mention that implants likely need to be considered as part of this discussion too. While I leave implant specifics to my animal science colleagues, implanted steers have the potential to see much better rates of gain and narrow that weight difference considerably. So, unless a producer is selling into a market that does not allow implants, they may offer the potential to receive steer prices, but also see improved rates of gain.

Every producer must decide for themselves whether castrating bulls makes sense for their operation. I am fully aware that there is a cost to working calves and some producers may choose not to do this due to facility or time limitations. I have not attempted to delve into those additional costs in this article, but rather have focused on the value differences so that producers can weigh those against the additional costs they would incur. There is consistent evidence that bulls will sell at a discount to steers in the marketplace and the additional lbs needed for bulls to offset that discount can be significant. I would also point out that there are individuals in the marketplace who make money by purchasing bulls, castrating them, backgrounding them for a period, and re-selling them. I just mention this as evidence that this is a way that value is commonly added to cattle in the market. So, producers who typically sell bulls may want to consider the potential value that can be added to their calves through this practice as they look for ways to increase profitability in the future.

Vaccine and Dewormer list

Dr. Michelle Arnold, UK Veterinary Diagnostic Laboratory

Examples of Respiratory and Reproductive Vaccines[£]

for Adult Cows, Bulls, & Replacement Heifers

C1A Modified Live Virus Vaccines with Leptospirosis

- *Pyramid 10 - Boehringer Ingelheim
- *Vista 5 L5 —Merck
- *Express FP10 —Boehringer Ingelheim
- *Bovishield Gold FP5 L5 HB — Zoetis
- *Titanium 5 L5 HB — Elanco
- *Labeled for use in pregnant cattle and nursing calves but follow label directions carefully

C1B Modified Live Virus Vaccines + Lepto and Vibrio

- *Express FP 5 VL5— Boehringer Ingelheim
- *Bovi-Shield Gold FP5 VL5 HB-Zoetis
- *PregGuard Gold FP 10 (No BRSV)- Zoetis
- *Vista 5 VL5 SQ-Merck

C2A Killed Virus Vaccines with Lepto

- Triangle 10 HB—Boehringer Ingelheim
- Cattlemaster Gold FP5 L5— Zoetis
- Vira Shield 6 + L5 HB— Elanco
- Master Guard 10 HB-contains killed IBR and BVD-Elanco

C2B Killed Virus Vaccines + Lepto and Vibrio

- Cattlemaster 4 +VL5-Zoetis
- Vira Shield 6 + VL5 (HB)— Elanco

Examples of “Pneumonia” Vaccines

C3 Mannheimia (Pasteurella) Vaccines

- Presponse HM—Boehringer Ingelheim
- Presponse SQ—Boehringer Ingelheim
- One Shot—Zoetis
- Pulmoguard PHM –1– Huvepharma
- Nuplura PH—Elanco
- Once PMH—SQ or Intranasal—Merck

C3a Mannheimia (Pasteurella) Vaccines+Other Resp

- Nuplura PH + BVD (Mannheimia and BVD)-Elanco
- Nuplura PH + 3 (Mannheimia, BVD, IBR)-Elanco

for Nursing Calves and Weaned/Feeders

D1A Modified Live Virus Vaccines (Often called “Live Virus”)

- *Pyramid 5 - Boehringer Ingelheim
- *Vista 5 —Merck
- *Inforce 3 (Intranasal) + Bovishield BVD —Zoetis
- *Express 5 —Boehringer Ingelheim
- *Bovishield Gold 5 — Zoetis
- *Titanium 5 — Elanco
- *Bovilis Vista BVD + Bovilis Nasalgen 3 (Intranasal)—Merck
- *Labeled for use in calves nursing pregnant cows but follow label directions carefully

D1B Modified Live Virus Vaccines + Somnus

- *Express 5-HS— Boehringer Ingelheim
- Resvac 4/Somubac-Zoetis

D2A Killed Virus Vaccines

- Triangle 5—Boehringer Ingelheim
- Cattlemaster Gold FP5 — Zoetis
- Vira Shield 6 — Elanco
- Master Guard 5-contains killed IBR and BVD-Elanco

