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Beef IRM Team

KENTUCKY BEEF CATTLE NEWSLETTER JUNE 5, 2023

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Contents

This month's newsletter includes:

Timely Tips

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

Spring-Calving Cow Herd

- Cows should be on good pasture with clover and preferably low endophyte levels in fescue for the spring breeding season. Keep pastures vegetative by clipping or making hay. They should have abundant shade and water. Our goal is to have cows become pregnant before July when temperatures and heat stress can ruin the "spring" breeding season.
- Observe the cows and bulls as the breeding season continues. Watch bulls for injury or lameness and change bulls if a high percentage of cows are returning to heat. Record cow breeding dates to determine next year's calving dates and keep records of cows and bulls in each breeding group.
- Keep a good pasture mineral mix, which contains adequate levels of phosphorus, vitamin A, selenium, and copper, available at all times.
- Consider a special area for creep grazing calves, or practice "forward grazing" this summer, allowing calves to graze fresh pasture ahead of the cows. This can be accomplished by raising an electric wire or building a creep gate.

Fall-Calving Herd

- Pregnancy test cows if not done previously.
- Cull these cows at weaning time (or now)
    - Smooth-mouthed cows
    - Cows weaning light weight and/or poor-quality calves
    - Open cows
    - "Problem cows" with bad feet, teats, udders, etc.
- Select replacement heifers based on:
  - temperament
  - conformation

- weaning weight
- dam and sire records
- Select more than needed to allow for culling after a short breeding season

General

- Finish harvesting excess pasture as hay soon! It should be cut before it becomes too mature. Be sure and replenish your reserves. Try to put up more than you think you will need in case of a late summer drought.
- Pasture should supply adequate energy, protein and vitamins at this time. However, be prepared for drought situations. Don't overgraze pastures so that recovery time will be faster. Overgrazed pastures will recover very slowly during July/August.
- Keep pastures small for rotational grazing so that nutritive quality can be maintained. They should be small enough so cattle do not graze longer than a week. As the season progresses, you need several paddocks to give each properly stocked pasture about 4 weeks' rest.
- Maintain a clean water supply and check it routinely. Water is extremely important in hot weather.
- Control flies. Consider changing insecticides and/or methods of control this year, because insecticide resistant flies may have developed if you have used the same chemical year after year. Consider pour-on and sprays that allow you to put cattle in the corral or through the chute with little stress on them. It will make subsequent trips through the "chute" less stressful.
- Prevent/Control pinkeye
  - consider vaccinating,
  - control flies,
  - clip tall, mature grass, - treat problems quickly.
- Clip grazed-over pastures for weed control and so that seed heads do not irritate eyes. Pastures should be kept in a vegetative state for best quality.

Beef Bash 2023

Dr. Les Anderson, Extension Professor and Tyler Purvis, Beef Extension Associate, University of Kentucky

Dr. Roy Burris started Beef Bash at the UKREC almost two decades ago. His vision was to create an event to encourage fellowship among producers, the industry, and the entities that serve the beef industry. A goal was to unite and empower the beef industry for the future.

The theme of Beef Bash 2023 is "Vision of the Future". Our goal is to create an event illustrating the tremendous work done in the beef industry in Kentucky creating a vision of the future of the beef industry. We are redesigning the format to accentuate all the work being done in Kentucky to improve the sustainability of the beef industry. We will have rotations featuring current research from UK and the USDA ARS group, educational opportunities sponsored by UK and Kentucky Beef Network and we will have several demonstrations by the UK Foods group and by the Kentucky Beef Council. In addition to these rotations, we will have an update on new facilities being designed and developed for the new Beef Extension Education Facility in Princeton, the new Livestock Education Center in Versailles, and the new USDA ARS research facility located on campus. We should have something for everyone at this years Beef Bash.

Beef Bash 2023 will be held Thursday, September 21st from 1-8 PM at the C. Oran Little Research Center. Registration will begin at 1 PM and the event will begin 2 PM. We will have the educational components from 2-4 PM and again from 6-8 PM. We will use 4-5 PM for participants to visit the tradeshow and interact with our vendors. We will rotate participants through the stations again from 6-8 PM. We extended the rotations into the evening for those who want to attend but cannot get off work.

