

OFF THE HOOF

Kentucky Beef Newsletter November 2017

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

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Timely Tips

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

Spring-calving cow herd

- If you need to replace cows, consider buying bred heifers in some of the Kentucky Certified Replacement Heifer sales which are being held across the state this month.
- Extend grazing for as long as possible to decrease the amount of stored feed needed.
- Evaluate body condition of cows. Sort thin (less than CS5) cows away from the cow herd and feed to improve their condition. Two and three-year olds may need extra attention now. These cattle can use the extra grass that has accumulated in this exceptional growing season.
- Dry cows in good condition can utilize crop residues and lower quality hay now (but don't let them lose any more body condition). Save higher quality feed until calving time. Keep a good mineral supplement with vitamin A available.
- Culling decisions should be made prior to winter feeding for best use of feed resources. Consider open, poor-producing and aged cows as candidates for culling.
- A postweaning feeding period will allow you to put rapid, economical gains on weaned calves, keep them through the fall "runs" and allow you to participate in Kentucky CPH-45 sales. Consider this health and marketing program which is designed for producers which are doing a good job of producing high quality feeder calves.
- Replacement heifers require attention during the winter, too. Weaned heifer calves should gain at an adequate rate to attain their "target" breeding weight (2/3 of their mature weight) by May 1.

Fall-calving herd

- Continue to watch fall-calving cows. Catch up on processing of calves including identification, castration and vaccinations.
- Cows that have calved need to go to the best pastures now! Help them maintain body condition prior to breeding in December.

- Vaccinate the cows while they are open and prior to the breeding season. Move cows to accumulated pasture or increase feed now.
- Start the breeding season in late November or early December for calving to begin in September of 2017. If you are using AI and/or estrous synchronization, get your supplies together now. Don't forget Breeding Soundness Evaluations (BSE) on your bulls. Make final selection of replacement heifers now.

General

- Have your hay supply analyzed for nutritive quality and estimate the amount of supplementation needed. Consider purchasing feed now.
- Take soil tests and make fertility adjustments (phosphate, potash and lime) to your pastures.
- This is a good time to freeze-brand bred yearling heifers and additions to the breeding herd.
- Graze alfalfa this month after a "freeze-down" (24 degrees for a few hours).
- Don't waste your feed resources. Avoid excessive mud in the feeding area. Hay feeding areas can be constructed by putting rock on geotextile fabric. Feed those large round bales in hay "rings" to avoid waste. Concrete feeding pads could be in your long range plans.

She's Been A Good 'Un

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

I mentioned in last month's article that picking a time to cull cows could be tricky. It is usually a straightforward decision in cases of open cows, lame cows or those with bad dispositions. However, culling old cows that have been "good ones" and are still producing can be a difficult decision. Despite all the "chatter" from our critics, we are the ultimate animal welfare people! We want to treat animals humanely but still be economically responsible. So culling cows while they are still healthy and have value but before they suffer the ill effects of old age is a part of good management.

Let's take the case of cow no. 311N (shown in the pictures) at the UKREC. She's 14 years old and never had a bad day. Her time is spent grazing in the morning then walking over to the shade and lying down to "chew her cud". She has also raised a good calf every year since she was two years old. So we've been good to her and she's been good for us.

Cow 311N has a nice bull calf by her side this year but she's showing her age. She is losing body condition for the first time in her life and is walking with a stiff gait. It's time to make a decision about her future. A close look at her teeth (see picture) reveals that she has a "smooth mouth" (her teeth are worn off). Grazing anything but lush forage will be a challenge and going into the winter with a calf at side will not be easy. She's not moving well either. The last picture shows that she has corns and abnormal hoof growth. So she may become lame very soon.

So what do we do? That's not an easy decision but I think that we will keep her until she can wean this calf – put her in drylot and feed her if necessary. But we will not let her starve or die a slow death. You see; if we do this right, she will be culled while she is pain-free and still has value in the market place. And yes, she will be harvested as painlessly as possible, too.

