COOPERATIVE EXTENSION SERVICE
UNIVERSITY OF KENTUCKY COLLEGE OF AGRICULTURE, FOOD AND ENVIRONMENT, LEXINGTON, KY 40546

OFF THE HOOF

Kentucky Beef Newsletter March 2017

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

Contents

This month's newsletter includes:

Timely Tips

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

Spring-Calving Cows

- Continue grass tetany prevention. Be sure that the mineral mix contains high levels (~15%) of magnesium and that cows consume adequate amounts. You can feed the UK Beef IRM High Magnesium mineral.
- Check cows at least twice daily and first-calf heifers more frequently than that. Be ready to assist those not making progress after 1 to 2 hours of hard labor. Chilled calves should be dried and warmed as soon as possible.
- See that each calf gets colostrum within an hour of birth, or administer colostrum (or a commercial colostrum replacement) with an esophageal feeder, if needed.
- Identify calves with eartags and/or tattoos while calves are young and easy to handle and record birthdate and Dam ID. Commercial male calves should be castrated and implanted as soon as possible. Registered calves should be weighed in the first 24 hours.
- Separate cows that have calved and increase their feed. Energy supplementation to cows receiving hay is necessary to prepare them for rebreeding. For example, a 1250 lb cow giving 25 lb/day of milk would need about 25 lb of fescue hay and 5 lb of concentrate daily to maintain condition. If you need to go from a condition score of 4 to 5, you will need to add about 2 more lb of concentrate. Cows must be in good condition to conceive early in the upcoming breeding season.
- Watch for calf scours! If scours become a problem, move cows which have not calved to a clean pasture. Be prepared to give fluids to scouring calves that become dehydrated. Consult your veterinarian for advice and send fecal samples to diagnostic lab to determine which drug therapy will be most effective. Try to avoid feeding hay in excessively muddy areas to avoid contamination of the dams' udders.
- Plan to vaccinate calves for clostridial diseases (Blackleg, Malignant Edema) as soon as possible. You might choose to do this at the prebreeding working in late April or early May.

- Obtain yearling measurements on bulls and heifers this month (weight, height, pelvic area, scrotal circumference, ultrasound data, etc.) if needed for special sales. Heifers should be on target to be cycling by the start of the breeding season.
- Finalize plans for your spring breeding program. Purchase new bulls at least 30 days before the breeding season – demand performance records and check health history including immunizations. Use visual evaluation and expected progeny differences (EPD's) to select a bull that fits your program. Order semen now, if using artificial insemination.
- Prepare bulls for the breeding season. Increase feed if necessary to have bulls in adequate condition for breeding.

Fall-Calving Cows

- Creep feed calves with grain, by-products or high quality forage. Calves will not make satisfactory gains on the dam's milk alone after about 4 mos. of age – since there isn't much pasture in March, fall calves need supplemental nutrition. Consider creep grazing on wheat pasture, if available. Calves can also be early-weaned.
- Bull(s) should be away from the cows now!
- Plan to pregnancy check cows soon. You can also blood test for pregnancy 30 days after bull removal.
- Calves intended for feeders should be implanted.
- Consider adding weight and selling your fall calves as "heavy" feeder calves. Keep them gaining!

General

- Watch for lice and treat if needed.
- Repair fences, equipment and handling facilities.
- If you have a dry, sunny day, use chain-link harrow to spread manure in areas where cattle have overwintered. This may be done in conjunction with renovation.
- Renovation and fertilization of pastures should be completed.
- Start thistle control. They can be a severe problem in Kentucky pastures. Chemical control must be done early to be effective.

Don't Dumb It Down to Fit In!

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

I had just finished high school and it was early summer. All of my relatives from "up north" were back in Tennessee for "decoration day" and the annual family picnic at the state park. Some aunts and uncles gave me graduation gifts to honor my recent accomplishment and the conversation soon turned to my career plans. I am sure that some relative would have given me the usual ride north to a car factory but my mother told them that I was "going to college".

Most of my family seemed genuinely impressed but one of my relatives quickly added that "Roy is going to be an educated farmer!". That sounded about right but I didn't understand why some found it amusing. I could say that I didn't think anything of it but, since I still remember it after 50 years, you would know that I was lying.

I, as all young folks do, was facing a crossroads. Decisions that we make early in our lives have long-lasting effects on what we will do and who we will become. We can get motivation from a variety of sources. It is especially good to have a support system that always provides encouragement, but sometimes critics and doubters can provide some motivation too!