Dinner will be provided by the Woodford County Cattleman's Association at 5 PM. Pre-registration for attendees will be $15 and includes a meal ticket. To register, go to Evenbrite.com and search for Beef Bash 2023. From there, you will be able to pre-register. If you have any questions on registration, please contact Tyler Purvis at tapu228@uky.edu. Come out to see a "Vision for the Future" provided by the University of Kentucky, the Kentucky Cattlemen's Association, and the USDA ARS.

For more information, please contact your local ANR Agent. We hope to see you there!

Information for Seedstock Symposium

Dr. Darrh Bullock, Extension Professor and Tyler Purvis, Beef Extension Associate, University of Kentucky

In conjunction with the University of Tennessee, the University of Kentucky will be hosting a Beef Cattle Seedstock Symposium October 17th, 18th, and 19th. The symposium will target beef cattle seedstock producers (bull providers) and will be held in three locations with the intention of making travel more convenient for those attending. On October 17th, the Fayette County Kentucky Extension Office will be hosting, the October 18th session will be held at the Barren County Kentucky Extension Office and the October 19th session will be held in Spring Hill, TN. The sessions will begin at 8:30 a.m. and wrap up around 4:30 p.m. Lunch will be provided at 12:30 p.m. University of Kentucky and University of Tennessee specialists will cover topics such as genetics, nutrition, reproduction, health, and marketing along with special guest speaker Dr. Matt Spangler from the University of Nebraska. Funding for this program was provided by the Kentucky Ag Development Fund and a small registration fee will be collected to help offset the cost of the meal. To receive information as it becomes available, please email Maggie Ginn at mmgi241@uky.edu and indicate your interest and contact information.

Finding the Cause for Abortions and Stillbirths in Cattle- Why is it still so Difficult?

Dr. Michelle Arnold, UK Veterinary Diagnostic Laboratory

Determining the cause of abortions and stillbirths in cattle remains a significant challenge for veterinary diagnostic laboratories, despite vast improvements in the tests used to detect infectious organisms. Most studies find that only 20-50% of abortion cases submitted are "solved", meaning the first initiating event resulting in the death of the fetus was discovered and answered "why" the calf died. Diagnosis of the cause of an abortion is exceptionally challenging because characteristic visible clues in the fetus rarely occur, sample tissues are often rotting and unsuitable for examination, and the most important tissue for analysis, the placenta, is seldom submitted. Instead, veterinary diagnostic laboratories can often recognize the final mechanism resulting in death of a fetus or calf, such as anoxia (lack of oxygen) or trauma, that answers "how" the calf died instead of "why".Veterinarians understand the limitations of abortion diagnostics and are best suited to help the producer determine if and when an investigation is warranted and how to collect and submit the appropriate samples. Abortion outbreaks can cause serious economic losses, so it is of value to identify potential causes and how to reduce or eliminate them. For

some producers, a single pregnancy loss may trigger an investigation while for others, multiple losses need to occur before calling a veterinarian. A loss of 2% for abortions is often quoted as "acceptable" but this percentage usually does not include any unobserved early losses. Most often, a cluster of cases within a short time span is the most important tipping point to begin an investigation. No matter the situation, the chances of a successful diagnosis increase with the right input from the producer, veterinarian, and the diagnostic laboratory.

"Reproductive failure" is a term used when a cow fails to get pregnant, loses a calf during pregnancy, or the calf dies within 48 hours after calving. Unfortunately, there is a lot of variation in the vocabulary used by scientists, veterinarians, and producers for the events that make up "reproductive failure". For clarity in this article, "embryonic death" is defined as death of the embryo up to 45 days but, with pregnancy detection now possible much earlier, this may be classified into early and late embryonic death. These early losses often go unnoticed and result in open females or an extended calving season. "Abortion" is defined as expulsion of a fetus between day 42 and day 260 of gestation, a timeframe defined as when the developing fetus could not survive outside the uterus (the limit of fetal independent viability). Females that abort from day 42–120 generally return to estrus either without a fetus being expelled because it was resorbed, or the expelled fetus was too small to observe. Abortions within the 120–260-day timeframe are sometimes referred to as "observable abortions" because they are more likely to be noticed by the producer. "Stillbirth" or "premature delivery" is expulsion of a near-term to full-term fetus that is considered "viable", so it is developed enough to survive outside the uterus. A "stillbirth" is generally defined as death of a full-term fetus before or during calving while a "perinatal mortality" is death immediately before, during or within 48 hours after calving. Although these distinctions may seem unimportant, they are diagnostically essential. Abortion investigations include gathering a thorough case history, and collecting samples from the dam, fetus and placenta for examination and testing. Stillbirth investigations include these elements but must also address non-infectious management issues such as how long the cow was in labor before assistance was given or potential trauma that occurred during or after birth.

