

OFF THE HOOF

Kentucky Beef Newsletter March 2018

Published Monthly by Dr. Les Anderson, Beef Extension Specialist, Department of Animal & Food Science, University of Kentucky

Contents

This month's newsletter includes:

Timely Tips – Burris

Drinkin' From the Same Dipper – Burris

Seedstock Conference in Shelby County – Crites

Don't Forget Tetanus Prevention When Banding Bulls! – Arnold

The Value of Selling Steer Calves vs Bull Calves – Burdine

Timely Tips

Dr. Roy Burris, Beef Extension Professor, University of Kentucky

Spring-Calving Cows

- Observe spring-calving cows closely. Check cows at least twice daily and first-calf heifers more frequently than that. Be ready to assist those not making progress after 1 to 2 hours of hard labor. Chilled calves should be dried and warmed as soon as possible.
- See that each calf gets colostrum within an hour of birth, or administer colostrum (or a commercial colostrum replacement) with an esophageal feeder, if needed.
- Identify calves with ear tags and/or tattoos while calves are young and easy to handle and record birthdate and Dam ID. Commercial male calves should be castrated and implanted as soon as possible. Registered calves should be weighed in the first 24 hours.
- Separate cows that have calved and increase their feed. Energy supplementation to cows receiving hay is necessary to prepare them for rebreeding. For example, a 1250 lb cow giving 25 lb/day of milk would need about 25 lb of fescue hay and 5 lb of concentrate daily to maintain condition. If you need to go from a condition score of 4 to 5, you will need to add about 2 more lb of concentrate. Cows must be in good condition to conceive early in the upcoming breeding season.
- Watch for calf scours! If scours become a problem, move cows which have not calved to a clean pasture. Be prepared to give fluids to scouring calves that become dehydrated. Consult your veterinarian for advice and send fecal samples to diagnostic lab to determine which drug therapy will be most effective. Try to avoid feeding hay in excessively muddy areas to avoid contamination of the dams' udders.
- Continue grass tetany prevention. Be sure that the mineral mix contains high levels (~15%) of magnesium and that cows consume adequate amounts. You can feed the UK Beef IRM High Magnesium mineral.
- Plan to vaccinate calves for clostridial diseases (Blackleg, Malignant Edema) as soon as possible. You might choose to do this at the prebreeding working in late April or early May.
- Obtain yearling measurements on bulls and heifers this month (weight, height, pelvic area, scrotal circumference, ultrasound data, etc.) if needed for special sales. Heifers should be on target to be

cycling by the start of the breeding season.

- Prepare bulls for the breeding season. Increase feed if necessary to have bulls in adequate condition for breeding. Obtain Breeding Soundness Evaluation (BSE) on bulls, even if they were checked last breeding season.
- Finalize plans for your spring breeding program. Purchase new bulls at least 30 days before the breeding. Order semen now, if using artificial insemination.

Fall-Calving Cows

- Bull(s) should be away from the cows now!
- Plan to pregnancy check cows soon. You can also blood test for pregnancy as early as 30 days after bull removal.
- Creep feed calves with grain, by-products or high quality forage. Calves will not make satisfactory gains on the dam's milk alone after about 4 mos. of age – since there isn't much pasture in March, fall calves need supplemental nutrition. Consider creep grazing on wheat pasture, if available. Calves can also be early-weaned. At the best least, be sure that feed bunks are low enough that calves can eat with the cows.
- Calves intended for feeders should be implanted.
- Consider adding weight and selling your fall calves as “heavy” feeder calves. Keep them gaining!

General

- Repair fences, equipment and handling facilities.
- If you have a dry, sunny day, use chain-link harrow to spread manure in areas where cattle have overwintered. This may be done in conjunction with renovation.
- Renovation and fertilization of pastures should be completed.
- Start thistle control. They can be a severe problem in Kentucky pastures. Chemical control must be done early to be effective.
- Watch for lice and treat if needed.

