COOPERATIVE EXTENSION SERVICE
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OFF THE HOOF

Kentucky Beef Newsletter May 2017

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

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

Spring-Calving Cow Herd

- Bulls should have a breeding soundness evaluation (BSE) well before the breeding season. They should also receive their annual booster vaccinations and be dewormed.
- Continue supplying a high magnesium mineral until daytime temperatures are consistently above 60 degrees F.
- Improve or maintain body condition (BCS 5) of cows before breeding season starts, if necessary.
- Schedule spring of "turn-out "working in late April or early May-at the end of calving season and before the start of breeding season. Consult with your veterinarian about vaccines and health products for your herd. "Turn-out" working for the cow herd *may* include:

    - Prebreeding vaccinations
    - Deworming
    - Replacing lost identification tags
    - Sort cows into breeding groups, if using more than one bull
    - Insecticide eartags (best to wait until fly population builds up)

  Turn-out working of calves may include:
    - Vaccinate for IBR-PI3, Clostridial diseases and Pinkeye
    - Dehorn, if needed (can be done with electric dehorner and fly repellent during fly season)
    - Castrate and implant male feeder calves (if not done at birth)
    - Deworm
    - Insecticide eartags
- Consider breeding yearling replacement heifers one heat cycle (about 21 days) earlier than cows for "Head-start" calving. Mate to known calving-ease bulls.

- Record identification of all cows and bulls in each breeding group.

- Begin breeding cows no later than mid-May, especially if they are on high endophyte fescue. Cows should be in good condition so that conception occurs prior to periods of extreme heat.
- Choose best pastures for grazing during the breeding season. Select those with the best stand of clover and the lowest level of the fescue endophyte, if known. Keep these pastures vegetative by grazing or clipping. *High quality pastures are important for a successful breeding season.*
- If using **artificial insemination:**
  - Use an experienced inseminator.
  - Make positive identification of cows and semen used. This will permit accurate records on date bred, return to heat, calving date and sire.
  - Good handling facilities and gentle working of the cows are essential.
- Observe breeding pastures often to see if bulls are working. Records cows' heat dates and then check 18-21 days later, for return to heat.

Fall-Calving Herd

- Pregnancy check the cow herd. Remove open cows at weaning time.
- Plan marketing program for calves. Consider various options, such as maintaining ownership and backgrounding in a grazing program, or precondition and sell in a CPH-45 feeder calf sale.
- Initiate fly control for the cows when fly population builds up.
- Calves may be weaned anytime now.

Stockers

- Keep calves on good pasture and rotate pastures rapidly during periods of lush growth. Manage to keep pastures vegetative for best performance.
- Provide mineral mix with an ionophore.
- Implant as needed.
- Control internal and external parasites.

General

- Harvest hay. *Work around the weather and cut early before plants become too mature. Harvesting forage early is the key to nutritional quality.* Replenish your hay supply!
- Rotate pastures as needed to keep them vegetative.
- Clip pastures to prevent seedhead formation on fescue and to control weeds.
- Seed warm season grasses this month.

Farm Visits, Honesty, and Coon Hounds

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

Interacting with farmers and cattlemen is a large part of what extension workers do and we love doing it. It used to be traditional for a specialist to have an opening line that went something like this – "I've been around the state twice this month and this is the best set of cattle that I've seen!". However, sometimes we have our moments when honesty collides with tact and diplomacy. We just open our mouth and "stuff" comes out. Hopefully with good results.

Some of us have a gift for being brutally honest and getting a favorable outcome. Dr. Mac Whiteker, a former U.K. swine specialist, was legendary for his no B.S. approach to extension work. Like the time that Mac was visiting with a farmer who wanted to remodel his dilapidated hog facilities. As Mac surveyed the situation, the farmer asked "What do I need here?" Mac quickly replied "What you need here is a (bleep) good fire!"