The causes for abortion in cattle can essentially be divided into non-infectious and infectious. Examples of non-infectious causes may be physical (trauma), nutritional deficiencies, genetic abnormalities that result in fetal death, and toxic agents such as nitrates. Infectious causes include bacterial, viral, protozoal and fungal agents such as the BVD virus, IBR virus, the protozoan *Neospora caninum* and the bacterium *Leptospira borgpetersenii* serovar *Hardjo* type hardjo-bovis, among many others. These agents either directly damage the fetus or, more commonly, damage the placenta resulting in suffocation of the fetus from lack of oxygen or starve it from lack of nutrients crossing to the fetus from the dam. Infectious organisms may arrive at their destination in the fetus and placenta through the bloodstream from the dam, known as the "hematogenous route", or may ascend through the dam's vagina and cervix to reach the placenta. If the infectious organisms colonize the placenta (called "placentitis") and penetrate the amniotic fluid, the infected fluid is then swallowed by the fetus or inhaled into the lungs, resulting in fetal bronchopneumonia, gastroenteritis, and, in the case of fungi, a fungal dermatitis may develop. In addition, hematogenous spread may take the infectious organisms through the umbilical vessels and into the fetal liver then out to other organs by the vascular system, resulting in widespread organ infections such as hepatitis (liver infection), interstitial pneumonia (infection within the lung tissue) and nephritis (infection of the kidneys) in the fetus. If the fetus is not yet viable, abortion occurs. If viable (>260 days gestation) yet weak due to lack of oxygen and nutrients or is suffering from infection, the outcome may be a premature, stillborn or weak calf that dies shortly after birth.

Successful diagnosis of abortion involves evaluation of the case history, submission of usable samples and accurate interpretation of laboratory results. Gathering relevant information to assess the extent of the problem and to provide possible diagnostic clues is exceptionally important. The ages of the dams affected, the gestational age of abortions, the estimated abortion rate, any illness or disease problem in the dams, current diet, any recent changes including movement to a different location, new herd additions or feed changes, vaccination status, and any history of previous disease in the herd may help guide testing and aid in the diagnosis. The entire fetus with the placenta and a serum sample from the dam are the best specimens to submit to a veterinary diagnostic laboratory for analysis at the time of the abortion. A complete necropsy examination on the fetus and placenta will then be performed to determine any visible abnormalities present and possibly establish the time of death (before, during or after birth) for the full-term calves found dead. Tissues from the placenta and fetal organs are then submitted for histopathology, an examination at the cellular level under the microscope. Fresh placenta and organ tissues as well as fetal stomach contents and fetal heart blood are tested for bacterial, viral, protozoal and/or fungal agents by various methods. The blood sample from the dam may help determine exposure to a pathogen (infectious organism) by measuring her antibody levels but usually cannot differentiate between antibodies produced due to previous vaccination or a natural exposure. To improve interpretation, a second blood sample from the dam may be drawn 3-6 weeks later (the convalescent sample) to help identify a rising number of antibodies to a particular organism. In the same way, measuring antibody levels in fetal fluids can be indicative of an active immune response, *if* the fetus was old enough to produce antibodies.