It is obvious that some of my relatives did not have a full appreciation for the technical nature of our

agricultural pursuits. In fact, I helped one of my uncles cut tobacco that summer and one of our conversations went something like this:

> "So you're going to school to be a farmer."
> "Well, I want to study animal sciences."
> "To learn about cows?"
> "Yeah."
> "Well, I had a cow to lose her cud the other day."
> "She lost her cud?!"
> "Sure did. You know what I did?"
> "What?!"
> "I stuffed a greasy dish rag down her throat. What do you think about that?"
> "Did she live?"
> "Yep."
> "Well, I think that was great!!"

Sometimes, like this one, you don't want to come across as a "smart aleck" but we may try too hard to fit in. I have changed some lately. After a long career as an educated farmer, I will admit that I am proud that I tried and succeeded in obtaining three degrees. I value education and think that it is more important than ever. I will not "dumb-down" agriculture or butcher the "queen's English" just to fit in. I am proud of my agricultural and rural heritage, and I can tell you that some of the smartest people that I have met are farmers and cattle producers.

I am concerned about what I see as a trend to dumb-down everything and try to fit in with the lowest common denominator to prove that we haven't gotten above "our raising". We now, more than ever, should value and support education and our scientific advances. You don't have to spit, dip, chew, cuss and talk like you "ain't got no book learning" to fit in. Stop it – our children are watching.

March 30th Grazing Management of Winter and Summer Annuals Field Day

Mr. Jacob Brandenburg, Master Grazer Coordinator, University of Kentucky

Participants will have the opportunity to learn more about utilization of annuals and how they can improve their pastures from UK Extension Specialist and County Agriculture and Natural Resource Agents. Topics that will be discussed are as follows:

- Economics and utilization of summer annuals.
- Spring management of cool season annuals.
- Assessment of paddocks and management for summer months.
- Utilizing frost seeding clover to improve.

Date: Thursday, March 30th, 2017
Location: UK Research and Education Center
Princeton, KY
1205 Hopkinsville Street
Princeton, KY 42445-0469
Time: 10:00 AM- 3:05 PM (CDT)

Please RSVP by calling the Calloway County Extension Office at 270.753.1452 or the Muhlenberg County Extension Office at 270.338.3124

Lunch will be provided

Preparing Cows for Breeding

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

A successful breeding season actually begins with management decisions made at calving. Cattlemen can impact rebreeding efficiency by focusing on body condition score (BCS), early assistance during calving difficulty, scheduling a breeding soundness exam for the herd sires, planning their herd reproductive health program, and developing a plan to regulate estrus in their first-calf heifers and late-calving cows.

Reproductive management begins with evaluation and management of BCS. Body condition score is a numerical estimation of the amount of fat on the cow's body. Body condition score ranges from 1-9; 1 is emaciated while 9 is extremely obese. A change in a single BCS (i.e. 4-5) is usually associated with about a 75-pound change in body weight. Evaluation of BCS prior to calving and from calving to breeding is important to ensure reproductive success.

Rebreeding performance of cows is greatly influenced by BCS at calving. Cows that are thin (BCS < 5) at calving take longer to resume estrous cycles and therefore are delayed in their ability to rebreed. Research has clearly demonstrated that as precalving BCS decreases, the number of days from one calving to the next (calving interval) increases in beef cows. Females with a precalving BCS of less than 5 tend to have production cycles greater than 1 year. For example, cows with a precalving BCS of 3 would be expected to have a calving interval of approximately 400 days, while a cow with a precalving BCS of 6 would have a calving interval of approximately 360 days. South Dakota research illustrates the influence of precalving BCS on the percentage of cows that initiated estrous cycles after calving. This experiment demonstrated that the percentage of thin cows that were cycling in the first month of the breeding season (June) was considerably lower than for cows that were in more moderate body condition. During the second month of the breeding season, 55% of the cows with a BCS of 4 had still not initiated estrous cycles, while more than 90% of the cows in more moderate condition had begun to cycle. Thin cows need a longer breeding season, which results in more open cows in the fall. They may also result in lighter calves to sell the next year because the calves from these thin cows will be born later in the calving season.

Management of BCS after calving also impacts rebreeding efficiency. Maintenance requirements for energy and protein increase 25-30% for most beef cows after calving. Ranchers need to plan their supplementation to match or exceed this increased nutrient requirement. Rebreeding efficiency is enhanced in cows that calved thin if their energy intake is increased. Although the best management plan is to calve cows in a BCS of 5+, increasing the energy to cows that are thin at calving can boost reproductive performance.

Dystocia (calving problems) can severely delay the onset of estrus after calving. Research shows that for every hour a female is in stage 2 active labor there is a four-day delay in the resumption of estrous cycles after calving. Early intervention helps; 16% more cows conceived when cows were assisted within 90 minutes of the start of calving. The best method is to reduce the incidence of dystocia via selection but early calving assistance will increase the opportunity of cows to rebreed.