As specialists and agents, we have all had our moments. I remember one time many years ago when I had a similar experience. I was on a farm visit with the county agricultural agent and this farmer had to show us his championship coon dog before we looked at his cattle. We then looked at the herd of about fifty cows (he wasn't sure how many he had). The cows looked pretty good but suddenly a little ole yearling bull, that didn't have enough meat in his rear end to make a sandwich, came walking up. I was just thinking out loud and said "What's the deal with that calf? Did you just forget to cut (castrate) him?" The farmer had a pained look on his face and said "That's my bull. What do you think?" Uh Oh! Fortunately I remembered the coon hound and so I proceeded to tell him that he obviously knew a lot about animal breeding since he had bred a championship coon hound. He must know that bull wasn't good enough for a herd bull. He replied that he knew that and was just going to breed him to his heifers.

"What do you think?"

"I think that I would sell him before anything comes into heat."

Later, I worried that I might have offended the gentleman so I called the Ag agent to see if things were okay. The agent told me that the farmer had indeed sold the "bull" that very week and had him to help find a better one. Maybe honesty is the best policy.

I also remember another when Dr. John Johns and I were visiting a purebred breeder. This man had no idea of performance in his herd but selected all of the popular bloodlines. It also seemed that every ownership brand in that particular breed was present on his farm. I guess a little trading had been going on. Anyway, as the owner was pointing out all the cows … and their impressive bloodlines, John and I were fixated on this one young bull that was kind of a "small-framed butterball". John asked "what's the deal with this calf?" The owner proudly exclaimed "that's an own-son of Levi. I gave $20,000 for him!" Well Hello Pete! John and I were both speechless … and that was probably a good thing. Maybe the owner had just traded two $10,000 heifers for that $20,000 bull! We hoped so.

Farm visits have, I'm sure, generated a lot of interesting experiences for all extension workers. We want to help and be of benefit to our clientele – always. But before we make any sweeping recommendations, it is always a good idea to brag on something – family, cattle, the farm or even coon hounds! Folks don't care what you know until they know that you care.

Feeding Steers on Corn Gluten or Distillers Grains? Learn to Recognize Urinary Calculi and How to Prevent Them

Michelle Arnold, DVM (Ruminant Extension Veterinarian, UKVDL), Dr. Jeff Lehmkuhler, Beef Extension Specialist, University of Kentucky

"Urolithiasis" is the veterinary term used for the disease resulting from the formation of stone-like structures ("calculi") inside the urinary tract of cattle, similar to kidney stones in humans. If a stone lodges in the urethra, it can partially or completely block the flow of urine and eventually lead to rupture of the bladder or urethra and ultimately death. Emergency surgical intervention may be performed or humane euthanasia recommended due to the extremely painful condition in affected animals. Stone formation is due to many factors but high phosphorus/ low calcium intake is perhaps the most important cause. Corn and corn-based coproducts such as dried distillers grains and corn gluten feed both have high concentrations of phosphorus and low calcium content. When feeding these feedstuffs without supplemental calcium to maintain at least a 1:1 ratio of calcium to phosphorus (2:1 is preferred), the potential for bladder or kidney stone formation increases dramatically.

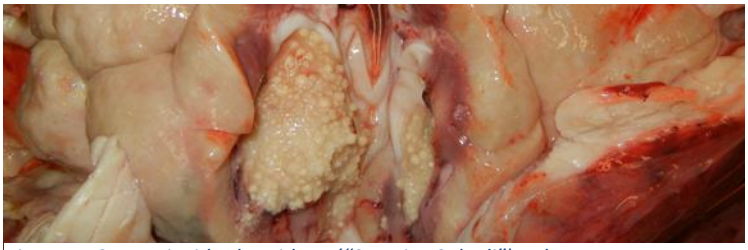

Figure 1: Stones inside the Kidney ("Struvite Calculi"). Photo courtesy UKVDL.

How do urinary calculi form? Stones begin as a small accumulation of cells, mucus or bacteria floating in the urine in the bladder or kidney. For a steer on a high grain diet with incorrectly balanced minerals, the urine pH is typically alkaline (or basic) and contains mucoproteins and minerals including phosphorus and magnesium in liquid form. If the steer is not drinking adequate water, the urine becomes concentrated and the minerals begin to change to their solid form and stick to the small clumps of cells. The mucoproteins serve as the glue that holds it all together.