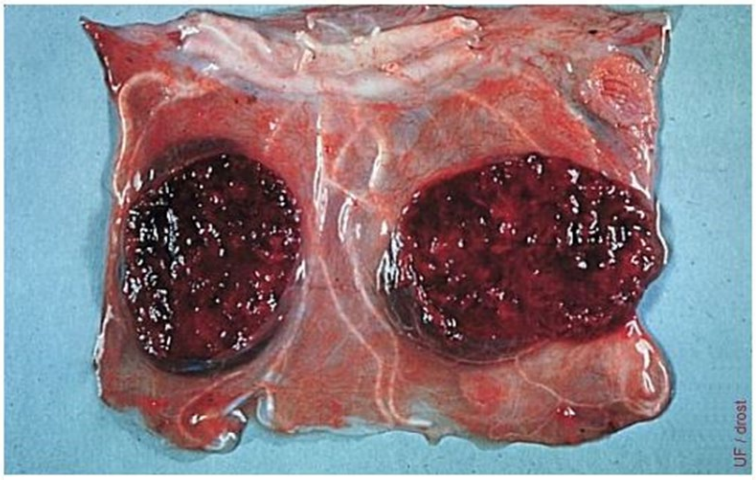


Figure 1. Normal Bovine Placenta (Accessed from the Drost Project on 5/16/2023 at https://visgar.vetmed.ufl.edu/en_bovrep/normal-

By far, the most important reason for failure to diagnose an infectious cause of an abortion is the lack of placenta submitted for analysis. It is the most significant tissue involved in abortion and without it, the odds of success go down dramatically. As mentioned previously, infection in the placenta ("placentitis"), disrupts oxygen transport, nutritional support, and the hormone and growth factors needed by the fetus. A normal placenta is thin and transparent in the areas between the dark, red-brown cotyledons (see Figure 1). Placentitis may cause cotyledons to appear discolored or rotten, with areas of hemorrhage and the tissue in-between may be opaque, reddened, and thickened (see Figure

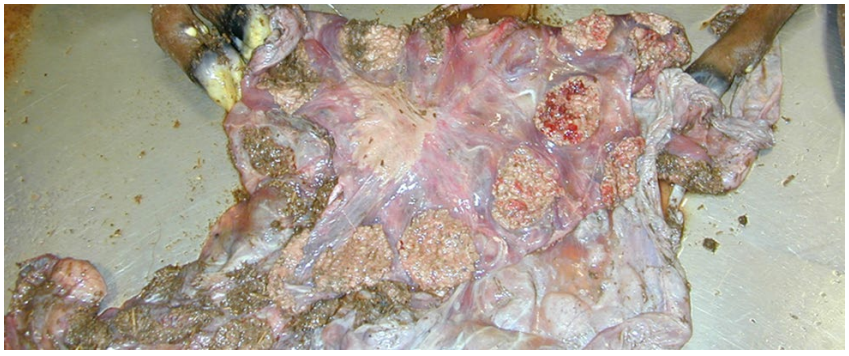


Figure 2: Placentitis. Cotyledons are tan with hemorrhages and the intercotyledonary portions of the placenta are opaque and thickened. (Photo obtained from http://www.askjpc.org/wsco/wsc_showcase2.php?id=451)

2). Although the placenta may be found in the pasture dirty, covered in mud and manure, frozen, and half-eaten, the superficial contamination can be rinsed away in the lab and the placenta spread out to look for any abnormal areas. Unfortunately, if the fetus and placenta were retained in the uterus for an extended time after death, the tissues may be macerated (soft), mummified (dried), or autolytic (rotten), making them difficult to impossible to use for testing. Ideally, every sample would be tested for every possible infectious agent, but financial considerations dictate selective ordering of appropriate tests, based on the case history and sample quality.

Beyond the diagnostic problems presented by poor sample quality and lack of placenta, what is often overlooked is that sometimes a diagnosis can't be found, even from good samples. There are numerous causes of perinatal mortality that are not related to a certain organism, or the organism is long gone due to the lag time between infection and death. Most final abortion/stillborn necropsy reports from a vet diagnostic lab include language regarding signs of "fetal stress" or "fetal anoxia" in the submitted animal, meaning the fetus was not getting enough oxygen and began struggling, breathing harder and faster, resulting in aspiration of any fluid type present in the nose or mouth down into the lungs.

