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College of Agriculture, Food and Environment
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Beef IRM Team

OFF THE HOOF

KENTUCKY BEEF CATTLE NEWSLETTER. DECEMBER 5, 2022

Published Monthly by UK Beef IRM Team and edited by Dr. Les Anderson, Beef Extension Specialist, Department of Animal & Food Science, University of Kentucky

Contents

This month's newsletter includes:

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

Spring Calving Herd

- Be sure that weaned heifer calves are on a feeding program that will enable them reach about 65% of their mature weight before the start of the breeding season. Rations should be balanced to achieve gains sufficient to get heifers from their current weight to that "target" weight.
- Body condition is important, plan an adequate winter program for cows to be at least body condition score 5 (carrying enough flesh to cover the ribs) before the calving and breeding season. This will help them to breed early in the spring. Thin cows should be fed to regain body condition prior to winter. Don't let cows lose weight/condition. Supplementation will most likely be needed. Find low-cost supplemental feeds to meet the nutrient needs of cattle.
- Divide the herd into groups for winter feeding
    - weaned heifer calves
    - first-calf heifers, second-calvers and thin mature cows
    - the remainder of the dry cows which are in good body condition
    - herd sires
- Begin feeding the lowest quality forage to dry cows which are in good condition during early winter and save the best hay for calving time or for weaned calves.
- Order and number ear tags for next year's calf crop this winter. It is also a good time to catch up on freeze branding and replacing lost ear tags.

Fall Calving Herd

- Get breeding supplies together, if using estrous synchronization and/or A.I.

- Have Breeding Soundness Evaluation (BSE) performed on bulls (even if you used them this spring).
- The fall breeding season starts. Breeding can best be accomplished on stockpiled fescue pasture; otherwise, cows with calves should be fed 25-30 pounds of good quality hay or its equivalent. Supplement with grain, if needed, and minimize hay waste. DON'T ALLOW THESE COWS TO LOSE BODY CONDITION PRIOR TO OR DURING THE BREEDING SEASON. It is easy to wait too long to start winter feeding. Don't do it unless you have stockpiled fescue.
- Nutrition level of cows during the first 30 days after conception is critical. Pay attention.
- Observe performance of bulls during breeding season. Watch cows for return to estrus, if you see several in heat, try to determine the cause and consider changing bulls.

General

- Complete soil testing pasture to check for fertility and pH.
- Consider putting down geotextile fabric and covering with gravel in feeding areas before you begin hay feeding to minimize waste of expensive hay. Or, perhaps, construct concrete feeding pads for winter feeding areas.
- Monitor body condition and increase feed, if needed, for all classes of cattle.

Backgrounding Short Course Set for December

Dr. Jeff Lehmkuhler, Extension Professor, University of Kentucky

The Backgrounding Short Course is set for December 15th & 16th this year. This two-day program will combine classroom and hands-on activities related to the backgrounding industry. Topics to be covered will include health, nutrition, disposition, chuteside Beef Quality Assurance, bunk management, market outlook as well as other topics. The program begins at 7:30 am on Thursday, December 15th.

As the program involves hands-on activities, the program is limited to the first 30 registrants. Participants may register online at https://www.eventbrite.com/e/469124111847 or send payment to Dr. Jeff Lehmkuhler, 810 WP Garrigus Bldg, Lexington, KY 40546 by December 10th. The cost for the program is $25 and will include meals. The program will be held at the University of Kentucky C. Oran Little Research Center in Versailles. This program is also supported by the Kentucky Beef Network and funds from the Kentucky Agricultural Development Funds. For more information email jeff.lehmkuhler@uky.edu or call 859-257-2853.

UK Beef Management Webinar Series

Darrh Bullock, Extension Professor, University of Kentucky

We will start back on the UK Beef Management Webinar Series on October 11 with a Shoot the Bull session and the full agenda for the fall is below. Registration is necessary if you have not registered in the past (If you have ever received an invitation then you should be registered). If you would like to register, please send an email to dbullock@uky.edu with Beef Webinar in the subject line and your name and county in the message. You will receive the direct link with a password the morning of each meeting. This invitation will directly link you to the site and you will be asked for the password which can be found just below the link. Each session will be recorded and posted for later viewing. **All meeting times are 8:00pm ET/7:00pm CT**.