One often overlooked management tool that can improve reproductive performance is breeding soundness exams in bulls. Ranchers need to think of breeding soundness exams as breeding season insurance. These exams are a low-cost method of insuring that your bull is not infertile. Bulls should be examined for breeding soundness about 30 days before they are turned out.

I have worked in reproductive management for nearly 20 years and it amazes me how many cattlemen still do not vaccinate their cow herd against reproductive diseases. Several diseases are associated with reproductive loss (lepto, BVD, vibrio, trich, etc.). The main problem is that most reproductive loss due to disease is subtle and ranchers don't notice the loss unless they have a massive failure. Most cattlemen are not aware of their losses due to abortion. Ranchers need to work with their local veterinarian to develop an annual vaccination plan to enhance reproductive success.

Lastly, ranchers need to develop a plan to enhance the rebreeding potential of their first-calf heifers and late-calving cows. Young cows and late-calving cows have one characteristic in common that will greatly impact their reproductive success; anestrus. After each calving, cows undergo a period of time when they do not come into estrus. This anestrus period can be as short as 17 days but can also last as long as 150 days depending upon a number of factors. Typically, mature cows in good BCS will be anestrus for 45-90 days (avg about 60-70 days) while first-calf heifers will be anestrous for 75-120 days. Research has shown that only 64% of mature cows have initiated estrous cycles about 70 days after calving while only 50% of first calf heifers have initiated estrous cycles at nearly 90 days after calving. Let's consider the impact of anestrus and calving date for a herd that calves from March 1 until May 10. Bull turnout is May 20th and the length of anestrus for mature cows is 60 days and for young cows is 90 days. A mature cow that calves on March 1 will begin to cycle on May 1 and is highly likely to conceive early. However, the mature cow that calves on April 20 won't cycle until June 20 and her opportunity to conceive early is very limited. A first-calf heifer that calves on April 20 won't begin to cycle until July 20 and will have limited opportunities to conceive. Cattlemen can reduce the anestrous period by fence-line exposure to a mature bull or by treating the cows with progesterone for 7 days prior to bull exposure. Sources of progesterone include the feed additive melengestrol acetate (MGA) or an EAZI-Breed CIDR® insert (Zoetis Animal Health). Both sources have been shown to induce estrus in anestrous cows and exposure of anestrous cows to progesterone for 7 days before bull exposure will not reduce fertility. Pregnancy rates will actually be increased in these females because inducing estrus will increase the number of opportunities these cows have to conceive in the breeding season.

Managing for reproductive success actually begins at calving. Cows need to calve with a minimum BCS of 5 and with little assistance. Effective planning for reproductive health and management plan for limiting the impact of anestrus will ensure that cattlemen are happy, happy, happy at the end of the breeding season.

Running on Empty? Lack of Energy in the Diet Will Cause Cattle Deaths

Michelle Arnold, DVM (Ruminant Extension Veterinarian, UKVDL)

From a weather standpoint, the winter of 2016-17 has been a non-event. Record temperatures recorded in February and very little measureable snow throughout winter has been a welcome change from previous years. Despite this unexpected warmth, submissions at the UKVDL and telephone conversations with veterinarians and producers confirm many cattle are losing excessive body condition and some are dying of apparent malnutrition. This indicates winter feeding programs on many farms this year are not adequate to support cows in late pregnancy or early lactation – or their newborn calves – in spite of recent environmental conditions. If producers are not supplementing cattle with adequate energy **AND** protein sources, hay of unknown nutritional quality often does not provide sufficient nutrition to meet the animal's basic requirements. This will result in depletion of body fat stores, followed by breakdown of muscle protein, and finally death due to insufficient nutrition.

Near the end of most winters, both veterinary diagnostic laboratories in KY frequently receive older beef cows for necropsy. These cows often are broken-mouthed or toothless, some are old enough to vote, are heavily pregnant or in peak milk production and in poor body condition (BCS 2-3). However, this winter, 'malnutrition' cases include young cows and pre-weaning/weaning age calves, indicating serious nutritional deficiencies in the feedstuffs, especially the hay produced last year. The producer may first notice a cow getting weak in the rear end then she goes down and is unable to stand. Death follows within a day or two after going down.

