

# OFF THE HOOF

*Kentucky Beef Newsletter October 2018*

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

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## Timely Tips

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

### Spring-calving herds

- Schedule a pregnancy examination of cows if not done previously. Winter feeding costs can be minimized by eliminating open cows prior to winterfeeding. Pregnancy status (pregnant versus open) can be determined using palpation, transrectal ultrasonography, or blood sampling. Stage of pregnancy can only be determined by palpation or ultrasonography (performed by your veterinarian).
- Evaluate the body condition of your cows and improve their condition prior to winter.
- If you have already done a preweaning working, revaccinate (booster) calves as needed. Treat calves for internal and external parasites. If you vaccinate calves yourself, be sure to store, handle and administer vaccines properly.
- Wean calves before cows lose body condition.
- Obtain weaning weights of your calves and remember weaning is the time to do your first round of culling and selecting breeding stock. You can eliminate obviously inferior calves, especially those with wild or nervous dispositions. Consider the number of heifers that you will need to save for your cow herd. Bulls that are old, unsound, roguish, etc. can be culled now. It is not too early to begin thinking about replacements now.

### Fall-calving herds

- The calving season should be in full swing for fall calvers. Check cows frequently. Identify calves and commercial males should be castrated and implanted.
- Put fall-calving cows on accumulated pasture before the breeding season. This has generally been a good year for moisture. Be sure to save some grass in the breeding pastures.
- It is time to get everything ready for the fall-breeding season, too. Line-up semen, supplies, etc. now and get your bulls ready to go (don't forget their breeding soundness evaluation).
- Obtain yearling measurements (weight, hip height, scrotal circumference, etc.) on replacement

animals—especially for registered ones, check pelvic areas, too.

### **Stockers**

- If you are purchasing weaned/stressed calves, have your receiving/feeding program in place. Feed a stress ration which contains at least 13% protein and is fairly energy dense.
- Manage to keep newly weaned and/or purchased calves healthy. Calves should be penned in a small lot with adequate feed, water and shade to reduce stress. Careful handling and comfortable, uncrowded conditions can decrease stress.
- When newly-weaned calves are purchased in the fall, sickness and death loss can be a big problem. Work with your veterinarian on a health and receiving program. Consider purchasing CPH-45 feeder calves which are preweaned, vaccinated, bunk-adjusted and treated for parasites.
- Watch calves closely for a few weeks after their arrival. Have a treatment program ready for any health problems. Early recognition of sick cattle improves their chance of recovery. Watch for drooped ears, hollow appearance, reluctance to rise, stiff gait, coughing and dull or sunken eyes. A good “receiving” program is essential to profitability.

### **General Reminders**

- Avoid prussic acid poisoning which can happen when frosts rupture the plant cells in sorghums, sorghum-sudan hybrids, sudangrass and johnsongrass releasing prussic (hydrocyanic) acid. Fields can be grazed after the plants have dried up after a frost. New growth that occurs in stalk fields is potentially dangerous whether frosted or not.
- Take soil samples for soil analysis to determine pasture fertility needs. Apply phosphate, potash and lime accordingly.
- Test hay quality and make inventory of hay supplies and needs. Make adjustments now - buy feed before you run out in the winter.
- Do not harvest or graze alfalfa now in order for it to replenish root reserves.
- Remove fly-control eartags from all animals, dispose of according to instructions on package. Treat for grubs/lice.

### **Preg Check Your Cows.....Please!**

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

It's weaning time and I hope most of you are planning your herd "preg check". If you have not incorporated this management practice in the past, please do so this year so that you won't be feed non-productive females this fall and winter. When it comes time to cull cows from your herd, pregnancy status is one of the first criteria that will determine whether a cow stays in the country or goes to town.

According to the results of a survey conducted by the [National Animal Health Monitoring System](#), fewer than 20 percent of beef cow calf producers used pregnancy testing or palpation in their herd. However, the benefits of this practice are fairly simple to realize. First of all, pregnancy diagnosis allows producers to identify "open" or nonpregnant cows. Compare the roughly \$5 per head cost of a pregnancy exam with the \$100-200 per head cost of hay alone to feed an open cow through the winter (if you can find hay for \$30 per roll). It's easy to see that pregnancy testing quickly pays for itself.