The library of all UK beef related videos, including past webinars, can be found at: https://www.youtube.com/playlist?list=PLC5aJFY_Be8XJZ_03_Ql73TK0826T8Fjq

Remember all sessions are 8:00pm Eastern/ 7:00pm Central and please let us know if you have any issues.

October 11, 2022
Shooting the Bull: Answering all your Beef Related Questions! – Updates and Roundtable discussion with UK Specialists

November 8, 2022
From Hay Sample to Feed Bunk: Winter Feeding Considerations for Cattle – Katie Mason, Assistant Professor, University of Tennessee

December 13, 2022
Packer and Consumer Trends with Some Holiday Beef Ideas – Gregg Rentfrow, Extension Professor, University of Kentucky and Alison Smith, Kentucky Beef Council Retail and Foodservice

Reproductive Failure in Cattle-Frequently Asked Questions about Leptospirosis

Dr. Michelle Arnold, UK Veterinary Diagnostic Laboratory

"Reproductive failure" is an all-encompassing term if a cow loses a calf during pregnancy or if she fails to get pregnant. Causes of reproductive failure are often divided into infectious and non-infectious categories. Examples of "non-infectious" include poor cow nutrition (lack of energy and micronutrients such as selenium/Vitamin E); bull infertility, disease, and injury; breeding season management (shortened breeding season, insufficient bull-to-cow ratios); genetic and some congenital abnormalities that result in fetal death; and toxic agents such as nitrates, phytoestrogens, and drugs including steroids and prostaglandins. "Infectious" causes are bacteria, viruses, protozoal and fungal agents that directly or indirectly damage the placenta and/or the fetus. Examples include the BVD virus, IBR virus, the protozoan *Neospora caninum* and many species of the bacterium *Leptospira*, among many others. This series of articles will explore the most common infectious causes of abortion and reproductive failure in cattle and available options for control and prevention.

What is Leptospirosis or "Lepto"? Leptospirosis is a complicated bacterial disease commonly associated with abortions, stillbirths, premature births, and infertility in cattle. However, this bacterium also causes sickness and death in cattle, dogs, sheep, and horses worldwide and is an important zoonotic disease affecting an estimated 1 million humans annually. Farmers, veterinarians, and those working in meat processing facilities are at highest risk to contract the disease.

What causes leptospirosis? The disease is caused by a unique, highly coiled, Gram-negative bacterium known as a "spirochete" belonging to the genus *Leptospira*. These "leptospires" are highly motile due to their spiral shape and, once inside a host animal, they enter the bloodstream and replicate in many different organs including the liver, kidney, spleen, reproductive tract, eyes and central nervous system. The immune system will produce antibodies that usually clear the organism from the blood and tissues

rather quickly except from the kidney. Leptospires take up residence primarily in the kidney and are excreted in the urine for months to even years after infection, depending on the species of *Leptospira* and the animal infected. Less frequently, leptospires persist in the male and female genital tract and mammary gland of females and may be excreted in semen, uterine discharges, and milk.

How do cattle become infected with leptospires? Transmission of the organism is most often through direct contact with infected urine, placental fluids, semen, or milk. However, transmission may also occur by coming in contact with areas contaminated with infected urine, such as stagnant ponds or swampy areas with standing water. The leptospires survive in the environment for long periods of time (approximately 6 months in the right conditions) in stagnant water as well as in warm and moist soils but die quickly when dry or in cold temperatures. Entry into the animal may be through penetration of *intact* mucous membranes such as through the mouth and the conjunctiva of the eye, or through damaged or water-softened skin. The organism may also be transferred during breeding and also during pregnancy from dam to fetus.

Which animals carry ("host") this organism and are responsible for spread of disease? This is where the complicated life cycle of this organism must be explained to understand the wide range of disease symptoms that may be observed in cattle. To begin, it is important to distinguish two different types of "hosts": 1) maintenance or reservoir hosts and 2) incidental or accidental hosts. A "maintenance host" is an animal that can carry and spread the leptospirosis organism but not experience any obvious sickness from it. These are also known as "reservoir hosts" because this animal's immune system allows the leptospires to survive and duplicate themselves then be excreted in urine and spread to other animals. Maintenance hosts for leptospires are often wildlife species including skunks, rats, raccoons, and opossums but can be domestic animals (dogs) or livestock (pigs, cattle), depending on which type of leptospire (known as a "serovar") is involved (Table 1). For example, cattle serve as the maintenance host for the *Leptospira* serovar called "Hardjo type hardjo-bovis", often abbreviated as "Hardjo". Transmission from one infected cow to another healthy cow with serovar Hardjo is efficient, and the infection rate can be very high in an unvaccinated herd. When a cow is initially infected with serovar Hardjo, she may exhibit a few mild signs such as low fever but there will be very little antibody production by the immune system and the leptospires will stay primarily in the kidney and be persistently shed in her urine for a prolonged period of time (months to years). In addition, the organism can also localize in male and female reproductive tracts and be shed in semen and uterine discharges.