Some opponents of animal agriculture might think that we should just let them die a slow death and return to the earth (and our water supply). But I'm kind of fond of 311N and don't want to see that happen. We are committed to doing things the right way and, although it isn't always easy, we should know better than anyone else about what's best for our cows. After all, we have provided for some of them for many years on family farms (not factory farms!). Knowing when to get rid of the bad ones is easy but knowing when to cull older cows that have been productive is a difficult decision. Sooner or later we have to decide about the best course of action. Here's to 311N and all of the good 'uns out there!



Chronic Pneumonia in Feeder Calves? Thank *Mycoplasma Bovis*

Michelle Arnold, DVM (Ruminant Extension Veterinarian, UKVDL), University of Kentucky

In this era of advanced vaccine technology and long-acting, expensive, powerful antibiotics, why do chronic pneumonia cases (“chronics”, “lungers”, “railers”) continue to occur? *Mycoplasma bovis* is considered the bacterial pathogen most often responsible for the development of chronic pneumonia in feeder operations. While *Mannheimia haemolytica* causes the dramatic pneumonia signs of fever, depression, appetite loss and rapid death, *Mycoplasma bovis* (*M. bovis*) is the underlying problem that continues to send calves back to the treatment pen. The organism has several unique survival mechanisms allowing it to dodge the immune system and suppress the calf’s normal response to disease. Once it establishes infection in the lungs, it can travel in the bloodstream to joints, organs, and nerves. These calves generally stay relatively alert with a fair appetite and are seldom pulled quickly for treatment. It may take 7-14 days after the lungs are severely affected before a calf shows dramatic clinical signs and, by that time, permanent damage has already occurred. In the absence of consistently effective vaccines, management practices and prompt treatment are crucial to controlling *Mycoplasma pneumoniae*. Because the disease is spread by close and repeated contact, improving ventilation, sanitation and reducing stocking density will disrupt the spread of *Mycoplasma*. The two most important factors in the treatment of *Mycoplasma pneumoniae* are early recognition and prolonged therapy. Metaphylaxis, where treatment is applied to the whole group (either on arrival or once 10-20 % of the calves are showing clinical signs of bovine respiratory disease or “BRD”), is one way to get an early start on *Mycoplasma*. Continuous therapeutic levels of effective antibiotics for 10 to 14 days are necessary because, without this, 30 to 70% of the calves will relapse, causing more lung damage, and requiring further treatment.

Traditionally, *Mycoplasma bovis* was considered normal bacteria in the nasal passages of healthy calves but with stress such as transportation and commingling, it descended into the lungs and spread throughout the body causing disease. However, recent studies found the *M. bovis* observed during BRD outbreaks are often due to calf-to-calf transmission of one strain among the cattle. Infection is widespread once cattle reach a feedlot situation; after 2 weeks on feed studies found 40-100% of calves will carry the organism. The disease is spread by close and repeated contact with nasal secretions of infected calves, especially in areas with poor ventilation and overcrowded facilities. The source of the *M. bovis* clones that spread among pen mates is either newly purchased calves or chronic calves housed in neighboring pens. There is evidence that transportation and other stressors (such as weaning, commingling, or extreme weather) increases shedding and therefore spread of the organism. Historically, the environment (watering troughs, feed bunks, bedding, old round bales of hay) has not been considered a major risk factor for spread of disease but new evidence has shown that *M. bovis* can persist longer under cool, damp, shaded conditions than previously thought and can be an important source of the organism.

There are no early clinical signs that indicate *Mycoplasma* is a problem at first treatment. Cattle are typically pulled for evaluation and treatment based on one or more of the following signs: depression, separation from the group, lack of rumen fill or “guttled” appearance, cough, excessive nasal discharge and difficult or rapid breathing. Respiratory signs with fever of 104°F or above confirms the diagnosis of BRD. However, certain later clinical signs strongly suggest *M. bovis* involvement:

1. Late Pneumonia-Usually 3-4 weeks after arrival to the backgrounder/ stocker operation/feedlot or 1-2 weeks after an initial treated case of pneumonia
2. Initially treated as routine case of respiratory disease (BRD) but calf does not respond to antibiotic treatment or suffers repeated relapses of pneumonia after antibiotic therapy.
3. Moderate fever/ Occasional cough
4. Development of lameness with swelling and pain in one or more joints, commonly the stifle, carpus (“knee”), hock and elbow may occur in 15-50% of cases. Some cases of pneumonia appear to respond to therapy but develop lameness without reappearance of the respiratory component.
5. Extreme weight loss (Wasting or “cachectic”)
6. A small percentage develop ear infections with drooped ear that occasionally drain pus.