At necropsy, the pathologist finds no body fat stores but the rumen is full of bulky, dry forage material (hay). There is a small but definite seam of fat on the surface of the heart that is the last storage area for fat. Once this fat seam is gone, there is no fat left in the body anywhere. Despite having had access to free choice hay, these cattle have simply 'run out of gas' due to lack of energy and protein. Although hay may look and smell good, unless a producer has had the hay tested for nutritional content, he does not know the true feed value of that harvested forage. *It is often difficult for producers to bring themselves to the realization that cattle can actually*

'starve to death' while consuming all the hay they can eat – especially if crude protein levels are in the 3-4% range, and TDN is <40% – as is not uncommon in some late-cut overmature hay – sometimes referred to as 'holiday hay' or 'CRP residue'. Inadequate crude protein in the hay (below7-8%) means there is not enough nitrogen for the rumen microflora ("bugs") to do their job of breaking down fiber and starch for energy. Digestion slows down and cattle eat less hay because there is no room for more in the rumen. Cattle are expected to eat roughly 2.5% of their body weight in dry matter but this may fall to 1.5% on poor quality hay. Many producers have purchased "protein tubs" varying from 16-30% protein to make up for any potential deficiencies but have failed to address the severe lack of energy in the diet. Remember, in the last 60 days of gestation, an adult cow (1200 pounds eating 2% of her body weight) requires feedstuffs testing at least 54-56%TDN (energy) and 8-9% available crude protein while an adult beef cow in the first 60 days of lactation requires 59-60% TDN and 9-10.5% available crude protein.

In addition to cases of apparent malnutrition in adult cattle, there have been multiple diagnostic submissions associated with 'weak calf syndrome' or full-term calves which were presumed to have been stillborn. Almost without exception, there have been no gross or microscopic lesions or pathogens identified in fetal tissues or placenta, which would indicate why this happened. Maternal nutrition during the last trimester of pregnancy – particularly dietary protein levels – has been well-documented to play an important role in calf survivability. Dystocia (difficult birth) results in lack of oxygen to the calf during delivery which can result in death or weak ("dummy") calves. Calves born to protein-deficient dams are less able to generate body heat and are slower to stand and nurse compared to calves whose dams received adequate dietary protein during the last 100 days of pregnancy. (See detailed information here: http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1151&context=rangebeefcowsymp) Colostrum quality and quantity from protein and energy-deficient dams is not adequate for calf survival and performance. One study looking at diets during pregnancy found at weaning, 100% of the calves from the adequate energy dams were alive compared to 71% from the energy deficient dams. The major cause of death loss from birth to weaning was scours, with a death loss of 19% due to this factor.

Mineral supplementation this winter is another area of concern, as copper and selenium levels in liver samples analyzed from a large number of cases have been far below acceptable levels. Copper and selenium are vital nutrients for immune system function. Many were diagnosed with malnutrition or respiratory disease (including pneumonia in pre-weaned calves). Selenium deficiencies will lead to later reproductive problems of delayed conception, cystic ovaries and retained placentas. Additionally, grass tetany/hypomagnesemia cases received in late February in lactating beef cattle consuming only hay, with no access to fresh grass, strongly suggest 2016 hay supplies may also be lacking in magnesium.

It is important to understand that the winter of 2016-2017 has been exceptionally easy weather-wise but difficult for cattle in Kentucky. Cows of all ages are pulled down much more than typically seen in late winter. This fact, coupled with the knowledge that the quality was generally poor for hay baled in 2016, is one reason we are seeing an increase in death loss across Kentucky due to malnutrition in all ages of cattle as well as many stillborn and weak calves that do not survive. What has normally worked in years past (feeding hay exclusively throughout the winter) will not necessarily work this year.

The best advice for all producers in KY is to know your forage quality. Testing is simple, inexpensive and results are easy to interpret. If cows are losing weight, consider supplemental feed to help them through the next month to 6 weeks until grass is growing and is past the "watery" stage. Energy AND protein are both crucial; protein tubs will not be sufficient in most cases to fulfill energy requirements. Contact your nutritionist to review your feeding program. Adequate nutrition is not just important today but also down the road. Milk production, the return to estrus and rebreeding, and overall herd immunity are also impacted over the long term. Continue to offer a trace mineral mix high in magnesium in order to prevent hypomagnesemia or "grass tetany" at least through the first of May. Remember the old adage regarding the effect of winter on late gestation and early lactation cattle, "February breaks them, March takes them." Just like a car that looks great on the outside, it will not go far without gasoline in the tank.

Craft Distillers Provide Local Cattlemen an Alternative Feed Choice

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

The recent bourbon boom has led to a large increase in the number of craft distilleries. According to recent figures, the number of craft distilleries in the US has increased from around 50 to more than 700. In Kentucky, bourbon production has increased by 300% since 1999. This increased spirit production provides local beef cattle producers an alternative feedstuff.

Recently, the Environmental Compliance Assistance Program held a series of meetings along parts of the Bourbon Trail. These meetings were to inform and educate farm managers, distillers and other industry personnel about state regulations of whole stillage when it is not used as a livestock feed. There are different permits for land application and on-farm storage for whole stillage. The take home message for me, from a livestock production point, only bring on to the farm what you can feed to your livestock. For more information related to land application and storage, I would encourage you to contact ECAP by emailing envhelp@ky.gov or call them at 502-782-6189.