Drinkin' From the Same Dipper

Dr. Roy Burris, Beef Extension Professor, University of Kentucky

They say that there's a couple of things that folks have difficulty believing – “the checks in the mail” and “I'm from the government and I'm here to help you”. Those statements are generally met with some degree of skepticism but we are here to help – but it isn't always easy.

For example, governmental regulations are sometimes troubling. It's kinda like the time a fellow from the health department visited a country family and told them that they would have to move their outhouse – it was too close to the well where they got their drinking water. He apparently didn't know what he was talking about because they moved the outhouse and the well went dry!

Speaking of drinking well water, folks used to keep a bucket of water on the back porch. There was one big problem with that – the dipper! Everyone drank from the same dipper. In fact, when you were referring to people that grew up in the same area you would say “they used to drink from the same dipper”.

One old gentleman that was chewing tobacco offered a young man a drink from his “community” bucket. The thirsty young fellow cautiously took the dipper and drank up near the handle. The old man roared his approval “you're the first person that I have ever seen drink just like I do!” At least he fit in. We don't always do that.

Dr. Jeff Lehmkuhler and I visited China in 2015, along with animal science professors from several countries.

Our host, Dr. Meng, told us that “if you want to do business in China – use chopsticks”. In other words, embrace their culture and try to fit in. It’s the same everywhere.

We sometimes approach working together, or helping people, with a degree of arrogance. I was up early one Christmas morning enjoying a cup of coffee before the children arose when the phone rang and broke the silence. Some loud woman was on the line and started talking as soon as I picked up the phone.

“How are you this morning?”

“Uh, Okay”

“Me and Jim was just thinking about how much we have and how we’ve been blessed. We want to do something to help some poor person and, of course, you’re the first person that we thought of.”

“Really?”

“So what do you think you need?”

I couldn’t believe my good fortune and began to envision all of the possibilities – something really nice or a big ole country ham at the very least.

“I could use lots of things. How much can you spend?”

“Is this ‘John Doe’?”

“No, ma’am”

“Well, that’s who I thought I was talkin’ to!”

“Does this mean I don’t get anything?”

[SLAM]

If you really want to help someone there are better ways to do it – like less arrogance and learning a little about the folks you want to assist.

A fellow graduate student told me years ago that the U.S. was sending aid to his home country of Malaysia – in the form of powdered milk. He was told “try it, you’ll like it”. He said that he tried it and almost died! You see, most people of Asian descent are lactose-intolerant. Our intentions were good but we hadn’t done our homework.

I firmly believe that the Cooperative Extension Service does the best job of helping people. We live in the communities where we work – your dreams are our dreams and we’ll help you to achieve your dreams of a better life. As I’ve said before, “people don’t care what you know until they know that you care”. We’re all drinking from the same dipper.

Seedstock Cattle Symposium: Coming to Shelby County

Ben Crites, IRM Coordinator, University of Kentucky

Make plans to attend the inaugural Kentucky Seedstock Cattle Symposium. Speakers from Kansas State University and the University of Kentucky will present timely information to assist producers on bull development and selection practices. Designed for seedstock cattle producers, the program will focus on nutrition strategies for bull development along with several techniques used when making sire selection decisions. These techniques include utilizing Expected Progeny Differences (EPD’s), incorporating genomics technology, and understanding selection indices. The event is scheduled to take place on Wednesday, April 25th, at the Shelby County Extension Office. The program will begin at 9:00 am EST with registration. Lunch will be provided to participants and is included in the \$25 registration fee.