"Meconium staining" is another sign of fetal stress due to meconium (the first feces) being expelled early, usually during a delayed birth, mixing with the uterine fluids and staining the calf yellow. These signs of fetal stress may be due to prolonged stage 1 or stage 2 of labor, a very large calf, a malpresentation, premature placental separation, and many other possibilities. Fetal anoxia may also be due to maternal hypoxia, meaning the dam's blood is low in oxygen from a disease such as an active case of anaplasmosis or from a toxin such as nitrate so there is not enough oxygen from the dam to support fetal life. Remember that working with your veterinarian, submitting a fresh fetus and placenta to a veterinary diagnostic laboratory, and providing as much information as possible to the lab is your best chance to determine an underlying cause of why a calf died.

Preventive Practices to Decrease the Risk of Reproductive Failure:

1. Always provide good nutrition-Providing forage, supplemental feed, trace mineral and clean water to meet nutritional needs and of sufficient quality and quantity to always maintain good body condition scores.
2. Vaccinate for diseases known to cause abortion, including BVD and IBR viruses, Leptospirosis and Vibriosis.
3. Prior to breeding season, test for venereal disease in bulls and have a breeding soundness exam performed. Veterinarians will check scrotal circumference and the reproductive tract for any signs of abnormalities, and the semen for motility and defects. Bulls should be monitored for excessive weight loss and illness. Heat detection, breeding attempts, and semen quality will be reduced in bulls that are under-conditioned or sick. Lameness and pinkeye can be important causes of poor pregnancy rates on pasture as bulls are less likely to seek out cows in heat. Frequent observation of bulls during the breeding season is important to detect any inability to mount or successfully breed that might be caused by injuries to the bull's legs, back or penis. This is particularly vital in single bull breeding pastures. Injured bulls, if detected, can be replaced before too much time is lost from the breeding season.
4. Avoid contamination of cattle feed and water sources with feces or urine from other cattle, wild animals, dogs, cats, and waterfowl. This includes surface runoff into water sources such as ponds.
5. New Purchases:

a. Buy from someone you trust-Ask for health records and a complete herd history of any disease problems. Ask questions regarding preventive health measures such as what and when vaccines and dewormers were given and how they were administered.
b. Quarantine all new additions away from home herds for a minimum of 30 days. Blood test for Johne's, BVD PI, Neospora, and possibly Anaplasmosis; consult your veterinarian for appropriate recommendations. Vaccinate and deworm while in quarantine. Best to not mix new cattle in cow-calf herd until calving season is over. If new additions are pregnant when purchased, strongly recommend testing their calves for BVD-PI shortly after birth.

6. Frequent monitoring of the calving process is the first step in early identification of calving difficulty. Checking the cows that are close to calving at least twice daily and heifers three times per day at minimum is recommended. It is best to separate the heifers from the mature cows and keep heifers in an area where there are working facilities close by to allow restraint and assistance. Pregnant females close to calving will show enlargement of the vulva, the pelvic ligaments at the hips will "sink in", there is enlargement of the udder, and the teats will become engorged with colostrum.