Whole stillage contains approximately 7-8% dry matter with the balance being water. Thin stillage contains slightly less grain material and contains about 96% water. This high water content limits the distance stillage can be transported while remaining economically competitive as a feedstuff. Research conducted at the University of Kentucky in the 1940's reported whole stillage from a limited number of samples to contain approximately 30% protein, 10% fat, and 8% dry matter. Recent analyses from a few samples would suggest small changes in nutrient content, but more sampling is needed to determine the nutrient content of today's stillage. However, one can assume the changes would be slight making whole stillage both a protein and an energy supplement for beef cattle.

Feeding recommendations are somewhat limited for whole stillage. Craft distillers are providing whole stillage as most are too small to justify equipment to separate the grain fraction. Little research has been published on feeding whole stillage even though it has been fed for centuries. In 1942 Garrigus and Good provided the following guidelines when feeding slop to finishing cattle: 1) ensure ½ lb per 100 lb of body weight of forage/hay intake (ie. 1,000 lb finishing animal would need 5 lb hay); 2) 3-6 lb of grain should be offered to increase dry matter intake; 3) feed yellow ear corn for vitamin A source and the cob will help prevent bloating; 4) feed whole stillage from white corn less than 3 months to prevent vitamin A deficiency; 5) feed free-choice limestone or ensure 2-3 ounces consumed daily; 6) limiting stillage to 3-4 gallons per 100 lb of body weight provided better on-farm performance. We know more about ruminant nutrition today than in the 1940's. However, the general ideas put forth by Garrigus and Good still provide a sound basis for using stillage.

Feeding whole stillage in a forage-based program is a bit different than a finishing scenario. Excessive fat intakes can lower fiber digestion in the rumen. For this reason, one would feed less stillage. Providing 1-1.5 gallons per 100 lb of body weight would be a better feeding level for forage-based programs. A 600 lb feeder calf would be offered 6-9 gallons which would provide approximately 4-6 lbs of dry matter. I recommend not to exceed 15 gallons for beef cows as this is the equivalent of feeding roughly 10 lbs of dry matter which is often more than the cows need nutritionally. At the recent Mid-South Stocker conference a producer developing dairy heifers indicated that 15 gallons was the upper level he provided as well. If one just needed 3-4 lbs of dry supplement to balance low quality hay or put a bit of condition on cows, working backwards 4 lbs of supplement / (0.08 lb DM/lb stillage) / (9 lb / gallon) = ~ 5-6 gallons per cow daily.

As you consider feeding whole stillage, plan to feed fresh stillage daily in warm weather as it can spoil quickly. Determine how many gallons you would need based on the number of livestock you intend to supplement and the rate that will be offered. For example if you had 30 beef cows and you were planning to offer 5-6 gallons per cow, you would only need 150-200 gallons daily. Cattle find stillage palatable once they learn what it is and you will need to provide 30 inches of trough space per cow.

Stillage can provide both energy and protein to beef cattle. Note throughout the article stillage was referred to as a supplement. Whole stillage should not be considered as the main dietary component. Be sure to consider the logistics and economics of transporting and handling this on the farm. For more details on how to utilize stillage as part of your feeding program, contact your county Extension office or myself.

Managing Spring Grass: Going from 0 to 60!

Dr. Chris D. Teutsch, Associate Extension Professor, Forage Specialist, University of Kentucky

Spring can often be one of the most challenging times of the year for graziers. Grass growth goes from nonexistent to excessive in a matter of weeks and in many cases grazing livestock have a hard time keeping up with it. This can result in lower quality forage that is less palatable. The growth of new forage is also delayed by not removing the growing point of our cool-season grasses. The presence of the growing point suppresses tiller formation at the base of the grass plant. The following suggestions can help you to control spring growth and get the most out of your spring pastures.

- ***Implement rotational grazing***. In order to fully utilize the spring flush of pasture growth **YOU** must be in control of grazing. In a continuous grazing system, the cows are in charge.
- ***Start grazing before you think the pastures are ready***. One of the most common mistakes that graziers make is waiting too long to start grazing in the spring. If you wait until the first paddock is ready to graze, by the time you reach the last paddock it will be out of control. Starting early allows you to establish a "grazing wedge" (Figure 1).
- ***Rotate animals rapidly***. The general rule is that if grass is growing rapidly then your rotation should be rapid. This will allow you stay ahead of the grass by topping it off and keeping it in a vegetative state.
- ***Do not apply spring nitrogen***. Applying nitrogen in the spring will actually make the problem of too much grass at once even worse. In many cases you are better off to save your nitrogen for stockpiling in the fall.
- ***Remove most productive paddocks from rotation and harvest for hay***. Graze all paddocks until the pasture growth is just about to get away from you and then remove those productive paddocks from your rotation and allow them to accumulate growth for hay harvest.
- ***Increase stocking density in the spring***. If it is possible, a good option for utilizing spring growth is to increase your stocking density. This will allow you to harvest more of the available forage and convert it into a saleable product. This can be done by adding some stockers or thin cull cows to your rotation and then selling them when pasture growth slows.
- ***Even out seasonal distribution of forage by adding a warm-season grass***. Adding a well-adapted warm-season grass that produces the majority of its growth in July and August would allow you to increase your season long stocking density to better utilize the spring flush of pasture growth.
- ***Bush-hog out of control pastures***. The benefits of clipping include maintaining pastures in a vegetative state, encouraging regrowth, and controlling weeds. Clipping pastures costs money, so make sure that the primary reason for bush-hogging is pasture management, not aesthetics.