Date: Wednesday, April 25th, 2018

Time: 9:00 am EST

Location: Shelby County Extension Office

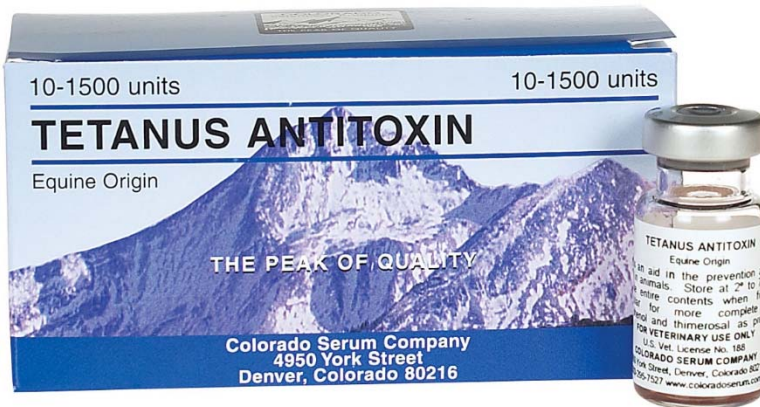
1117 Frankfort Rd
Shelbyville, KY 40065

For more information about the program, please contact Evan Tate (evan.tate@uky.edu), Kevin Perkins (kevin.perkins@uky.edu), Jeff Lehmkuhler (jeff.lehmkuhler@uky.edu), Darrh Bullock (dbullock@uky.edu), or Ben Crites (benjamin.crites@uky.edu).

Don't Forget Tetanus Prevention when Banding Bulls!

Michelle Arnold, DVM (Ruminant Extension Veterinarian, UKVDL), University of Kentucky

In the United States, more than 17 million bulls are castrated yearly that range in age from 1 day to 1 year-old. Tetanus (*Clostridium tetani* infection) is a potentially life-threatening neurologic disease affecting all species of domestic livestock, including cattle. The clinical signs of tetanus are subtle and often missed until the disease is



advanced. At that point, treatment and management of the affected animal is very difficult and the chance for recovery is poor. Recognition of the initial signs of stiff legs, an anxious expression with ears held back toward the poll, moderate bloat, erect tail, and the unusual “flick” of the third eyelid across the eye leads to an accurate early diagnosis and allows treatment to begin when it is most effective. Any calf castrated with an elastrator band should be given tetanus prevention in the form of either tetanus toxoid (two doses required with the 2nd

given two weeks prior to castration), tetanus antitoxin (given the day of banding) or, in some cases, both are used concurrently or sequentially. Calves banded early in life are less likely to develop tetanus because the testicles are much smaller and the scrotal sac generally falls off much more quickly than heavier calves so the tetanus organism does not have time to grow. Additionally, with early castration by any method, the risk of infection is much lower, the risk of injury to the person performing the castration is lower, and the procedure is relatively quick and easy.

Tetanus is caused by toxins produced by the gram-positive bacteria *Clostridium tetani*. It is found in soil but may also be present in the feces of domestic animals, especially horses. In the presence of oxygen, *C. tetani* produces “spores” that basically protect the bacteria with a hard outer layer and allow its survival in soil for years. These spores are resistant to many disinfectants and can even survive steam heat at 212°F for 20 minutes.



Figure 1: “Pump-handle tail” in a case of tetanus. From <http://www.nadis.org.uk/bulletins/clostridial-disease-in-cattle.aspx>

If an open wound is contaminated with soil or feces, the spores of *C. tetani* will enter the site and germinate in environments where there is dead or rotten tissue and no oxygen (such as the scrotum after banding). This results in rapid growth and production of tetanus neurotoxin (TeNT) responsible for causing the clinical disease of tetanus or “lockjaw”. The toxin binds irreversibly to the nerve endings and travels back to the spinal cord, causing spastic paralysis. The most common infection sites in cattle for *C. tetani* include deep wounds with dead tissue, infected areas of the vulva or vagina following difficult birth, and severe infections in the uterus. Management practices that may create environments perfect for germination of *C. tetani* spores include dehorning, elastrator band castration, nose ring placement, tail docking, and ear