Second, pregnancy testing will provide a producer an estimation of when cows will be calving based on the age of the fetus at the time of the pregnancy exam. An average calving date can be calculated and the producer can use this information to better supplement, the cows through the winter. Remember, the nutrient needs of cows vary throughout their production cycle; cows nutrient requirements are highest immediately before and after calving and are lowest in the second period of pregnancy. Knowledge of the stage of pregnancy can help

producers make efficient feeding decisions. For example, most producers will have hay of varying qualities in storage. Since cows in the second period of their pregnancy require less nutrients, producers can target their lower quality feedstuffs for the time when their cows nutrient requirements are the lowest. Alternatively, producers can save their best quality feedstuffs for the post-calving period when a cow's nutrient requirements are the highest. Thus, obtaining the pregnancy status of your cowherd will allow a producer to adjust the supplementation in a timelier manner.

Finally, if the herd needs to be culled and pregnant cows need to be sold due to drought and lack of pasture, knowing the pregnancy status of the cows will be appealing to potential buyers. Buyers will be looking to purchase cows that will calve closely in line with the cows already in their own herds.

Pregnancy diagnosis is a quick and simple procedure. Three practical methods for pregnancy diagnosis can be used in beef cattle: 1) rectal palpation and 2) transrectal ultrasonography 3) blood sampling. Rectal palpation is most common and is an accurate form of pregnancy diagnosis that can be performed after day 45 of pregnancy. Many veterinarians are proficient at rectal palpation, and this procedure requires little time in the squeeze chute. Transrectal ultrasonography, commonly referred to as ultrasound, can be used to detect pregnancy as early as 28 days with a high degree of accuracy. This method can be employed just as quickly as rectal palpation when done by a skilled technician and may provide additional information that cannot be determined by rectal palpation. Using transrectal ultrasonography, the technician is actually "looking" at the fetus and can determine the viability of the fetus and the incidence of twins. It is also possible to determine the sex of the fetus between days 60 and 90 of pregnancy.

The blood test method to determine pregnancy is simple and accurate. First, a blood sampling kit needs to be ordered from the company. Usually, the cost is about \$1.50-1.60 per cow for the kit. All the tubes should be labeled according to the instructions in the kit. The most difficult part of this process for most producers will be obtaining the blood sample. Cows must be at least 30 days pregnant and 90 days from calving for the test to work. Also, producer's who have no experience taking a blood sample will need to schedule this test with their local veterinarian. Once the sample is obtained, the samples are packaged and sent to a laboratory for analysis. The cost for the test is \$2.50-3.00 per cow. So the total cost per cow will be the cost of the kit, plus the test cost, plus the cost of mailing and any costs associated with obtaining the sample if you cannot do it yourself. Likely the cost per cow will be about \$5 per cow for most producers.

The results are normally obtained with 2-3 days and the accuracy of the test is very high. If the test calls the cow open, then the producer is 99+% sure the cow is open. When the test determines a cow pregnant, you can be 93-95% sure they are pregnant. This test will not determine stage of pregnancy (i.e. 90 days versus 120 days).

A final piece of information to keep in mind is to sell cull cows early. The market for cows is usually good through September, and then the price goes south at a fairly rapid pace until it bottoms out in November. So, pull the bulls at the end of the breeding season, schedule to pregnancy check your cows about 45 days later, and get rid of the open cows and other culls before cow prices take a nose dive.

So PLEASE have pregnancy diagnosed in your cows. It will save you money.