There is not a one-size fits all when it comes to grazing. One of the most important features to build into your grazing system is flexibility. This will allow you to adapt as situation changes. Grazing systems are not static entities, but rather dynamic works of art that evolve as your skill level increases!

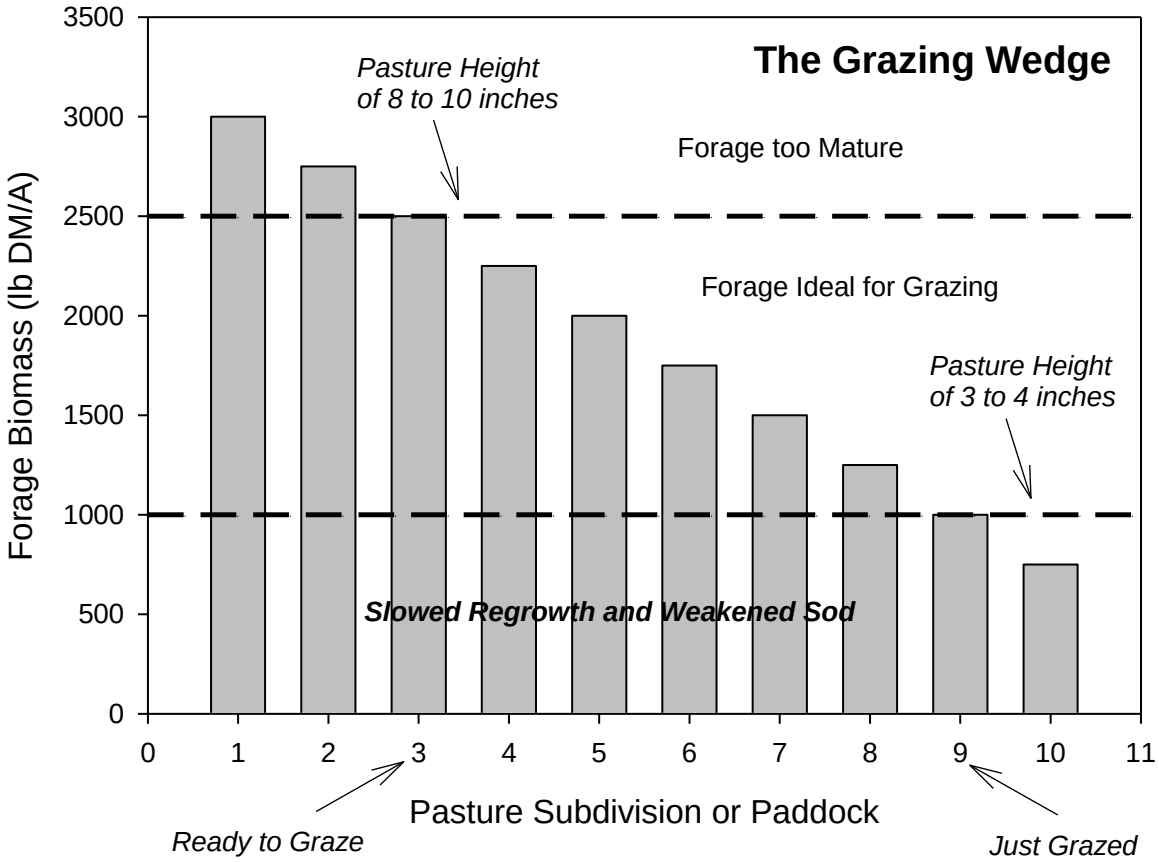


Figure 1. The "grazing wedge" simply refers to having pasture subdivisions or paddocks at varying stages of regrowth from just grazed to ready to graze.

For more information on grazing management contact your local extension agent or visit [*http://www.uky.edu/Ag/Forage/*](http://www.uky.edu/Ag/Forage/) *and* [*https://www.youtube.com/c/KYForages*](https://www.youtube.com/c/KYForages).

