OFF THE HOOF

KENTUCKY BEEF CATTLE NEWSLETTER APRIL 1, 2024

Martin-Gatton College of Agriculture, Food and Environment
Cooperative Extension Service
University of Kentucky
Beef IRM Team

Each article is peer-reviewed by UK Beef IRM Team and edited by Dr. Les Anderson,
Specialist, Department of Animal & Food Science, University of Kentucky

This month's newsletter includes:

Timely Tips

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

Spring Calving Cow Herd

- Watch cows and calves closely. Work hard to save every calf (you can cull/sell them later). Calves can be identified while they are young and easy to handle. Commercial male calves should be castrated and implanted. Registered calves should be weighed at birth.
- Cows that have calved need to be on an adequate nutritional level to rebreed. Increase their feed after calving. Don't let them lose body condition. Keep feeding them until pastures are adequate.
- Don't "rush to grass" although it can be really tempting. Be sure that grass has accumulated enough growth to support the cow's nutritional needs before depending solely upon it. Cows may walk the pastures looking for green grass instead of eating dry feed. This lush, watery grass is not adequate to support them. Keep them consuming dry feed until sufficient grass is available to sustain body condition. We've spent too much money keeping them in good condition to lose it now!
- *Prevent grass tetany!* Provide magnesium in the mineral mix until daytime temperatures are consistently above 60°F. Mineral supplement should be available at all times and contain a minimum of about 14 percent magnesium. Make sure that your mineral mix also contains adequate selenium, copper, and zinc. You can ask your feed dealer about the UK Beef IRM High Magnesium Mineral.
- Make final selection of heifer replacements. Strongly consider vaccinating with a modified-live BVD vaccine. Vaccinate at least 60 days before the start of the breeding season.
- Purchase replacement bulls at least 30 days prior to the start of the breeding season. Have herd bulls evaluated for breeding soundness (10-20% of bulls are questionable or unsatisfactory breeders). Get all bulls in proper condition (BCS 6) for breeding.
- If you are going to use artificial insemination and/or estrous synchronization, make plans now and order needed supplies, semen, and schedule a technician.
- Prebreeding or "turn-out" working is usually scheduled for late April or May - between the end of calving season and before the start of the breeding season (while cows are open). Consult your veterinarian about vaccines and health products your herd needs. Plan now for products needed and have handling facilities in good working order. Dehorn commercial calves before going to pasture.

Fall Calving Cow Herd

- Pregnancy check cows now and cull open ones at weaning especially if the open cows are older than 5 years of age.
- Re-implant feeders.
- Consult with your veterinarian about preweaning working the herd.
- You may let calves creep-graze wheat or rye if it is available. Calves will benefit from extra feed until spring grass appears.
- Plan marketing strategy for feeder calves.

Stockers

- Don't go to pastures too soon, give plants some growing time. Then stock at two to three times the July rate and rotate rapidly.
- "Condition" purchased calves prior to grazing. They should be processed and fed a conditioning diet prior to being placed on pasture. You can also use this time to introduce them to electric fences which are used in rotational grazing.
- Provide a good mineral supplement which contains a rumen modifier (Rumensin, Bovatec, etc.) along with adequate levels of copper and selenium.

General

- We've made a muddy mess this winter, so be prepared to reseed bare spots. Our forage group has some excellent information on restoring heavily traffic areas.
- Make plans to improve hay feeding areas to avoid muddy conditions like we have faced this winter. Consider geotextile fabric with gravel or concrete feeding pads.
- Prepare for the grazing season. Check fences and make necessary repairs. Check your corral, too.
- Get everything ready to make high quality hay in May! Have equipment serviced and spare parts on hand. Order baler twine now. Be prepared to harvest an adequate supply of hay when you have the opportunity. Re-supply the extra hay that you fed out of the barn. This past winter caused most producers to exhaust their hay supply, so it's time to re-stock.
- Plan now for fly control ... decide what fly control program that you will use but don't put insecticide eartags on cattle until fly population appears.