Diagnosis of *Mycoplasma pneumoniae* in a live calf is challenging and is based on the history of repeated antibiotic therapy and clinical signs of chronic pneumonia and sometimes arthritis. Only lung fluid removed from the lung via bronchoalveolar lavage can be used for culture or PCR to identify the organism. The diagnosis can be made most reliably at necropsy if *Mycoplasma bovis* is cultured in an animal with lung lesions as seen in Figure 1. Arthritis is present in 15%-50% of cases with the stifle joint most commonly affected. Mixed lung infections with other disease-causing bacteria such as *Mannheimia haemolytica*, *Pasteurella multocida*, and *Histophilus somni* are common but antibiotic therapy may eliminate these other bacteria that initiated and/or contributed to disease.

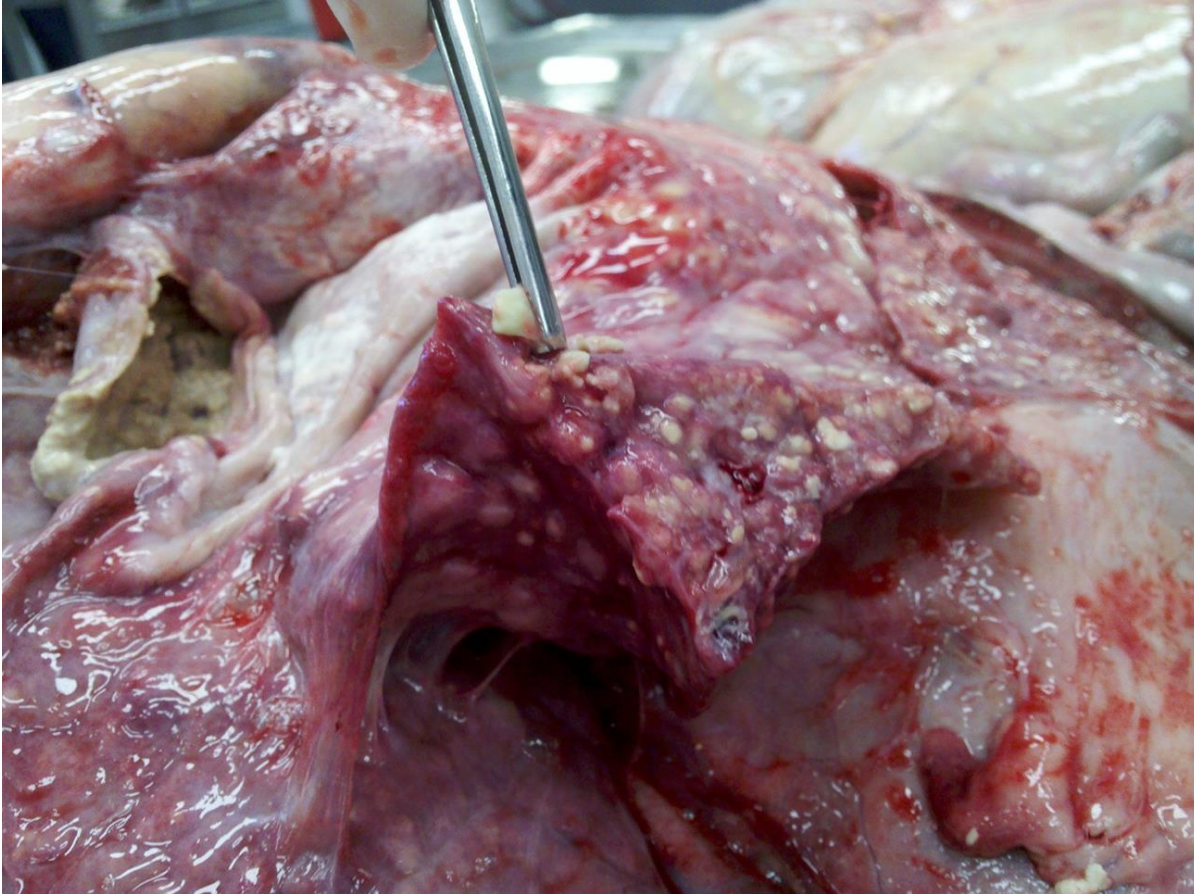


Figure 1: Caseonecrotic lung lesions of *Mycoplasma bovis* (Photo courtesy of UKVDL)

Response to antibiotic treatment is variable and frequently unrewarding. *Mycoplasma* organisms have no cell wall and are unaffected by penicillin and other “beta lactams” (Polyflex, Excenel, Excede, Naxcel) that kill bacteria by destroying the cell wall. Currently Draxxin, Baytril and NuflorGold (available by prescription only) are FDA approved to treat *Mycoplasma pneumoniae*. Use of other antibiotics is considered “Extra label” and requires a valid veterinary/client/patient relationship. These antimicrobials provide an opportunity for the host’s immune response to develop and counteract infection, but *M. bovis* has defense mechanisms that include an ability to vary its surface proteins and to form protective biofilms, making it difficult for antibodies to do their work.

The two most important factors to keep in mind regarding treatment are:

1. Early recognition and treatment and timely assessment of response to therapy is crucial.
2. Prolonged treatment is necessary (continuous therapeutic levels for 10-14 days). The feed additive Chlortetracycline (CTC) is often used for extended therapy after an injectable antibiotic. Because *M. bovis* is frequently found in conjunction with *Pasteurella multocida* in cases of BRD, the following indication for use is necessary on the Veterinary Feed Directive (VFD) for Aureomycin (CTC):