D2B Killed Virus Vaccines + Somnus

- Elite 4-HS—Boehringer Ingelheim
- Vira Shield 6 Somnus— Elanco

Examples of Combination Vaccines

C4 Modified Live Respiratory Viruses + Mannheimia

- *Pyramid 5 + Presponse SQ —Boehringer Ingelheim
- *Vista Once SQ — Merck
- *Bovi-Shield Gold One Shot—Zoetis
- *Titanium 5 + PHM—Elanco
- *Inforce 3 (intranasal) + One Shot BVD-Zoetis
- *Bovilis Vista BVD CFP + Bovilis Nasalgen 3-PMH (intranasal)-Merck
- *Labeled for use in pregnant cattle and nursing calves —follow directions carefully

£ The provided lists of vaccines and dewormers is for example purposes only and should not be considered an endorsement of products by the University of Kentucky

Examples of Blackleg, Pinkeye and Scours Vaccines and Dewormers

D5A Clostridial (Blackleg) 7 or 8 Way Vaccines

Ultrabac 7 or Ultrachoice 7-Zoetis
Caliber 7—Boehringer Ingelheim
Alpha 7-Single dose -No booster-Boehringer Ingelheim
Vision 7 or 8 with SPUR—Merck
Calvary 9 or Covexin 8—Contains tetanus-Merck

D5B Clostridial (Blackleg) + Pinkeye

Alpha 7/MB1— No booster-Boehringer Ingelheim
20/20 Vision 7 with SPUR-Merck
Piliguard Pinkeye + 7—Merck

D5C Clostridial (Blackleg) + Somnus

Ultrabac 7/Somubac—Zoetis
Bar Vac 7 Somnus-Boehringer Ingelheim
Vision 7 or 8 Somnus with SPUR—Merck

D5D Clostridial (Blackleg) + Pasteurella

One shot Ultra 7 or 8—Zoetis

D7 Pinkeye Vaccines

Maxi/Guard-Addison Labs
Vision 20/20—Merck
i-site XP—AgriLabs
Pinkeye Shield XT4—Elanco
Piliguard Pinkeye-1 Trivalent or Triview—
Merck
SolidBac Pinkeye IR/PR—Zoetis
Ocu-guard MB-1—Boehringer Ingelheim

D6A Dewormers (Injectables and Pour-ons)

Cydectin— Bayer
Dectomax — Zoetis
Ivomec or Ivomec + - Boehringer Ingelheim
Eprinex—Boehringer Ingelheim Noromectin—
Norbrook
LongRange - (extended duration) - Boehringer Ingelheim

D6B Drench Dewormers

Valbazen + (Pour on) - Zoetis
Safeguard + (Pour on) - Merck
Synanthic + (Pour on) - Boehringer Ingelheim
("Pour on" for external parasite control—lice, flies)

D8 Scours Vaccines Administered to Calf

Bovilis Coronavirus (Intranasal, Coronavirus Only)- Merck
Bar-Guard-99 (Oral, E. Coli K99 Only) - Boehringer Ingelheim
Calf-Guard (Oral, Rota- and Coronavirus)— Zoetis
First Defense (Oral, E.coli K99, Corona)-Immucell Corp
First Defense TriShield(Oral, E.Coli K99 + Rota- +Coronavirus)
Bovine Ecolizer (Oral, E. coli K99, C. perfringens)-Elanco

C8 Scours Vaccines Administered to Pregnant Cow

Guardian-Merck
ScourGuard 4KC-Zoetis
Scour Bos 9 and 4— Elanco



Figure 1: Examples of respiratory virus vaccines: Modified live or MLV (Bovi-Shield Gold 5/Zoetis); Killed (Triangle 5/Boehringer Ingelheim)

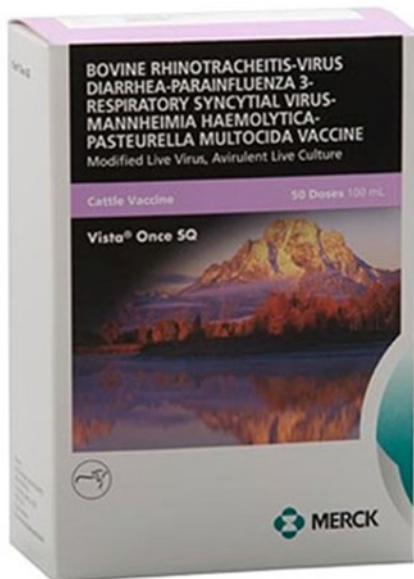


Figure 2: Examples of a combination MLV virus vaccine and "Pasteurella" (Vista Once SQ/Merck)-above and "Pasteurella" vaccine by itself (Once PMH SQ/Merck)-below.