Comparing 2023 Beef Cow Slaughter to 2022

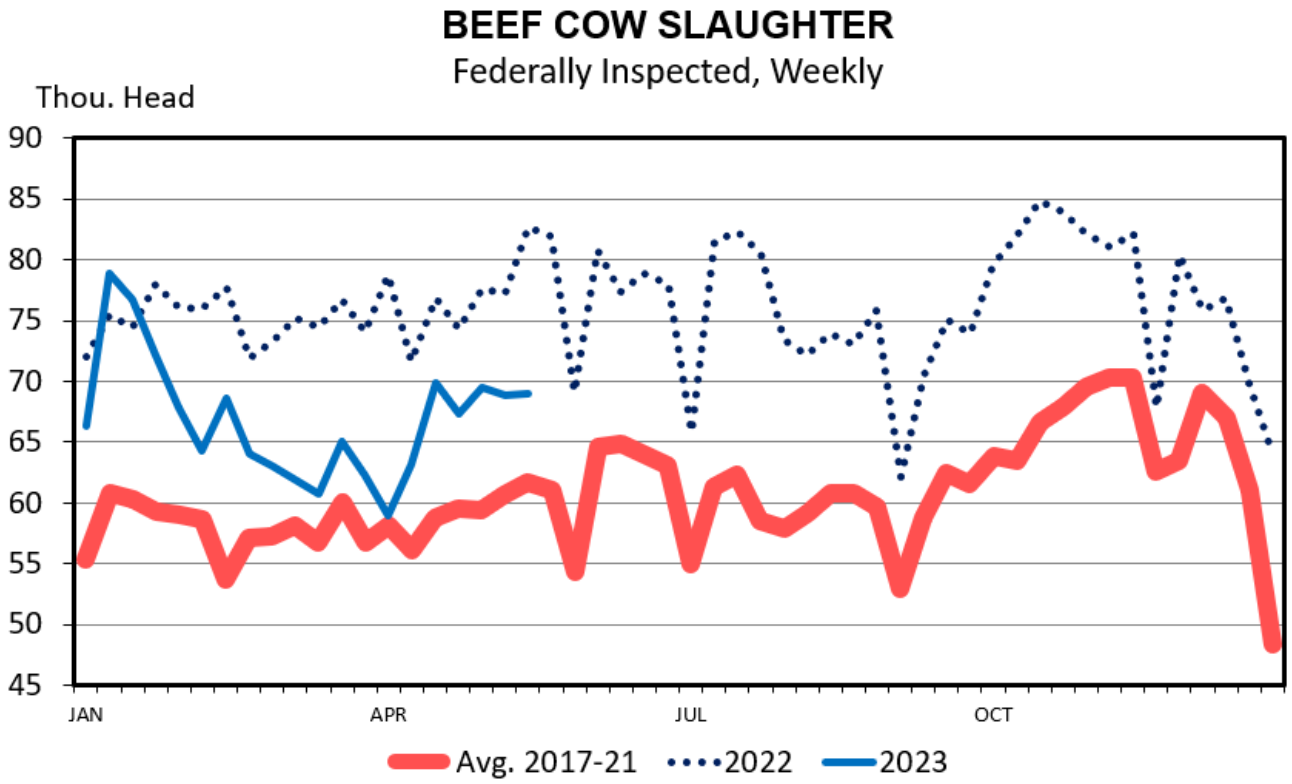
Dr. Kenny Burdine, Extension Professor, Livestock Marketing, University of Kentucky

As is often the case, pasture conditions are a mixed bag and tend to be very localized. A quick look at the drought monitor below reveals increasingly dry conditions in the Eastern half of the US and parts of Kentucky are now classified as "abnormally dry". I can certainly speak to how badly we need a good rain and I know that rings true for many producers. Weather is always a concern during summer, and this certainly bears watching in the coming weeks.

As I cringe thinking about the possibility of another widespread drought, I am reminded of how long lines at auction facilities made national news last year as conditions worsened through summer. A lot of producers were forced to move cows due to limited forage growth. By the end of the year, 389 thousand more beef cows were harvested in 2022 than in 2021, which was an increase of about 11%. Beef cow slaughter through the third week of May can be seen in the chart below. Thus far, it is very clear that the pace of beef cow slaughter is well below that of 2022. In fact, for the first 20 weeks of the year, beef cow slaughter is down by about 12% from last year.

I use year-over-year comparisons a lot, as do most economists. They provide a simple way to compare trends from one year to the next. But they can be misleading at times, and this is especially true when one of the two years being compared is a significant outlier. Clearly, beef cow slaughter in 2022 was an outlier so any comparison to last year must be made with that in mind. For a different perspective, one might compare cow slaughter for the first 20 weeks of 2023 to the first 20 weeks of 2021. It might surprise some people to know that through the third week of May, we have actually harvested 1.8% more cows this year than we did during the same period in 2021. This speaks to what an anomaly 2022 likely was and paints a little different picture of 2023. One should also remember that there are almost 2 million fewer beef cows in the US now than there were in 2021, so the fact that slaughter rates are higher is noteworthy.

While I did think it was important to put cow 2023 beef cow slaughter in perspective, I also think it is a bit too early to make much of harvest levels. Culling decisions are made at the individual producer level and national slaughter levels are a culmination of all those decisions. Production costs, calf prices, and cull cow values all play a role in determining how hard the herd gets culled. But, the weather is typically the biggest driver and the coming months will be crucial in those decisions, just as it was last year.



Data Source: USDA-AMS & USDA-NASS

Livestock Marketing Information Center

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