Calves, Beef and Non-lactating Dairy Cattle: Treatment of bacterial enteritis caused by *Escherichia coli* and

bacterial pneumonia caused by *Pasteurella multocida* organisms susceptible to chlortetracycline.

Drug Concentration:

- Complete Feed g/ton (500 to 4,000 g/ton to provide 10 mg/lb body weight/day)
- Top Dress g/ton (4,000 to 20,000 g/ton to provide 10 mg/lb body weight/day)

Duration of Feeding: days (Feed for not more than 5 days)

- USE OF FEED CONTAINING THIS VETERINARY FEED DIRECTIVE (VFD) DRUG IN A MANNER OTHER THAN AS DIRECTED ON THE LABELING (EXTRA-LABEL USE) IS NOT PERMITTED.

Prevention depends on sound biosecurity and biocontainment practices. Because *M. bovis* pneumonia or polyarthritis may develop secondary to other viral (especially BVD) or 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, vaccination protocols and management are critical. There are numerous challenges to production of an effective vaccine to prevent *M. bovis* infections. Among these challenges are duplicating the roles of other respiratory pathogens and their interaction with *Mycoplasma*, and the need for a “challenge model” that reproduces the disease in the laboratory as seen in the field. In spite of all the considerable amount of work on bacterin-based *M. bovis* vaccines, there is no direct proof to date 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 *Mycoplasma pneumoniae* in feeders:

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 levels of the trace elements selenium and copper have difficulty fighting any disease challenge. An injectable trace mineral supplement (such as Multimin) 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. Keep chronics away from calves treated for the first time to minimize the spread of *Mycoplasma*.
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.
6. Buying preconditioned calves that have been vaccinated for respiratory diseases prior to weaning (especially BVD) and dewormed will help minimize sickness and death loss.