## **Pneumonia in Feeder Calves? Don't Forget *Histophilus somni* (Formerly known as *Haemophilus somnus*)**

*Michelle Arnold, DVM (Ruminant Extension Veterinarian, UKVDL)*

In this era of advanced vaccine technology and long-acting, expensive, powerful antibiotics, why do cases of Bovine Respiratory Disease (BRD) continue to increase? One reason is the re-emergence of *Histophilus somni* (formerly known as *Haemophilus somnus*) as a major bacterial pathogen responsible for the development of

pneumonia in feeder operations. While *Mannheimia haemolytica* is the bacteria known to cause the dramatic pneumonia signs of fever, depression, appetite loss and rapid death, *Histophilus somni* (HS) can cause similar symptoms and is proving very difficult to treat and control with traditional methods. The organism is often found in combination with *Pasteurella multocida* or other BRD bacteria in “biofilms” which are clusters of bacteria in a matrix that serves as protection from antibiotics and host immune system responses. Stress can trigger dispersal of large numbers bacteria from the biofilm that can then invade the lower respiratory system. Once it establishes infection in the lungs, it can travel in the bloodstream to joints, organs (especially the heart), and to the brain. These calves may develop pneumonia, pleuritis (infection of the membrane surrounding the lungs), myocarditis (infection in the heart muscle), thrombotic meningoencephalitis (infection in the brain), tenosynovitis (infection within joints), and otitis media (middle ear infection). The disease can happen anytime in the year but most clinical cases occur between October and January. Previously, disease due to HS or “histophilosis” was associated with primarily Western and Midwestern states in the USA and Canada but cases are now being diagnosed throughout the US, including Kentucky. Most comprehensive studies have been conducted in Canada where HS accounts for an estimated 40% of the death loss in feedlots. Unlike typical BRD outbreaks that peak at 14 days after arrival to the feedlot, HS acute pneumonia cases peak at 25 days on feed. In the absence of consistently effective treatment or vaccine options, management practices are crucial to controlling *Histophilus* pneumonia. Metaphylaxis, where treatment is applied to the whole group (either on arrival or once 10-20 % of the calves are showing clinical signs of BRD), along with prompt individual treatment of sick cattle is one recommended control approach. Vaccines are available against HS but their ability to prevent disease has not been proven.

The common BRD-associated bacteria (*Mannheimia haemolytica*, *Pasteurella multocida*, *Histophilus somni* and *Mycoplasma bovis*) are considered normal bacteria in the nasal passages of healthy calves but with stress (such as transportation and commingling) and viral infection, they can descend into the lungs and sometimes spread throughout the body, causing disease. This simple disease model is now under scrutiny with the realization that multiple factors contribute to combinations and complex interactions between the environment, the bacteria and viruses, and the calf’s immune system. Stressed cattle are more susceptible to the viral components of BRD, including Infectious Bovine Rhinotracheitis (IBR), Bovine Viral Diarrhea virus (BVD), Parainfluenza 3 virus (PI3), Bovine Respiratory Syncytial virus (BRSV) and possibly another agent commonly found, Bovine Coronavirus (BCV). Viruses are known to damage the lining of the respiratory tract and some will actually suppress the immune system, allowing secondary bacterial infection. Once established in the lung, the bacterial components are responsible for the inflammation and bronchopneumonia signs seen with BRD. Combinations of different bacteria can work synergistically to cause more severe disease than if operating alone. There are no early clinical signs that indicate *Histophilus* is part or all of the disease problem, other than it occurs later after arrival than most cases of BRD. The *Histophilus somni* Disease Complex (HSDC) is a term used to describe the respiratory disease when HS reaches the lungs and the complications from “septicemia”, when HS leaves the lungs and lands in the brain, heart and joints. Components of the HSDC include:

1. Rapidly Fatal Pneumonia: Some animals with HS pneumonia are simply found dead due to a rapidly fatal type of damage to the lung called “severe fibrinous pleuritis”. Currently, this is the most common manifestation of HS in western Canadian feedlots and is seen 30-90 days after arrival. Rarely are abnormalities found in any other organ besides the lungs which are covered in a thick sheet of fibrin and the lungs are often remarkably collapsed underneath.
2. Bronchopneumonia: Some calves with HS develop typical signs of BRD including depression, separation from the group, off feed, cough, excessive nasal discharge and difficult or rapid breathing. Respiratory signs with fever of 104°F or above confirms the diagnosis of BRD but detection of the bacteria and/or viruses involved must be done at a diagnostic laboratory. Treatment is often very difficult and unrewarding in the field although in the laboratory, the bacteria is susceptible to many antibiotics.
3. Heart Muscle damage: HS can cause a “necrotizing myocarditis” when it localizes in the muscles of the left ventricle of the heart. Death can be rapid with no previous signs (a heart attack) or chronic forms lead to “poor doers”.