The most common types of stones identified from cattle on grain diets are "struvite" (magnesium ammonium phosphate) or "apatite" (calcium phosphate) calculi. Excess phosphorus and magnesium in the diet, low water intake and urine alkalinity all contribute to this condition. Other types of stones are possible depending largely on the diet. Calcium carbonate stones occur more commonly in forage-fed animals, calcium oxalate stones may be seen if ingesting oxalate-containing plants and silica stones can form when grasses have high silica content.

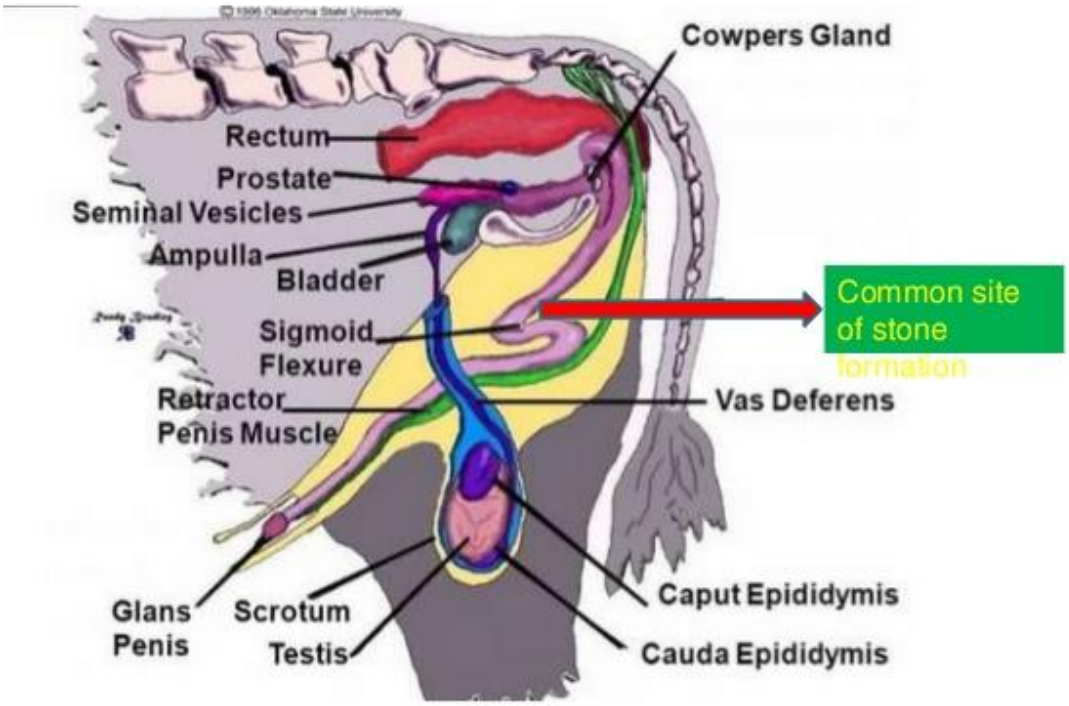

Figure 2: Male Urinary Tract showing common site for stone to lodge in a steer. Illustration from https://www.slideshare.net/BabulRudraPaul2/urolithiasis-in-cattle-sheep-and-goat-ppt.

Is this only a problem in steers? Urinary calculi are mostly problematic for feedlot steers, and less often seen in bulls or females. The male urethra (the tube that transports urine away from the bladder) is a long and winding

road from the bladder to the outside of the body (see Figure 2). Stones most often lodge at the "sigmoid flexure", an "S" shaped curve in the urethra. Early castration may reduce the diameter of the urethra, making steers more susceptible to stones lodging and completely cutting off the flow of urine. Females are rarely affected because they have a shorter and wider urethra that makes passage of stones much easier. Bulls can suffer from this condition but it is less common than steers.

Figure 3: Crystals on preputial hairs. Photo: https://veteriankey.com/urinogenital-disorders/

How do I recognize a steer with urinary calculi obstructing urine flow? The first indicators are depression, no interest in feed, labored breathing and walking stiffly. Crystals may be observed on preputial hairs (Figure 3). Early clinical signs look similar to a digestive upset or colic. The steer will lick or kick at his belly, stomp his rear feet, and switch his tail. Attempts to urinate are frequent, with straining and grinding the teeth. Excessive straining can cause the rectum to prolapse and may be confused with constipation. If urine can pass, it often dribbles out and may be blood-tinged, and sometimes urine is completely absent.