Several studies have reached the conclusion that up to 60% of cattle entering the chronic pen can survive and reach slaughter. The question becomes how to maximize the number that recover and minimize the time on the farm for those that won't. The chronic pen should provide a comfortable, well-bedded environment with good footing and easy access to feed and water. It is recommended to weigh and examine all chronically ill cattle regularly to assess changes in weight, temperature, and other clinical signs including lameness. Calves in the chronic pen should be categorized into those that: 1) need further treatment, 2) can return to their home pen, 3) are eligible for salvage slaughter or 4) must be euthanized due to continued weight loss from pneumonia and lameness. It may take **a month or more** before there is adequate improvement in lameness and weight gain to return to a pen. Lameness may never resolve completely but the animal may be fit for slaughter if body condition is adequate, drug withdrawal times are complete, and the animal can be humanely transported. There is little else that can be done with chronic calves besides providing an opportunity for convalescence but terminating them if no hope for recovery.

In summary, the clinical features of chronic pneumonia, recurrent treatment failure, and lameness caused by arthritis are highly suggestive of infection by *Mycoplasma bovis*. It can act on its own but most often it does its damage in conjunction with other bacteria and viruses and may take over lung lesions initiated by other bacteria. Response to antibiotic therapy is often limited and drugs such as penicillins and cephalosporins are useless because of the bacteria's lack of a cell wall. Diagnosis can be difficult since *M. bovis* 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. *M. bovis* is responsible for a large proportion of chronics and the fate of these animals is an important management task. Future research will focus on the relationship between mycoplasmas and other respiratory pathogens, developing improved diagnostic tests, monitoring antibiotic effectiveness and evaluation of vaccines for prevention of disease.

Don't Forget to Preg Check Your Cows

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

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.

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. A quick google search will help you find the closest lab. Usually, the cost is about \$1.50-2.00 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).

Schedule to get pregnancy diagnosed in your cows. Few management tools are available that will save you more money.

Kentucky Beef Cattle Market Update

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

The feeder cattle market did give back some of its fall gains in the last couple weeks as fed cattle prices pulled back from their highs. At the time of this writing (November 15, 2017), spring CME© live cattle futures have dropped roughly \$5 per cwt from their early November highs and feeders have followed suit. While my charts below only show monthly prices through October, the first couple weeks in November did suggest slightly lower prices. This is not unusual for November, but I do not view this as a typical “seasonal” price drop. In this case I think it is directly in response to lower fed cattle prices, which had really been on a tear since August. There is still very little indication that we have seen major calf runs and given weather conditions and lower feed prices, we may not see our typical fall runs at all.

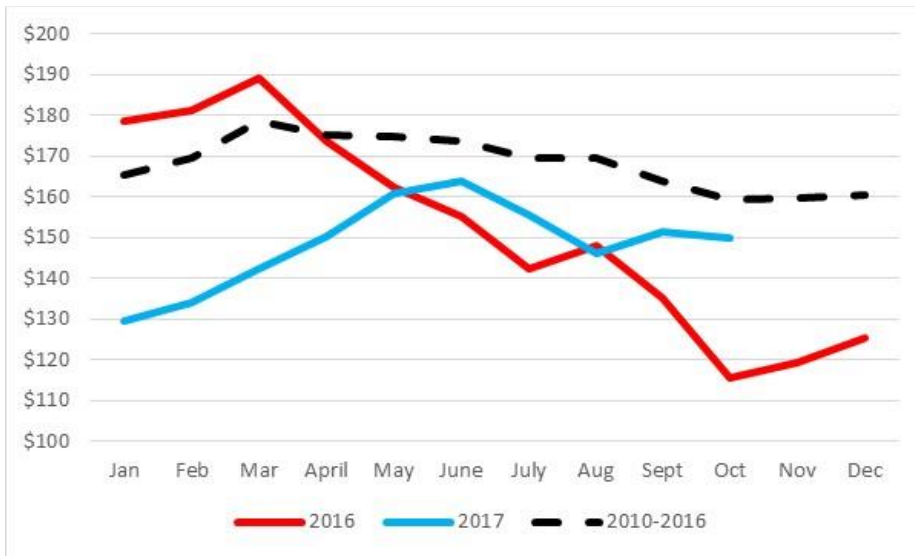
One dynamic that producers have commented on is the lack of market separation between calves and heavy feeders. Even a quick glance at the charts below shows very little price difference per cwt in 550 lb steer calves and 850 lb feeder steers. Some of this is due to overall market price levels and some it is also due to cheaper feed prices this fall, but the primary reason is a simple matter of timing.