Understand the Implications of a Price Slide When Buying and Selling Cattle

Dr. Kenny Burdine, University of Kentucky

Everyone who buys or sells feeder cattle regularly understands that in most markets price per lb decreases as cattle get heavier. This can create a challenge for pricing cattle in situations where weight is not known with certainty. This applies to forward contracts, internet sales and cattle that are sold off the farm but hauled to another location to determine pay weight. In these situations, cattle are often sold with a base weight and price is adjusted downward as the weight of the cattle exceeds that base weight. As an illustration, let's consider a backgrounder that sold cattle via an internet auction with an advertised base weight of 800 lbs and a price slide of $8 per cwt. Let's further assume that the cattle sell

for $240 per cwt in the auction and will be hauled to a weigh station the following week to determine the pay weight.

If those steers were to weigh exactly 800 lbs, no price adjustment is needed. The pay weight is 800 lbs and the price is $240 per cwt for a total of $1,920 per head. However, if the cattle weighed 850 lbs, the price is adjusted downward because they are 50 lbs above the base weight. With an $8 per cwt slide, the price would be adjusted downward by $4 per cwt (50 lbs is half of a cwt). With a pay weight of 850 lbs and an adjusted price of $236 per cwt, the per head total is $2,006. Price slides can get much more complicated than this, but this simple illustration captures the process well enough for this discussion. As long as the price slide is not so large as to actually result in a lower value per head, the seller is typically happy to have more lbs to sell. In the previous example, the cattle sold for $86 more than they would have had they weighed right at the base weight.

Base weight	**Sale Price**	**Pay Weight**	**Price Slide**	**Final Price per cwt**	**Final Value per head**
800	$240	850	$8 per cwt	$236	$2,006.00
800	$240	850	$10 per cwt	$235	$1,997.50
800	$240	850	$12 per cwt	$234	$1,989.00

Now, I want to focus this discussion on the difference between the artificial price slide used to adjust the price for cattle weighing above the base weight and the actual market price discount as cattle get heavier. The table below illustrates this point in relatively simple terms. Suppose the market price for an 800 lb steer is $240 per cwt and the market price for an 850 lb steer of the same type and quality was $235 per cwt. This would imply that the actual price discount in the feeder cattle market was $10 per cwt and the market value of those 850 steers would be $1,997.50 per head (850 lbs x $235 per cwt). If a seller advertised that group of steers with a base weight of 800 lbs and a $10 per cwt price slide, the price slide and the market discount for weight would match perfectly. The final price would be the same despite the fact that the pay weight exceeded the base weight. This scenario is shown in the middle row of the table below, but this will not be the case when differences exist between the market discount for weight and the price slide.

If the artificial price slide is less severe than the market discount as cattle get heavier, then the seller is actually better off if the pay weight exceeds base weight because the lower artificial price slide would result in a smaller price discount due to the additional lbs. This is illustrated below with the $8 per cwt price slide and note that the final price is higher for these steers. Previous research has found evidence that sellers tend to underestimate weights in these situations (Brorsen et al., 2001). Conversely, if the market discount is greater than the price slide, the seller would actually receive a lower final price than had they advertised the cattle with the higher base weight to begin with. Note that the $12 per cwt price slide below, which exceeds the market discount, results in a lower final price. In situations such as this, sellers have no incentive to overestimate weight (Burdine et al., 2014).

In theory, price slides used for selling cattle with weight uncertainties should evolve with the market. But my experience has been that they are often slow to adjust, whereas market conditions change very quickly. The key point from this discussion is that a price slide is most efficient when it is roughly equal to the market discount as cattle get heavier. In those situations, there is no incentive for sellers to underestimate weight when selling cattle on a slide and there is little true penalty if they do. Buyers and

sellers both need to understand the implications when prices slides and market weight discounts diverge, as this can have an impact on both parties.

References:

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Burdine, K.H., L. J. Maynard, G.S. Halich, and J. Lehmkuler. 2014. "Changing Market Dynamics and Value-added Premiums in Southeastern Feeder Cattle Markets". *The Professional Animal Scientist*. 30:354-361.

Myth-Busting BVD Virus Eradication: Is it Possible in KY Cow-Calf Operations?