4. TME: Thrombotic meningoencephalitis-myelitis or “TME” is a disease of older calves and yearlings affecting the brain. During an outbreak, individual cases occur sporadically in separate pens in a feed yard. Signs include depression, fever, blindness, coma and death; this can look similar to signs seen with polyoencephalomalacia or “brainers”. Treatment is most often unrewarding.
5. Other Manifestations: Arthritis with joint swelling may follow episodes of pneumonia. Middle ear infections with drainage from the ear canals may also be seen.

Diagnosis of *Histophilus somni* pneumonia in a live calf is challenging because it is present in the upper airways of both healthy and diseased calves so swabs taken from deep in the nose will not tell the story of what is actually happening in the lungs. Only lung fluid removed from the lung via bronchoalveolar lavage can be used for culture or molecular assays such as PCR to identify the organism. The organism is very difficult to grow in the laboratory, especially if the calf was treated with antibiotics, so PCR is strongly recommended for detection. Mixed lung infections with other disease-causing bacteria such as *Mannheimia haemolytica* and *Pasteurella multocida* can easily overgrow *Histophilus somni* on a culture plate so the identification is easily missed when relying on traditional bacterial culture methods alone.

Prevention depends on sound biosecurity and biocontainment practices. Because HS pneumonia or septicemia may develop secondary to viral infections (especially BVD) or in combination with other bacterial pathogens, control should begin with minimizing the effect of well-recognized factors predisposing to BRD. Stress plays a major role in disease through immunosuppression so excellent nutrition, sound vaccination protocols and management are critical. There are numerous challenges to production of an effective vaccine to prevent *Histophilus somni* infections. In spite of all the considerable amount of work on bacterin-based HS vaccines, there is no direct proof that these vaccines are effective under field conditions. Consult with your local veterinarian for the best management plan for your operation.

The following steps should reduce the risk of pneumonia in feeder calves:

1. Vaccination with a 5-way respiratory virus vaccine and a *Mannheimia haemolytica* toxoid. Use of an intranasal vaccine for the viral fraction is recommended in high risk cattle to keep appetite up and reduce vaccine-induced fever.
2. Cattle with extremely low blood concentrations of the trace elements selenium and copper have difficulty fighting any disease challenge. An injectable trace mineral supplement (such as Multimin 90) is often needed to boost the copper and selenium levels during the initial arrival period.
3. Metaphylactic treatment (treatment of all calves on arrival) of high risk calves with long-acting antibiotics is a well-established, beneficial procedure that can reduce morbidity (sickness) and case fatality (death) by up to 50% in high risk calves. Be aware that overconfidence in and reliance on metaphylaxis and long-acting antibiotics can lead to delayed follow-up treatment if calves are not adequately monitored.
4. Feed bunks and watering troughs are known areas for disease transmission. Keep sick cattle, especially chronic pneumonia calves, away from healthy calves and manage the feed and water separately.
5. Eliminating exposure by reducing unnecessary traffic through the farm, isolating new arrivals, good sanitation and treating sick cattle early will help reduce the risk of disease spread.
6. Buying preconditioned calves that have been weaned and vaccinated for respiratory diseases prior to weaning (especially BVD) and dewormed will help minimize sickness and death loss.

In summary, the clinical features of disease caused by *Histophilus somni* are often confused with other diseases commonly seen in the feedlot. Response to antibiotic therapy is frequently very poor due to biofilm protection. Diagnosis in a live calf can be difficult since *H. somni* is often recovered from nasal swabs of healthy calves so the presence of the bacteria in the nose of a sick calf does not prove it is causing disease. It is also a difficult bacterium to grow in the laboratory, especially if the calf has been recently treated with antibiotics. Future research will focus on the relationship between HS and other respiratory pathogens, developing improved diagnostic tests, monitoring antibiotic effectiveness and development of new vaccines for prevention of disease.