Factors Behind the Recent Cattle Market Downturn

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

There continues to be a great deal of discussion surrounding the current cattle market and specifically why prices dropped so much over the course of 2015 and 2016. It is one of the most common questions I am asked when I travel the state and it has been written about in farm and popular press. There is a lot of frustration among those in the industry and also a great deal of misinformation circulating. My motivation for writing this is simply to provide some objective information and answer some questions that are out there. There are multiple factors behind the price drop from 2014 to the present and I will walk through many of these factors as I answer a series of common questions that I have been asked. I have discussed many of these things in extension programs and other articles, but I am hoping this discussion will pull much of this together.

How much has beef production increased since 2014?

According to USDA-ERS, 2016 beef production was up about 4% from 2014. Part of this is due to the cowherd expanding during 2014 and 2015. A larger cowherd means a larger calf crop and a larger calf crop means larger beef production over time. Since this cowherd has continued to grow, we will likely continue to see beef production increases over the next couple of years. Production levels have also been impacted by increasing harvest weights, which are partially explained by lower feed prices. Harvest weights reached a peak in fall 2015, but have continued to be historically high since then.

How about production levels of competing meats?
The primary meats consumed in the US are chicken, beef, and pork. Prices were strong for each of these species during 2014 and all three expanded. But, production can increase much quicker in the poultry and pork sectors, which meant that poultry and pork production rose first. According to USDA, broiler production rose 5.5% from 2014 to 2016 and pork production rose by over 9%. Increased production of competing meats tends to put pressure on wholesale beef prices as there is more competition at the wholesale level.

How about the balance of imports and exports?
Beef imports dropped sharply in 2015, but increased in 2016. Comparing 2014 to 2016, beef exports are down about 2%. Imports followed the opposite pattern, increasing in 2015, but decreasing in 2016. Over the course of the last two years, imports increased about 2%. Much of this tracked the strength of the US dollar.

Another common way to look at meat supply is to combine production with trade. Production levels, plus imports, minus exports, yield a measurement of how much total meat is really available for each US consumer. USDA-ERS refers to this as "per capita disappearance". Per capita disappearance of beef increased by 2.4% from 2014 to 2016. Even more telling, total red meat and poultry disappearance per capita increased by more than 6% from 2014 to 2016. In short, there was quite a bit more meat that had to work through the system in 2016 than there was in 2014.

How much are cattle prices actually down from 2014?
While this seems like a simple question, it really depends on what level in the system we are talking about and the specific time-frame we consider. For example, weaned calf prices in Kentucky were down a little over 50% from December 2014 to December 2016. Heavy feeders in KY were down about 43% over that two-year period and fed cattle prices, using the USDA 5-market weighted average price, were down about 30% over that same 24-month period. It is common for the percent change to be greater at the calf level because the value per head is smaller. For example, if there is a shock in the system that results in a $100 decrease in values per head, this $100 is a greater percentage of calf values than of fed cattle values. This is probably best explained by working through some examples.

The $100 change in value discussed above will be passed through the marketing chain. By this I mean that packers won't be able to pay as much for fed cattle, feedlots won't be able to pay as much for feeder cattle, and backgrounders and stocker operators won't be able to pay as much for calves. If a 1,400 lb slaughter steer is selling for $1.20 per lb, that steer is worth $1,680. If the value of this fed steer drops to $1,580, that was a decrease of about 6%. If this decrease in the value of fed cattle is expected to persist, this will reduce the price for feeders. If 800 lbs steers were selling for $1.30 per lb, or $1,040 per head, their value is likely to be reduced to $940. Because this feeder steer is less valuable than the fed steer, the $100 decrease in value is nearly a 10% change. Finally, perhaps 500 lb steer calves are selling for $1.40 per lb, or $700 per head. A $100 decrease in the value of this calf would be a decrease of more than 14%.

How long has it been since we have seen prices this low?
I have probably heard more misinformation here than anywhere. Looking back at Kentucky prices for both calves and feeders, we saw similar price levels during 2010 as were seen in 2016. And, the same holds true for fed cattle prices at the national level. I have read multiple times that this is the worst cattle market in decades, but the price data simply does not support this assertion. Things changed quickly, but we are by no means in uncharted water. In fact, current price levels are a lot closer to "normal" that the price levels that were seen in 2014 and 2105.