Dr. Michelle Arnold, Ruminant Extension Veterinarian

"BVD" or "Bovine Viral Diarrhea" virus contributes to a wide range of reproductive, respiratory, and digestive system diseases in cattle. Although symptoms of the initial virus infection are typically mild such as fever and possibly off-feed for a day, there is much more going on than meets the eye. In calves, the BVD virus is immunosuppressive, predisposing infected calves to secondary bacterial infections particularly in the lungs, leading to significant sickness and death loss from bronchopneumonia in the stocker/backgrounder sector. In naïve, susceptible (non-vaccinated or poorly vaccinated) adult cows and heifers, infection with the BVD virus often goes completely unnoticed but ultimately results in reproductive failure, including infertility, early embryonic deaths, abortions, stillbirths, malformed calves, and weak newborns depending on phase of gestation when the female becomes infected. If a pregnant, susceptible cow or heifer is infected with the BVD virus between 42-125 days of gestation, the virus will also cross the placenta, infecting her unborn calf. When this calf is born, it is "persistently infected" or "PI" and is a "carrier" of the virus for its lifetime. The dams that experience a transient infection while pregnant will be negative when tested for BVD but their PI calves will test positive. BVD Persistently infected or "PI" animals are the most unique epidemiological feature of the BVD virus. "PI" animals are the major reservoir for the virus and the reason it continues to exist today. A BVD-PI calf is born with the BVD virus and serves as the primary source of virus transmission because they continuously shed enormous amounts of virus particles throughout their lives in feces, urine, saliva, and nasal discharge. Many die at an early age but if a PI survives to adulthood, virus is also secreted in milk, semen, uterine secretions, and aborted fetal membranes. Approximately half of PI animals appear absolutely normal, and infection can only be detected through testing. The virus is deposited in watering troughs, feed troughs, cattle trailers-virtually everywhere the PI animal goes-and picked up by the other cattle in the pen or herd. Vaccines used in adult cattle against BVD (including those with Fetal Protection claims or "FP" vaccines) will reduce the chance of fetal exposure but protection is never 100%. Use of a modified live (MLV) BVD vaccine, with at least one two-shot (primary and booster) series given to breeding age heifers, is necessary to provide strong BVD PI protection as killed vaccine has not proven effective in this regard.

Currently there is much debate surrounding BVD PI calves, including how to best identify and remove them since one PI animal may expose 200-300 other animals or more to the virus during shipping, in auctions, when commingled in stocker/backgrounder operations and through fence-line contact with neighboring cattle. Several European countries, including Switzerland, Ireland, Scotland, and Germany, have substantially reduced or successfully eradicated BVD virus through national programs based on testing newborn calves and removing those that are PI positive. Of those countries, Germany is probably

most comparable to Kentucky's situation in that they began in 2011 with a high prevalence of BVD, their cattle industry involves frequent trade and transport of cattle, and BVD vaccination is permitted (both killed and modified-live). From 2011 to 2016, the proportion of PI animals in Germany dropped from 0.5% at the start of the control program to just 0.03% PIs remaining, with 48,000 PI cattle removed in 5 years. Although Germany's "success story" of a mandatory, nationwide control program is enviable, could something similar be implemented in the U.S., including in Kentucky?

To begin, Germany has, as of November 2023, 10.8 million total cattle (3.7 million dairy cows and 625,000 beef cows) with over 4 million calves born annually on just over 127,000 farms. Approximately one quarter of the farms have over 100 head, while a little over 50% of farms have under 50 head. When the control program began in 2011, Germany had a high prevalence of BVD (0.5%) despite vaccination use, and a considerable amount of cattle trade and transport. For comparison, Kentucky has, as of January 2024, significantly fewer head at 1.89 million total cattle (907,000 beef cows) with 920,000 calves born in 2023. Kentucky's land mass is approximately 3.5X smaller than Germany, with 73,500 farms in the Commonwealth at the end of 2022 with an average farm size of 176 acres. The BVD prevalence in KY is estimated to be, on average, 0.4% or 4 PI animals per 1000 head, most of which are young, lightweight calves.