## **Stirring the Pot at Weaning**

*Dr. Jeff Lehmkuhler, Associate Extension Professor, University of Kentucky*

The many challenges facing the beef industry today sometimes can seem a bit overwhelming. Issues such as lab grown meat, trade negotiations, genomics, antibiotic utilization, sustainability, and so many other issues are thrown into the stone soup of beef production. At some point you have to wonder when will the soup be spoiled by so many spices. The best thing you can do is be familiar with the components you are adding. This means we need to be as informed as we possibly can about our industry's driving forces.

What main ingredient is stirred into the industry "soup pot" every fall? This time of year folks are weaning and marketing their spring-born calf crop. Weaning is a transition phase for calves and, to keep our "soup" from spoiling, we need to be knowledgeable of management practices that can reduce the stress that calves experience due to the many changes during this period. Stressors a calf may experience at this time include dam and herd separation, diet change from milk and grass to hay and grain, castration / dehorning, and altering the physical location of calf from pasture to a drylot pen. All these factors can stress the calf (add spice to the soup pot) especially if another "spice" is added. A major spice that can ruin the weaning soup is weather. The drastic weather changes we experienced this past week (daily average temperature dropped 30-35 degrees F in one week) add a major "spice" to the stressed-calf soup pot. The weather impacts our markets that were a bit soft the other week as yards had muddy pen conditions and perhaps were reluctant to place bawling calves. You can't control the weather, but you can control when and how you market the calf crop.

What is the normal "recipe" for weaning soup? 1) Abruptly remove calves from their dams, 2) load them into a trailer to transport them to market facility, 3) separate them from herd mates, 4) haul them to an unfamiliar location and commingling with strange calves, and 5) transport them several hours to a completely different state with different climate conditions and surroundings. No wonder this soup often spoils?! We have all seen this recipe before. The question is how long will we be allowed to make this entrée?

Change is hard and replicating the perfect recipe often never happens. However, the more care we take to follow the recipe the greater the chance the results will be similar to the last time. Vaccinating calves prior to weaning will boost immunity. Weaning on pasture eliminates the physical location change. Fenceline weaning may ease dam separation and allow calves to rebound quicker. Castrating and dehorning at a young age is one more element that does not have to be associated with this time of year. By planning and applying simple management practices and making slight alterations, we have changed our recipe and in many instances simplified our weaning recipe.

Less stress on the calf, means less stress on you. This is not the only reward. In many markets this fall it appears that the value of a weaned calf is being communicated and higher prices are being paid. I will argue that sometimes you shouldn't have to be rewarded for doing what is right, but that's an argument we can have over dinner sometime.

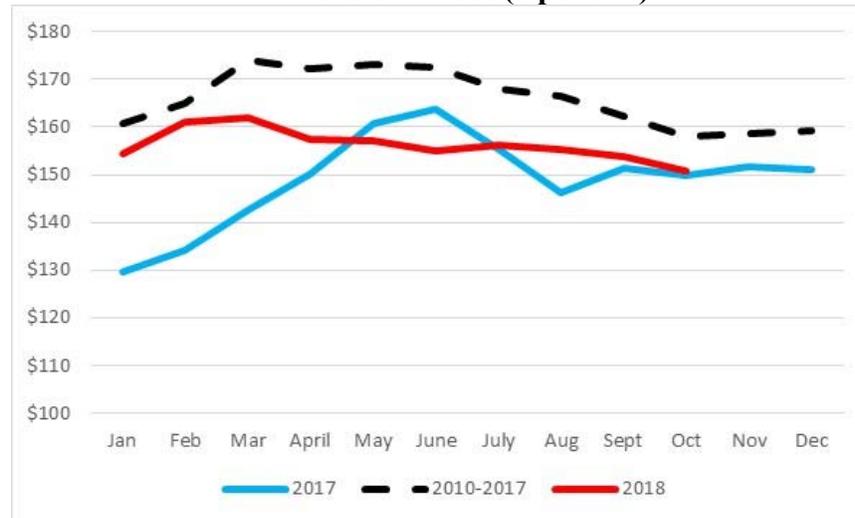
## **Kentucky Beef Cattle Market Update**

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

The cattle markets continue to be at higher levels than I would have projected this time last year given production levels for all major meats. A lot of large groups of 800-900 lb steers are still moving in the \$150's. Exports have remained strong and I also think the overall strength of the US economy has encouraged solid beef movement. Heavy feeders moving now, are still being sold based on strong spring CME© Live Cattle futures prices, but as is always the case, there is a sizeable drop from April to June. I don't expect heavy feeders to hold at these levels as we move towards the end of the year and the summer live cattle contracts become the driver.