Are packer margins higher now than usual?
This is the most controversial question I get asked and also the most difficult to answer. First, I do not fully understand the cost structure for packers, so I can't estimate their profit. There is data on boxed beef prices, beef byproduct values, and fed cattle prices, and these can be used to estimate a gross margin at the packer level. Gross margin does not include additional costs of facilities, equipment, labor, utilities, etc., but it can be used to

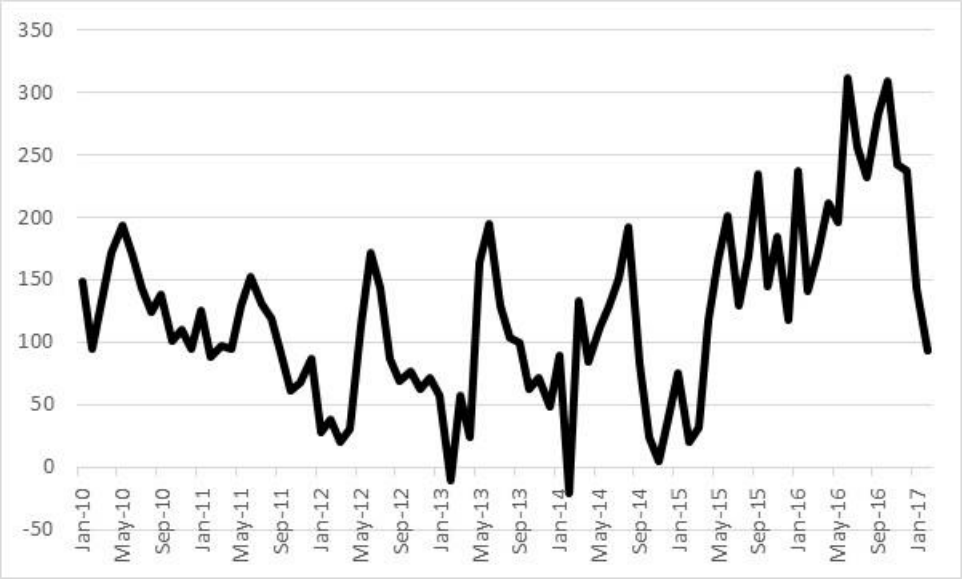
gauge likely changes in profit. While this approach has limitations, I will do my best to provide some perspective here.

Figure 1 is my attempt to track an estimated monthly gross margin for beef packers from January 2010 to February 2017. To estimate revenues per head, I start with the average live weight for steers in each month as reported by USDA, convert that to carcass weight, and multiply it by boxed beef and drop prices, both of which are calculated on a carcass weight basis. Then, to estimate purchase price for fed cattle, I multiply the live weight by the 5-area weighted average slaughter steer price. The difference between these two estimates is considered an estimated packer gross margin per head and is plotted below. Again, this is an estimated gross margin and does not include an estimate of any costs beyond what is paid for fed cattle. Clearly, this does not perfectly describe trends in packer profitability due to contracting, formula pricing, timing, and other limitations, but I do think the trends over time may shed some light on this question.

Figure 1 shows that there is a great deal of variation in the packer margin that I have estimated over time. It appeared to move in a range of $0 to $200 per head from early in the year 2000 through the first half of 2015. But, this margin does appear to increase significantly from mid-2015 to the end of 2016 and this did coincide with a sharp decrease in fed cattle prices. I'm sure contracting explains some of this, but this still suggests that margins on the spot market were higher during this time period. Also, note the sharp drop in this estimated margin for the first two months of 2017 as fed cattle prices increased.

It may also help to put this in perspective by discussing the magnitude and potential impact on calf values. Again, for simplicity, let's assume that packer margins were $100 higher than normal during 2016. If packers eventually bid that $100 back into fed cattle prices as they compete against each other to purchase cattle, and if that full $100 were passed back to the feeder cattle level, this would amount to something close to $20 per cwt on 500 lb calves and $12.50 per cwt on 800 lb feeders. Clearly, this is an oversimplification, but it does illustrate the potential impact on cattle prices and also demonstrates that, while packer margins may partially explain the recent drop in cattle prices, this is only one of several factors that have been at play. Further, I would add that we have a better chance of seeing cattle prices increase if entities downstream are profitable. If packers are more profitable now, it is likely that overtime they will bid some of these profits back into cattle prices as they compete against one another purchasing cattle.

Figure 1: Estimated Packer Gross Margin (Jan 2000 to Feb 2017)



Source: USDA-AMS, Livestock Marketing Information Center, and Author Calculations
See calculation explanation in text above

The purpose of this article was to review some of the many factors that have impacted cattle prices over the last

few years. We saw prices reach record highs and saw them drop about as swiftly as they rose. Many have said that there is no way the fundamentals of the market have changed so much that calf prices should have dropped by 50% over 24 months. While this is true, it is equally hard to explain why prices reached the high levels that we saw in 2014 and 2015. I believe that it was a very unique set of circumstances that lead to what we saw during that time period and I simply can't forecast a return to those levels. Regardless, good managers look forward rather than backward. So, it's time to focus on the next few years, rather than the last few.