An "incidental host" or "accidental host" is an animal that gets infected with a *Leptospira* serovar not normally found in that animal (infected "by accident") which results in clinical disease that may be severe. Incidental hosts are <u>not</u> reservoirs of infection and transmission of the organism is uncommon within a herd. Infection of an incidental host usually occurs in areas contaminated with urine from maintenance hosts. For example, cattle are incidental hosts for the *Leptospira* serovar "Pomona" which is carried by feral swine, opossums, skunks, and raccoons (the maintenance hosts) and transmitted to cattle from water or feed contaminated with their urine. Once infected, cattle (especially calves) with Pomona often show significant signs of disease, the immune system rapidly produces antibodies and there is a short carrier state in the kidney when cattle shed the organism in urine.

Table 1: Common Leptospira Isolates in Ruminants			
Species	Serovar	Maintenance Host	Incidental Hosts
L. borgpetersenii	Hardjo (type hardjo-bovis)	Cattle (repro failure)	Sheep, goats
L. kirschneri	Grippotyphosa	Raccoons, muskrats, squirrels	Cattle, sheep, horses, dogs
L. interrogans	Pomona	Swine, opossums, skunks, raccoons	Horses, cattle, sheep, goats, dogs
L. interrogans	Canicola	Dogs	Cattle
L. interrogans	Icterohaemorrhagiae	Rats	Dogs, cattle, swine
L. interrogans	Bratislava	Pigs, mice, horses	Dogs, cattle, horses
L. interrogans	Hardjo (type hardjoprajitno)	Cattle-Europe only (milk drop)	Sheep, goats

What are the symptoms of leptospirosis? Clinical signs or symptoms of disease in cattle depend on which *Leptospira* serovar is involved and if cattle serve as a maintenance host or incidental host for this specific type. There are over 250 serovars of *Leptospira* but the two most important serovars affecting cattle in North America are Hardjo and Pomona, with Grippotyphosa, Canicola and Icterohaemorrhagiae much less frequently diagnosed. Most bovine leptospirosis is caused by the serovar Hardjo, which causes infertility and reproductive failure. Cows with Hardjo are twice as likely to fail to conceive and experience a significantly longer time interval from calving to conception.

Infection in pregnant cows with non-Hardjo strains, mostly Pomona and Grippotyphosa, results in abortion (usually late term), stillbirth, or birth of premature and weak infected calves. Retention of fetal membranes may follow abortion. Lactating dairy cows may exhibit “milk drop syndrome”, characterized as a drop in milk production for 2-10 days where the milk has the consistency of colostrum, thick clots, yellowish color, and high somatic cell count, but the udder remains soft. In calves, a severe, rapidly progressing disease may occur when infected with incidental serovars, especially Pomona. Symptoms of high fever, extreme weakness, red urine, rapid breathing due to anemia and death are all possible. Cows may experience a loss of milk production with very prolonged recovery.

How is leptospirosis diagnosed and treated? Diagnosis of this disease is not necessarily a simple task. Traditionally, two blood samples (in red top blood tubes) drawn at least 1 week apart after an abortion are submitted to measure antibodies against the most common serovars. Incidental infections (for example, Pomona) will show a rapid rise in antibody numbers (called “titers”) over time that are diagnostic. However, since cattle are the maintenance host of serovar Hardjo, the antibody numbers may remain low if reproductive failure is due to Hardjo. Vaccination also confuses the interpretation of results because blood tests do not differentiate antibodies due to infection or antibodies due to vaccine. Therefore, multiple types of tests may be required to rule this disease in or out. Currently, urine is the preferred sample as it can be tested for leptospires through a variety of assays, especially PCR, to identify the organism. Animals diagnosed with leptospirosis can be treated with injectable long-acting oxytetracycline to remove the organism from the kidney. Research is ongoing if additional treatment is needed to clear infections within the genital tract. Consult your veterinarian for detailed advice regarding diagnosis and treatment options.