Calf markets have also held pretty well through the first part of fall. Some of this is due to a relatively strong spring feeder cattle board, but there is also little question that good fall forage growth has spread fall calf runs out more than usual. Figure 1 shows Medium & Large Frame #1-2 steer prices at Kentucky auctions. As I wrote this, I just had two weeks of October prices to include, but I did go ahead and roll October into the chart. You will notice a significant drop from September to October and most of this occurred in the second week of this month. State average prices fell by about \$5 per cwt from the first week to the second.

**Figure 1. 550# Medium & Large Frame #1-2 Steers  
KY Auction Prices (\$ per cwt)**

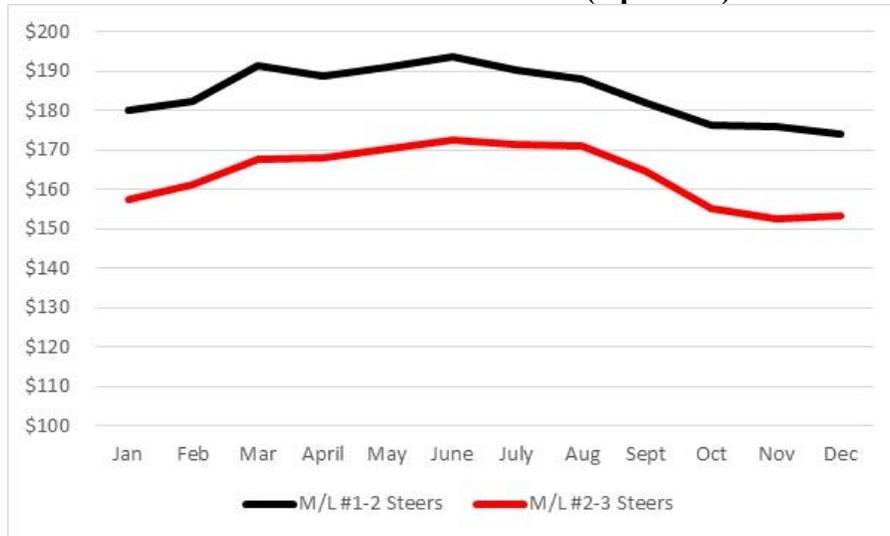


Source: USDA-AMS, Livestock Marketing Information Center, Author Calculations

As I was thinking about price levels and cow-calf revenues this fall, it occurred to me that I always show Medium & Large Frame #1-2 Steer prices for my price charts. This is primarily because that is the best dataset that I have available and I tend to use that as an index for our calf markets. But, USDA-AMS does track Medium & Large Frame #2-3 steer prices as well. Although there are a few weekly gaps in this series, it does give us an opportunity to look at how much price discount is typically seen when calves fall into the lighter muscling, 2-3 category.

I pulled the last five years of prices for both groups in order to do a simple comparison. From 2013 to 2017, the average monthly price differential between Medium & Large Frame #1-2 steers, and those falling into the #2-3 category, was \$20.74 per cwt. On a 550 lb steer calf, this is well over \$100 per calf. Much like frame size, muscling has a very significant impact on calf values and is something that producers should be aware of as they make genetic and culling decisions about their cow herds. A quick summary can be seen in figure 2. (Note that price levels are very high because the chart only includes 5 years and 2014 and 2015 are pulling the averages upward).

**Figure 2. 550# Medium & Large Frame Steers (#1-2 vs #2-3)  
KY Auction Prices 2013-2017 (\$ per cwt)**



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