Feeder cattle values are ultimately driven by their eventual value as fed cattle and the cost of finishing them. The timing issue in the fall primarily comes down to when those feeder cattle would be finished. As of mid-November, there was nearly an \$8 per cwt decrease in CME© live cattle futures from April to June and roughly an \$11 per cwt decrease from April to August. Those heavy feeder cattle, that can be finished sooner and hit that higher spring fed cattle market, are clearly going to have much greater value when sold as fed cattle. Feedyards know this and as they bid against each other to place those heavy feeders, they bid their prices upward in response. Conversely, those lighter calves would be on feed a longer period of time and would be sold on the lower summer fed cattle market. This is actually a pretty common market dynamic in the fall, but it just seems more pronounced this year than usual.

Given the expected decrease in fed cattle prices from spring to summer, it is very unlikely that current prices for heavy feeders can be sustained without some outside factor emerging. However, there are some additional factors that are likely to impact calf markets in the next couple months. First, local feed prices are such that the cost of growing calves this winter is lower than it has been for a while. This makes these calves pretty attractive to winter backgrounders. Couple this with the fact that we are not seeing a lot of calves move through markets due to exceptional fall weather, and we should continue to see support for calf prices.

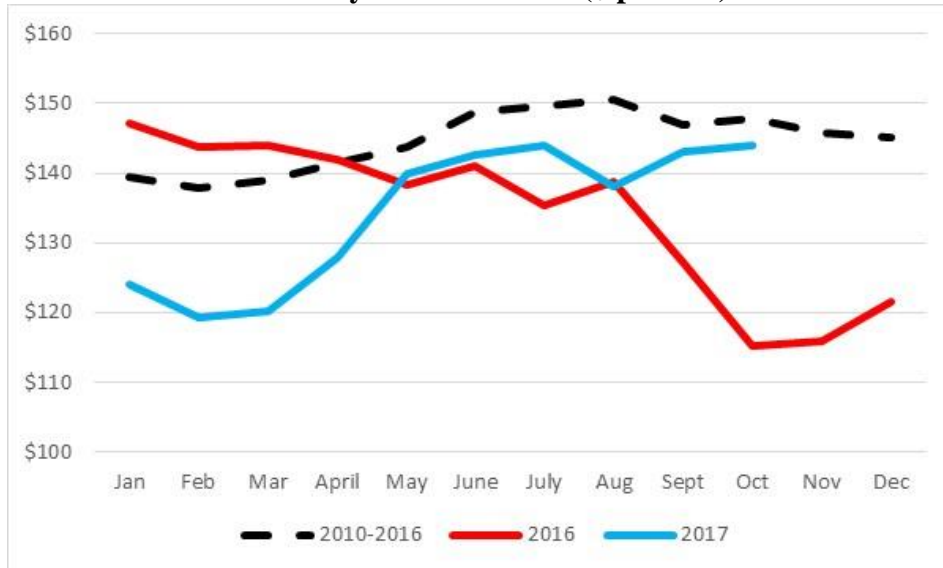
Secondly, we are now approaching the time when wheat grazing becomes relevant. Grazeout programs often set a foundation under our fall / winter calf markets and they are likely to do so again this year. I was on a conference call with some colleagues earlier this week and several in the southern plains were discussing this. The general consensus was that wheat was planted and was up, but that placements had not been large thus far. However, they indicated that they thought overall interest in grazeout was strong and they expected a lot of placement in the near future. As these winter grazers start looking to place calves into winter programs, they will be competing with winter backgrounders and feedyards for these calves.

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



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

**Figure 2. 850# Medium & Large Frame #1-2 Steers
Kentucky Auction Prices (\$ per cwt)**



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