tag placement. The incubation period, or time from injury to development of first signs, averages seven to ten days but can be much longer. The first detectable clinical signs of tetanus in cattle are usually generalized leg stiffness and reluctance to move. Signs of tetanus vary and may be mild to severe when the animal is found. As the disease progresses, a stiff, stilted walk develops and the calf resembles a sawhorse when standing still due to muscle rigidity. A “pump-handle tail” is often noticed where the animal’s tail is stiff and raised away from the body because of the rigid muscles along the lower spine. An affected calf may have the head extended, nostrils flared, the ears standing up and pulled back towards the poll, and eyelids held widely open so much of the white (sclera) is showing. Most producers will describe a “strange-looking eye blink” which is actually prolapse of the nictitans (“flick” of the third eyelid). This is caused by spasm of the muscles pulling the eyeball inward and allowing the third eyelid to passively move across the eye. The chewing muscles of the jaw may be involved to the point that opening the mouth is very difficult (“lockjaw”). Affected cattle usually lose the ability to eat and drink, resulting in progressive weakness and dehydration. Rumen contractions become weak or disappear and cattle frequently bloat because they lose the ability to eructate (burp off) gas. Subtle muscle tremors may be seen early, but are much more obvious in later stages of disease. Convulsions may be triggered by loud noises or handling of the animal or may occur spontaneously. Affected animals finally become recumbent (down on their side) and unable to rise due to stiffness of the hind legs and the inability to pull their legs underneath them. If left untreated, severe dehydration develops and death may result from exhaustion and respiratory failure or from bloat. The case history and distinctive clinical signs of tetanus found on a routine physical examination are usually enough to make a diagnosis as there are no reliable tests to confirm the disease.

Basic principles for medical management of tetanus cases in cattle are to provide muscle relaxation, neutralize the circulating unbound TeNT toxin, begin establishment of active immunity, eliminate the *C. tetani* infection with antibiotics, maintain hydration and nutritional status, and provide good footing with deep bedding. Tranquilization by a veterinarian with sedatives such as acepromazine in the muscle will allow some muscle relaxation and help to control excessive sensitivity to stimuli, allowing easier treatment. Tetanus antitoxin, available over-the-counter and on the Internet, may catch and inactivate any circulating toxin but cannot undo the effects of toxin already bound to nerve receptors. The dose for tetanus antitoxin has a wide range from 1,500-100,000 units per animal but generally 15,000 units administered under the skin is recommended for initial therapy. To initiate active antitoxic immunity, a dose of tetanus toxoid should also be delivered in the muscle. Once the wound or infection site is identified, then it must be thoroughly cleaned to remove all dead tissue and should be flushed with hydrogen peroxide to reduce toxin production by any remaining actively growing bacteria. In a recently banded calf showing signs of tetanus, the scrotal sac should be removed and the area cleaned and flushed with peroxide. Antibiotics, primarily penicillin, is recommended at high doses in the muscle for at least 7 days. Good nursing care is very important to survival of tetanus patients. The animal should be placed in a stall with deep bedding to prevent “bedsores” and good footing to help them stand. The animal’s hydration status should be monitored closely and intravenous fluids may be needed if unable to drink. Downer cattle should be set up in a sternal position if possible to prevent bloat. If the patient develops free gas bloat requiring stomach tubing, then a rumen trocar should be placed to relieve gas buildup until the patient regains the ability to eructate. The opening provided by the trocar can also provide a portal for the delivery of water and feed to the rumen.



The mortality or death rate may reach 50% in cattle, but animals that survive longer than seven days have a fair-to-good chance of complete recovery. Mild cases usually respond to treatment within one week, but it is important to realize that many patients may improve then develop unforeseen complications that result in death or the need for euthanasia. Regaining the ability to drink is one of the most encouraging signs of recovery. Cattle that end up down on their side with straight, stiff legs usually require euthanasia.

Prevention involves reducing the risk of cattle developing



deep wounds or areas of dead, rotten tissue where *C. tetani* spores may germinate along with the use of vaccines in animals at risk for infection. Elective procedures that could lead to open wounds include dehorning, elastrator band castration, nose ring placement, tail docking, and ear tag placement. It is important for veterinarians and producers to maintain clean conditions and disinfected instruments for each of these procedures. Cattle are not routinely vaccinated against tetanus, and most 7- or 8-way Clostridial (blackleg) vaccines do not contain specific protection against *C. tetani* although some do (for example, Covexin 8® and Calvary 9®-Merck) contain a tetanus toxoid. Cattle can be vaccinated easily and inexpensively with tetanus toxoid and protective antibody levels should develop in two weeks following the booster injection (2nd shot) of the series. Tetanus antitoxin is recommended for immediate, emergency treatment of exposed or at risk animals when clinical tetanus is suspected or could develop but protection only lasts 10-14 days. Elastrator band castration of heavier, older calves often results in the scrotal sac remaining attached for extended periods of time (> 10 days), creating the right environment for *C. tetani* spores to germinate. In