Figure 4: Ruptured urethra with urine in prepuce. Photo: https://veteriankey.com/urinogenital-disorders/

When the obstruction is complete, the urethra or bladder will finally rupture. Rupture of the urethra results in swelling in the prepuce and scrotum (see Figure 4), and the diffusion of urine under the skin of the belly cause the swelling to extend toward the chest. The penis may be swollen and protruding. Rupture of the bladder causes urine to gather in the abdomen, causing a progressive distension of the flank areas ("uroperitoneum"). Rupture brings relief from the pain and the steer will seem relieved. There is a temporary improvement in attitude and the animal resumes eating but the abdomen continues to expand with fluid (urine). As urine accumulates in the abdomen, toxemia and death occur in about 48 hours after rupture. The gathering of urine under the skin or in the abdominal cavity is often referred to as "water belly".

How do you treat a steer that is "blocked"? Routine observation of cattle is necessary to detect the earliest signs of disease. Timing is important because delayed treatment can lead to complications that lessen the chance of survival. Often surgery is needed to create a permanent opening in the urethra in the perineal area. These calves can be marketed after a period of time to eliminate tissue residues of urine and medications. Partial obstructions can sometimes be medically managed with urinary acidifiers, anti-inflammatories and phenothiazine tranquilizers but surgical management is often required.

How do you prevent urinary calculi? Most importantly, easy access to fresh, **clean** drinking water is essential. To increase water consumption and dilute the urine, increase salt in the feed to 0.25%-0.5% of the diet. The addition of ammonium chloride, fed at a rate of 0.5%-1% of the diet dry matter or 30-60 grams per head per day, will lower the urine pH to prevent formation of stones. Correction of the calcium to phosphorus ratio in the ration to at least 1:1 with 2:1 as the recommended target is mandatory. As a general rule of thumb, three pounds of corn gluten feed or dried distillers grains provides approximately the same amount of phosphorus intake as 4 ounces of a 6% mineral product. Therefore, it is necessary to provide additional calcium to maintain an

adequate calcium to phosphorus ratio to prevent urinary calculi in corn-based diets and when higher levels of corn-based coproducts are used as supplements. Offer a high calcium, low phosphorus mineral (20-25% calcium and 3% or less phosphorus mineral) or use a coproduct balancer mineral pellet product in the feed. Adding feedgrade limestone to the diet at a rate of 0.1-0.2 pounds per head per day will increase calcium when feeding high levels of corn/corn-based coproducts. If grain intake is high, a switch to straight soyhulls or another feed that allows easier maintenance of the proper Ca:P ratio may be necessary.

In summary, formation of urinary calculi is a metabolic, nutritional and management issue. A diet high in grains causes an increase in mucoproteins in the urine. An improperly- balanced calcium to phosphorus ratio in the diet leads to increased phosphorus intake, and the high levels of phosphorus and mucoproteins, in an alkaline pH urine, results in stone formation. An additional factor that favors formation of stones is concentrated urine from not drinking enough water. Attention must be paid to the water source because clean and fresh water, close by and with plenty of space to drink, encourages adequate consumption.

Cow-Calf Profitability Expectations for Spring 2017 (Fall Calving Herd)
Kenny Burdine and Greg Halich, University of Kentucky Agricultural Economists

While calf prices have rebounded somewhat from the lows they made in fall of 2016, they remain down drastically from where they were two years ago, which continues to create challenges for cow-calf operators. Last fall, we provided an estimate of cow-calf returns to a spring calving cowherd given calf prices and expected costs. In this article, we will attempt to do the same thing, but will do so for a fall calving cowherd. Calf prices reflect this spring's market and expected costs for a fall calving cowherd at the time this article was written (early-April 2017).

Table 1 summarizes estimated spring 2017 costs and returns to a traditional fall-calving cow-calf operation. Every operation is different, so producers should modify these estimates to fit their situation. Average weaning weight is assumed to be 550 lbs and the steer / heifer average calf price is assumed to be $1.45 per pound. Weaning rate is assumed to be 90%, meaning that it is expected that a calf will be weaned and sold from 90% of the cows that are managed and exposed to a bull. This is a relatively high weaning rate as this analysis will generally assume a well-managed operation and reflects more favorable weather during the breeding and calving seasons for fall calving cows (this is in comparison to 85% that we used for a spring-calving herd last fall). Based on these assumptions, calf revenue per cow is $718.