The German control program began in 1998 as a voluntary effort run independently by the 13 individual federal states. Costs were high and essentially no progress was made over a 10-year period. In 2008, the German government unveiled a consistent, nationwide BVD eradication program with two major objectives; 1) the fast and efficient removal of PI animals and 2) the establishment of certified BVD virus-free farms. Beginning in January of 2011, the eradication program was implemented with the following rules:

1. Mandatory testing of all newborn calves within the first 6 months of life, shortened to 1 month of age from 2016-2021.
2. Immediate elimination of all detected PIs.
3. Only BVD negative animals could enter commerce/be sold. In 2016, movement restrictions were imposed on farms with BVD, including pregnant animals could not be sold until after calving and a negative test result of the offspring since a negative dam can deliver a PI positive calf.
4. Prevent reinfection on negative farms through implementation of biosecurity and vaccination protocols.

To remove PI cattle, a case definition was required to describe what legally constitutes a PI animal. A persistently infected ("PI") animal was defined as:

1. Tested positive for the BVD virus antigen with an ELISA test (primarily by ear notch in calves or blood test in adults) or the BVD virus genome with PCR. If desired, producers were allowed to test any positive animal a second time, up to 40 days later, to differentiate PIs from transiently (short-term) infected ("TI") animals.

2. All offspring of a PI positive dam were considered positive without the need for a test since a PI positive cow will always produce a PI positive calf.
3. Any cattle diagnosed with mucosal disease, a fatal form of BVD that involves severe and bloody diarrhea, rapid weight loss, ulcers in the mouth, nose and interdigital areas of the hoof, and death, only occurs in PI cattle.

Between the start of mandatory testing in 2011 and 2022, there were approximately 5 million BVD tests run per year, including all calves born, any follow-up confirmatory testing of positives, and any imported cattle. The proportion of PI animals was reduced each year starting with 0.5% (23,792 PI calves among 4.9 million newborn calves) in 2011 to less than 0.001% (55 PIs among 4.3 million newborns) in 2022. In the first 5 years, PI animals were found on over 8000 farms in 2011 and only 324 farms in 2016, meaning more than 99.8% of all German cattle farms had no PI animals detected in 2016. The final phase of eradication involves molecular sequencing of the virus in the remaining PI animals to trace back to their herds of origin and contact herds.

In summary, BVD virus exposure can be quickly and substantially reduced, primarily through early testing and removal of newborn PI calves before they ever leave the farm of origin. However, many questions remain as to how a control program would be implemented and the effect this reduction in PIs would have on overall cattle health. BVD-infected cow/calf herds experiencing losses in reproductive performance and higher calf morbidity and mortality would ultimately benefit from diagnosing and eliminating BVD virus but at the cost of testing and subsequent culling of PI animals. Is there sufficient value to the industry in removing BVD-PIs to compensate the cow/calf sector for those additional costs? Should producers receive indemnity payments for PI calves that must be euthanized and, if so, what is a PI calf's value? Are calves that test BVD negative worth more? It is important to understand that even one PI in a pen of cattle or in a cattle pot results in continuous virus exposure for the rest.

In the stocker/backgrounder world, BVD virus is just one contributor to the bovine respiratory disease (BRD) complex involving numerous pathogens (viruses and bacteria) interacting in many ways in a wide range of management and environmental conditions across multiple types of operations. Although BVD is not the ultimate cause of death, its immunosuppressive impact increases the severity of infections by other BRD organisms and often increases morbidity and mortality rates, especially in recently weaned, lightweight calves. However, it is not known how much BRD's impact would be reduced if enhanced BVD control could be achieved. The most commonly used sample for identifying PI cattle is skin, usually taken as an ear notch. Blood (serum) can also be used but not in calves less than 3 months old. Any BVD ELISA positive test result can be confirmed, if desired, by segregating the animal and retesting a second ear notch or blood drawn at least 3 weeks after the first sample. True PI animals will remain positive after 3 weeks while transiently infected ("TI") will test negative. *Remember PIs are considered defective and there is a legal, moral and ethical obligation to dispose of these animals without sending or returning them to commerce*. In Kentucky, transportation or sale of BVD positive animals is prohibited by law unless approved by the State Veterinarian. Positive animals may be euthanized, immediately slaughtered (does not affect meat), or quarantined and fed to slaughter in an isolated location or permitted feedlot.