those cases, both a toxoid and antitoxin should be given at the time of castration if no previous tetanus toxoid series was given prior to banding.

Castration is considered to be a necessary management practice for cattle. Work with a local veterinarian to establish the optimal herd health program for your farm and institute an early castration program to minimize the pain, stress and complications that go along with this procedure. If castration is delayed until the calves get older and heavier, these calves are at much higher risk for development of tetanus and are twice as likely to get respiratory disease as steers on arrival in a feedlot or backgrounding operation.

The Value of Selling Steer Calves vs Bull Calves

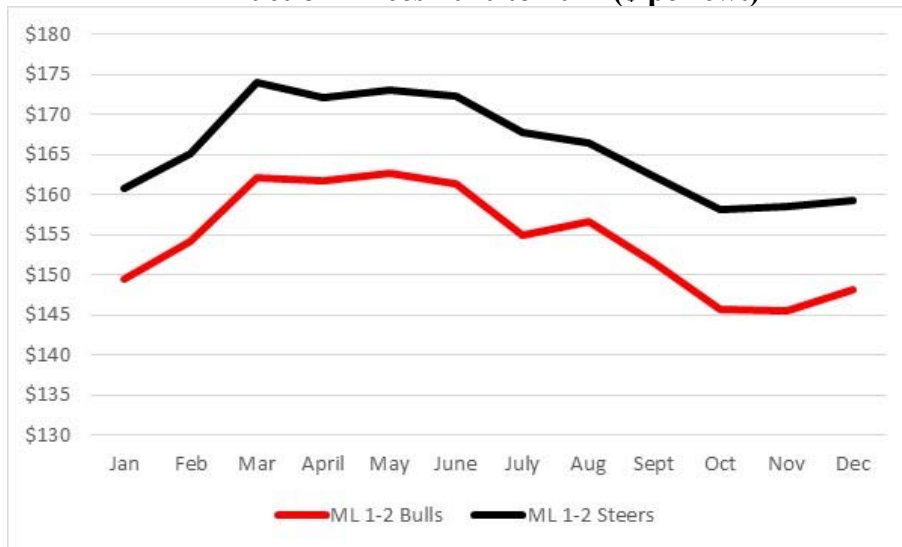
Dr. Kenny Burdine, Livestock Marketing Specialist, University of Kentucky

Producers will often ask about the magnitude of the price premium for steers over bulls. Most agree that steers will outsell bulls of similar weight, but it is also well established that castrating bulls requires facilities, time and some expense. Further, it is generally accepted that bulls will outgain steers, which further complicates the discussion. While there is no way that this short article can completely address this topic, it should help provide a framework to help producers make this basic management decision.

We will start with the basic notion of price differentials, and even this is not completely without question. We will occasionally get a call or email asking why bulls are outselling steers at a given time or location. The first thing to understand is that there are thousands of cattle sold at Kentucky markets every single day. Inevitably, a group of bulls will outsell a group of steers on occasion. Sometimes this may be due to quality factors, other times it might be a lot size issue, and it can sometimes also be due to the needs of individual buyers at a given time. However, these instances are the exception, rather than the norm. This can be best shown by examining actual price data collected by Kentucky market reporters.