The pasture stocking rate is assumed to be 2 acres per cow-calf unit and pasture maintenance costs are assumed to be relatively low. At $25 per acre, this would include one pasture clipping and seeding some legumes on a portion of the pasture acres each year. Producers who apply fertilizer to pasture ground would likely see much higher pasture maintenance costs and these costs should be adjusted accordingly. Producers should also consider the stocking rates for their operation as this will vary greatly, especially for fall calving herds. Stocking rate impacts the number of grazing days and winter feeding days for the operation, which has large implications for costs on a per cow basis.

The primary cost difference between a fall-calving herd and a spring-calving herd is winter feed. Since fall calving cows are lactating during the winter, their nutrient requirements are higher when stored feed is typically fed. For the initial purposes of this analysis, fall calving cows are assumed to consume 2.5 tons of hay through the winter and that hay is valued at $90 per ton. This hay value is considerably above "market" price in most areas, but is high due to the greater hay quality needs of fall calving cows (this is in comparison to $75/ton hay that we used for a spring-calving herd last fall). In some settings, fall calving cows may be fed lower quality hay, in which case weaning weights (and revenues per cow) would likely be lower. An alternative strategy for some operations might be to feed lower quality hay and supplement cows during the winter. If this is done both the cost of the supplemental feed and the additional feeding labor should be considered. Regardless, winter nutrient needs are higher for fall calving cows, and this comes at an additional cost. Mineral cost is set at $35 per cow, veterinary / medicine costs $25, trucking costs $10, machinery costs $20 (primarily for feeding hay as

this does not include machinery for hay production or pasture clipping as they are included in those respective costs), and other costs $25.

Breeding costs are assumed to be $40 per cow and are one of the most misunderstood costs on a cow calf operation. Breeding cost on a per cow basis should include annual depreciation of the bull and bull maintenance costs, spread across the number of cows he services. For example, if a bull is purchased for $3,500 and is sold two years later for $2,500, the bull depreciated $500 each year. Then, if his maintenance costs were $500 per year (feed, pasture, vet / med, etc.), his ownerships costs are $1,000 per year. If that bull covers 25 cows, breeding cost per cow is $40. A similar approach can be used for AI, but producers should be careful to include multiple rounds of AI for some cows and the ownership costs of a cleanup bull, if one is used. Breeding costs per cow may be much higher for many operations as these assumptions are likely conservative. Marketing costs are currently assumed to be $32 per cow. Larger operations may market cattle in larger groups and pay lower commission rates, but our analysis assumes 2.95% of value, plus $7 commission, $2 checkoff, and about $2 for insurance.

Finally, breeding stock depreciation is another key cost that is often overlooked. Breeding stock depreciate just like any other asset on the farm. For example, if the "typical" cow entered the herd as a bred heifer valued at $1,700 and her expected cull value was $700, then she would depreciate $1,000 over her productive lifetime. If we assume a typical cow has 8 productive years, then annual cow depreciation is $125 using a straight line depreciation method. This is the assumption made in this analysis, but the actual depreciation will vary across farms. When buying bred replacement heifers, this cost is obvious. With farm-raised replacements, this cost should be the revenue foregone if the heifer had been sold with the other calves, plus all expenses incurred (feed, breeding, pasture rent, etc.) to reach the same stage as a purchased bred heifer.

Note that based on our assumptions, total expenses per cow are roughly $587 and revenues per cow are $718. So, estimated return to land, labor, capital, and management is $131 per cow managed. At first glance, this return can be misleading, so some additional discussion is warranted. A number of costs were intentionally not included in this analysis because they vary greatly across operations. Notice that no value is placed on the time spent working and managing the operation, no depreciation on facilities, equipment, fences, or other capital items is included, and no interest (opportunity cost) is charged on any capital investments including land, facilities, and the cattle themselves. So, the return needs to be thought of as a return to the operator's time, equipment, facilities, land, and capital.