Beware of Reducing Feed at Calving!

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

I presented at a Master Cattlemen session last night and, after the meeting, got asked a common question about body condition and feeding cows at calving. His question was he had heard that he should reduce feed to his cows before calving to keep birthweights lower to reduce calving problems. He indicated that the BCS of his cows as they begin to calve was only 4. This is a frustrating question because it comes up often and nothing could be further from the truth.

Several researchers have addressed this issue over the last 20-30 years. Each of these experiments had cows that were fed to maintain weight, decrease weight, or increase weight right before calving began. The result of underfeeding cows before calving results in the exact problem the producer is trying to avoid. The research demonstrated that poor nutrition and low BCS precalving:

- Increased calving problems
- Decreased calf health (low colostrum consumption and poor-quality colostrum)
- Increased calf death loss
- Increased the number of days for females to resume estrous cycles.

One of the most extreme research trials on prebreeding nutrition in cows was conducted by Dr. Steve Loerch at The Ohio State University. At that time, the cost of hay was much higher than the cost of grain and Dr. Loerch was examining the impact of feeding corn as an alternative to hay for gestating and lactating cows. The cows used were large framed Charolais-cross cows and were either fed around 11 pounds of whole shelled corn, 2.5 pounds of a pelleted supplement, and 2 pounds of hay (dry matter basis) or offered hay and a salt and mineral mix free choice from November to April. Hay was predominantly first-cutting orchardgrass testing around 72% neutral detergent fiber (NDF) and 9.5% crude protein (CP). Cows fed free choice hay ate twice as much feed resulting in double the feed costs compared to limit feeding the corn-based diet.
In this study, cows consuming the corn-based diet had fewer calving problems than the cows consuming forage-based diets. Limit-feeding corn to meet the nutrient requirements of cows did not negatively impact calving performance, pregnancy rate, or calf weaning weight. I don't bring this trial up to endorse feeding gestating cows corn-based diets but rather to reinforce that feeding cows prior to calving does not increase calving problems even if cows are fed corn-based diets.

This producer indicated that his cows were at a BCS of 4 prior to calving and this is going to create some issues for him. Rebreeding performance of cows is greatly influenced by BCS at calving. Cows that are thin (BCS < 5; visible ribs) at calving take longer to resume estrous cycles and therefore are delayed in their ability to rebreed. As precalving BCS decreases, the number of days from one calving to the next (calving interval) increases in beef cows. Females with a precalving BCS <5 tend to have production cycles greater than 1 year. For example, cows with a precalving BCS of 3 would be expected to have a calving interval of approximately 400+ days, while a cow with a precalving BCS of 6 would have a calving interval of approximately 360 days. Thin cows are anestrous for a longer period of time and are therefore more likely to be open at the end of the breeding season. They may also result in

lighter calves to sell the next year because the calves from these thin cows will be born later in the calving season.

Let's consider the impact of anestrus and calving date for a herd in BCS 4 that calves from March 1 until May 10. Bull turnout is May 20 and the length of anestrus for mature cows (BCS 4) is 90-120 days and for young cows is 120-150 days. A mature cow (BCS 4) that calves on March 1 will begin to cycle sometime in the month of June and will likely conceive later than desired. However, the thin mature cow that calves on April 20 won't cycle until end of July/middle of August and her opportunity to conceive is minimal. Thin two-year olds nursing their first calf will likely begin cycles 4-5 months after calving and will have limited opportunities to conceive.

Reducing nutrients before calving is a huge mistake but this strategy has been circulating in the beef industry for decades. At first glance, it seems logical, but no research supports the notion of limit-feeding cows prior to calving and this dogma has cost the industry millions of dollars. So, beware of reducing feed to your cows at calving. It won't impact calf size but will impact your cows ability to rebreed.