Figure 1 shows prices for 550 lb steers and bulls in Kentucky auction markets from 2010 to 2017, by month. To compile this data, we averaged the 500 to 550 lb weight range with the 550 to 600 lb weight range for all state auctions. This excluded cattle that market reporters identified as value-added, fancy, thin, fleshy, or otherwise noted as falling outside the norm. Utilizing the eight years of data available allows us to take a longer term view on this question. Note that over the 8-year period depicted in figure 1, steers outsold bulls by a little over \$11 per cwt. It may also be worth noting that the 550# steer price exceeded the 550# bull price in each of the 96 months analyzed. Again, that doesn't mean that every single steer lot outsold every single bull lot, but it does mean that on-average, steers consistently outsold bulls. While figure 1 shows the differential at 550 lbs, it's also worth noting that the differential between bulls and steers tends to wider as weight increases.

**Figure 1. 550# Medium & Large frame #1-2 Steer and Bull Prices
KY Auction Prices 2010 to 2017 (\$ per cwt)**



Source: USDA-AMS, Livestock Marketing Information Center, Author Calculations

Now, one limitation of comparing prices, as in figure 1, is that it compares steers and bulls of the same weight. For example, an \$11 per cwt price differential on a 550 lb calf is over \$60 per head. Clearly, this ignores potential weight differences between the two. So, how much more would that bull calf have to weigh to bring as much per head? This answer is not as simple as one might think because of price slides. As calves gain weight, their value per cwt decreases. This is a key concept in cattle marketing that impacts most all decision that producers make. Let's walk through it step-by-step.

The average value of a 550 lb bull calf from 2010 to 2017 in Kentucky auction markets was \$853 (550 lb @ \$155 per cwt). A price slide of \$15 per cwt, would mean that for each 100 lb increase in the bull's weight, his price decreases by \$15 per cwt. So, if a bull weighed 600 lbs, rather than 550, his price would have most likely been \$147.50 per cwt (\$7.50 per cwt less). This would place the value of the 600 lb bull at \$885 (600 lbs @ \$147.50). This is \$32 more dollars than the 550 lb bull, but only about half of the additional \$60 needed to make him as valuable as the 550 lb steer calf. So, an additional 50 lbs of weight is not likely to be enough to make up for the price discount that bulls see relative to steers, assuming a price slide of \$15 per cwt.

Probably the most valuable use of this approach is to use it as a way to value additional lbs. In the previous scenario, an additional 50 lbs added \$32 of value to the bull on a per head basis using a \$15 per cwt price slide. This means that those additional pounds were worth roughly \$0.64 each. At that rate, the bull's weight would need to exceed the weight of the steer by 94 lbs for their values to be similar. Using a smaller price slide of \$10 per cwt, would make the value of those additional lbs worth about \$0.94, which would mean that the bull would need to outweigh the steer by roughly 64 lbs for his value to be comparable. This discussion is quickly summarized in Table 1.

Table 1: Price Slides and Value of Additional Weight

	\$10 / cwt price slide	\$15 / cwt price slide
Value of 550 lb bull, initial price of \$155 per cwt	\$853 per head	\$853 per head
Value of 600 lb bull	\$900 per head	\$885 per head
Value of additional 50 lbs	\$47	\$32
Value of each additional lb	\$0.94 per lb	\$0.64 per lb
Lbs needed to add \$60 of value per head	64 lbs	94 lbs

The final point that needs to be made here involves implants. Gains will decline significantly the first 2-3 weeks after castration, which will ultimately impact sale weight. However, implanted steers have the potential to gain up to an additional 0.5 lbs per day for the duration of the implant. This can be 100 to 120 days in many instances, which can significantly narrow that weight differential. This will be especially true for producers that background calves prior to selling them. Again, we are fully aware that working calves takes time and facilities, but if a producer does choose to castrate their bulls, implanting does provide another option for producers that are not targeting a market that prohibits their use.

The purpose of the previous discussion was primarily to make two points. First, there is solid evidence that bulls will sell at a considerable discount to steers in Kentucky auctions. Second, it would require significantly higher sale weights for bulls to offset this price discount. Still, there may be reasons such as time limitations, working facilities, or other factors that may result in a producer choosing not to castrate bulls. However, one should also understand that there are individuals in the market place who make money by purchasing bulls, castrating them, backgrounding them for a period of time, and re-selling them. 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.