What methods are used to control and prevent leptospirosis in cattle? New infections are best prevented through early vaccination with products containing the most common serovars affecting cattle. The leptospirosis fraction of most reproductive vaccines is often denoted as “L 5” in the vaccine name, representing Hardjo, Pomona, Grippotyphosa, Canicola and Icterohaemorrhagiae. In addition, several vaccine manufacturers have added extra protection against serovar Hardjo type hardjo-bovis and this is denoted with “HB” in the vaccine name. Spirovac® (Zoetis) is a vaccine for Leptospirosis only,

specifically for the prevention of infection by *Leptospira borgpetersenii* serovar Hardjo type hardjo-bovis, including reproductive and renal tract colonization, and urinary shedding for up to 12 months. It is worth mentioning that cattle already infected with leptospirosis must be treated with antibiotics first to remove the organism before vaccination is effective.

Control is accomplished by prevention of exposure, annual vaccination and treatment if needed. Reduction of cattle exposure to infected urine, especially fencing off stagnant ponds and swampy areas, and preventing urine contamination of feedstuffs will significantly reduce transmission of the organism. Personal protective equipment should be used when working with cattle suspected to be infected to prevent human disease.

Consider Pasture, Rangeland, and Forage Insurance as a Risk Management Tool

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

The most recent drought monitor, released on October 27th, shows the majority of the United States dealing with drought, or abnormally dry, conditions. While I sincerely hope some of those regions received some much needed rain recently, I do think this provides an opportunity to discuss Pasture, Rangeland, and Forage (PRF) Insurance. PRF insurance provides an opportunity for producers to purchase rainfall coverage for perennial forages used for pasture and / or hay production. Producers have until December 1st to enroll for 2023, so I thought I would focus this discussion on three reminders for producers as they consider PRF insurance for the upcoming year.

PRF is a Single-Peril Index Insurance Product

Producers first need to understand that indemnities from PRF are not based on rainfall at their farm, but rather on actual and historical rainfall for a 0.25 degree latitude by 0.25 degree longitude grid, where their farm is located. Daily rainfall for each grid is collected through NOAA weather stations and used by the program. Certainly, there should be a correlation between rainfall amounts for a given grid and the farms within it, but variability will exist. This variability creates a type of "basis" risk that isn't that different than an insurance product like Livestock Risk Protection Insurance, which pays based on changes in the CME© Feeder Cattle Index, rather than local prices. It is also important to understand that PRF insurance does not protect against extremely high rainfall levels, or any other challenge that might impact forage production. It simply provides coverage for less than normal rainfall levels over 2 month periods during the year.

The Premium Subsidy for PRF is Significant

The premium subsidy levels for PRF depend on the level of coverage that is selected, but exceed 50% in all cases. The USDA Risk Management Agency (USDA-RMA) has intended for this to be relatively affordable so that farmers will be more likely to utilize it. While indemnities may not be received in a given year, the subsidy levels suggest that indemnities should exceed premium levels over a large number of years. Given this, producers may want to consider scaling the coverage upward to increase the base value per acre they are insuring. Base values per acre can be increased by up to 150% by increasing the productivity factor.

Multiple Approaches are Possible for Covered Months

Finally, I think it is important that producers give some thought to the months they want to cover. Producers must select coverage in a minimum of two, two-month periods and can place no more than

60% of their coverage value in any single two-month interval. A month also may not be double-covered. For example, one cannot cover the June-July interval and the July-August interval, because July is double-covered. However, one could put 60% of the value in a two month interval that included July.

A logical approach would be to cover months in which rainfall and forage productivity are of the most concern. For example, someone may choose to cover June-July and August-September, if they are concerned about the summer months. A producer who is more dependent on fall pasture growth to stockpile forage may choose to stretch coverage into the fall months. Producers should also discuss this with their insurance agent as they are likely to have valuable insights as well. Most importantly, producers should give this some thought and be deliberate about this decision.

While no insurance product is perfect, PRF insurance does provide producers with a relatively inexpensive opportunity to get some protection against less than normal rainfall levels. Producers have until December 1st to sign up for coverage for the 2023 calendar year, so the time is right to be thinking about it. In addition to talking with your insurance agent, a great deal of information can be found on the PRF page of the USDA-RMA website at https://www.rma.usda.gov/en/Policy-and-Procedure/Insurance-Plans/Pasture-Rangeland-Forage.