As one thinks about quantifying these additional costs, it likely makes sense to start with land. Cow-calf operators should at least cover the rental potential of that pasture ground. Similarly, there is a great deal of capital investment on a cow-calf operation in facilities, fencing, and equipment that should be considered. Finally, a cow-calf operator should expect some return to the time they spend managing the operation. This might be best illustrated by using a simple, bare-bones illustration. At a relatively low land rental rate of $30 per acre, this would represent another $60 per cow in opportunity cost given the two acres per cow stocking rate. A similarly low $50 per cow estimate for depreciation and interest on equipment, fencing, facilities, etc. (this would not include hay equipment as hay is valued at market price in the analysis) and $30 value for the operator's labor and management, would suggest that return to land, capital, labor, and management would need to be $140 per cow. Again, these numbers are likely low and variable across operations, but thinking through them is important to understanding current cow-calf profitability. Put simply, well-managed fall calving herds are likely covering cash costs and breeding stock depreciation right now, but are not likely receiving anything but minimal returns to the their capital investment, labor, and management.

Table 1: Estimated Returns to Fall Calving Cow-calf Operation: Spring 2017					
Revenues					
Steer / Heifer Calf Average		**550**	lbs	**$1.45**	**$798**
Discount for Open Cows		**10%**	open		**$80**
Total Revenues per Cow					**$718**
Expenses					
Pasture Maintenance		**2.0**	acres	**$25.00**	**$50**
Hay		**2.5**	tons	**$90.00**	**$225**
Mineral					**$35**
Vet					**$25**
Breeding					**$40**
Marketing					**$32**
Machinery					**$20**
Trucking					**$10**
Breeding Stock Depreciation					**$125**
Other					**$25**
Total Expenses per Cow					**$587**
Return to Land, Labor, and Capital Investment					***$131***

It is likely that the two most variable factors impacting cow-calf profitability are calf prices and hay / winter feed costs. So, table 2 shows estimated returns to this same fall calving cow-calf operation given a range of winter feed costs and calf prices. Note that the center of the table, which represents a steer / heifer average price of $1.45 and hay costs of $225 per cow perfectly matches the detailed budget shown in table 1. From there, calf prices are increased and decreased by $0.10 and $0.20 per lb.

Winter feed costs are increased and decreased by $50 per cow in table 2. This is done to capture a wider range of hay costs, winter feeding days, or other nutritional approaches employed by the cow-calf operator. For example, at 2.5 tons per cow through the winter, a $50 increase in winter feed cost would value hay $20 higher per ton and a $50 decrease in winter feed costs would value hay at $20 less per ton. Producers should consider where their operation likely lies on table 2 to better estimate their likely profit levels in this environment. Both tables 1 and 2 should help producers understand current returns to a fall calving cow-calf operation.

Table 2: Estimated Returns to Fall Calving Cow-Calf Operation given Winter Feed Costs and Calf Prices: Spring 2017					
	Avg. Steer/Heifer Price, 550 lbs				
Winter Feed Costs	**$1.25**	**$1.35**	**$1.45**	**$1.55**	**$1.65**
$175 ($70/ton)	*$84*	*$133*	*$181*	*$229*	*$277*
$225 ($90/ton)	*$34*	*$83*	*$131*	*$179*	*$227*
$275 ($100/ton)	*-$16*	*$33*	*$81*	*$129*	*$177*
Note: Returns above are returns to land, labor, and capital based on the same assumptions used in Table 1.					

This analysis suggests that fall-calving herds are likely covering their cash costs and breeding stock depreciation. However, each operator should also consider what return they need to adequately compensate them for their investment in land, capital (including depreciation), labor, and management. For example, if a producer felt that they needed a minimum of $140 return to compensate them for their time and investment as was previously discussed, our initial estimates in table 1 suggest that we are not reaching that level. If enough producers feel that way, it is likely that we will start to see herd liquidation in response to the unsustainable profit levels over time. Outside of some major shift in demand, this is what will ultimately be required to see calf prices improve. In the meantime, cow-calf operations should work to better understand their cost structure and what calf prices are needed to reach their profit goals. This will help them determine their best strategy as they make long-term decisions about their cowherds.

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