

# OFF THE HOOF

*Kentucky Beef Newsletter January 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. Roy Burris, Beef Extension Professor, University of Kentucky*

### Spring-Calving Cow Herd

- Study the performance of last year's calf crop and plan for improvement. Plan your breeding program and consider a better herd sire(s). Select herd sires which will allow you to meet your goals and be willing to pay for superior animals.
- Consider vaccinating the cows to help prevent calf scours.
- Keep replacement heifer calves gaining to be cycling by the start of the spring breeding season.
- Start cows on the high magnesium mineral supplement soon. Consider protein supplementation if hay is less than 10% crude protein. If cows are thin, begin energy (grain) supplementation now.
- Get ready for calving season! See that all equipment and materials are ready, including obstetrical equipment, record forms or booklets, ear tags, scales for obtaining birthweights, etc. Prepare a calving area where assistance can be provided easily if needed. Purchase ear tags for calves and number them ahead of time if possible. Plan for enough labor to watch/assist during the calving period.
- Move early-calving heifers and cows to pastures that are relatively small and easily accessible to facilities in case calving assistance is needed. Keep them in good condition but don't overfeed them at this time. Increase their nutrient intake after they calve.

### Fall Calving Cow Herd

- Provide clean windbreaks and shelter for young calves.
- Breeding season continues. Keep fall calving cows on accumulated pasture as long as possible, then start feeding hay/grain. Don't let these cows lose body condition!
- Catch up on castrating, dehorning and implanting.

## **General**

- Feed hay in areas where mud is less of a problem. Consider preparing a feeding area with gravel over geotextile fabric or maybe a concrete feeding pad.
- Increase feed as the temperature drops, especially when the weather is extremely cold and damp. When temperature drops to 15°F, cattle need access to windbreaks
- Provide water at all times. Cattle need 5 to 11 gallons per head daily even in the coldest weather. Be aware of frozen pond hazards. Keep ice "broken" so that cattle won't walk out on the pond trying to get water. Automatic waterers, even the "frost-free" or "energy-free" waterers can freeze up in extremely cold weather. Watch closely.
- Consider renovating and improving pastures with legumes, especially if they have poor stands of grass or if they contain high levels of the fescue endophyte. Purchase seed and get equipment ready this month.

## **Saw Briars and Sassafras!**

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

Life before fescue was a lot different for farmers especially on some of the poorer soils of the south. In fact, Warren Thompson (a UK Forage Specialist) used to refer to the four "S's" that made pasture management difficult – saw briars, sassafras, sage grass and cedars! That mixture was good for wildlife and had other uses but didn't do much in terms of beef production per acre. We've come a long way, baby!

Saw briars have long been the bane of rabbit and squirrel hunters. This long vine with briars on it could really scratch your legs. Livestock couldn't eat it very well either. Hence, the old expression "grinning like a mule eatin' saw briars". They were sometimes accompanied by blackberry briars which was a good habitat for rabbits but not of any benefit in pastures either. At least, blackberries were or could be a source of jam and, perhaps, pies for the Fourth of July picnic.

Sassafras was a "weed" in the pastures too but our depression-era relatives found uses for it. Sassafras tea (made from the root of the sassafras tree) was common and thought to have medicinal properties. It was also the basis of "root beer" until safrole was found to be carcinogenic. Folks used to chew on a sassafras twig which, due to its oil content, was used as a tooth brush and breathe freshener. Sassafras was sometimes sawed into lumber which was made into farm gates. It was prized for that use since it is both lightweight and decay resistant. Its cousin, the persimmon tree, also had other uses. After frost, its normally bitter fruit would make a persimmon pie but the rest of the time it was referred to as 'possum apples. It was also prized as a wood for golf club heads.

The third "s" was for sage grass (broomsedge) which is usually associated with low pH and low phosphorus in soils. Broomsedge can still take over pastures if we aren't vigilant with our fertility and management program. It is, however, a good habitat for wildlife. In fact, good pastures with clean fence rows aren't that great for wildlife so areas are sometimes "set aside" for recreational uses.

The fourth "s" is cedar (we have to take a little literary license with that one!). Eastern red cedar is an invasive species and cedar thickets will take over their area in the pasture if they aren't removed. Before everyone had bush hogs, most farmers would wait until after they got their hay put in the barn and would then use the "sickle bar" mower on their pastures, if they weren't too rough or rocky. Cedar trees can suck up a lot of moisture from pastures, too.

Cedar fence posts were especially valuable on the farm. Those posts were usually split or even quartered so that fencing staples could be driven into the heartwood of the cedar which wouldn't decay. Bigger "poles" could be used in the construction of sheds and barns. Most of the older folks would even have a cedar tree with its limbs cut off on which they would hang glass jugs to dry.

Folks that had survived the depression were careful not to waste anything. They would even take the small cedar trees that they cut off the pastureland and place them in a newly formed gully with the tail pointing upstream. This would catch and hold the silt that might otherwise wash down the hill and would stop the erosion.

Fescue and other forage species have now changed the way we manage our pastures. Couple that with the cows, which in many cases, evolved from the old milk cows on the farms and some real changes have occurred on our beef cattle farms. Now our producers are managing their pastures as you would any crop. However, sometimes we need to take a little trip down memory lane and reflect on where we have been in order that we may fully appreciate where we are.

## **Beef Cattle Genetics Webinar**

*Dr. Darrh Bullock, Beef Extension Professor, University of Kentucky*

The eBEEF.org team is partnering with National Cattlemen's Beef Association to present a series of webinars over the next few months. These webinars will cover all things genetics and should provide valuable information for producers at any level. Please mark your calendars and join us for the following sessions:

**January 18, 2018, 8 p.m. ET/7 p.m. CT** – "Fake News: EPDs Don't Work", Dr. Alison Van Eenennaam and Dr. Matthew Spangler – register at: <http://www.beefusa.org/cattlemenswebinarseries.aspx>

**February 22, 2018** "Show me the money! Are there EPDs for profit?", Dr. Darrh Bullock and Dr. Jared Decker

**March 22, 2018** "The 4 S's of crossbreeding: simple, structured, successful, and sustainable", Dr. Robert Weaber and Dr. Megan Rolf

**April 19, 2018** "Putting the tools to use: buying your next bull", the eBEEF team. Please visit [ebeeef.org](http://ebeeef.org) and [beefusa.org](http://beefusa.org) for updates and registration information.

## **Stocker Conference Coming to Logan County**

*Dr. Jeff Lehmkuhler, Extension Beef Specialist, University of Kentucky*

The Mid-South Stocker Conference will be back in Kentucky in 2018 at the Logan County Extension office in Russellville, Kentucky. Mark your calendars to join us on March 7<sup>th</sup>, 2018 beginning at 8:00 am CT with registration and plan to stay the day with us. The Logan County Extension office will be a great venue for the conference. The facility provides plenty of space for the tradeshow as well as the educational sessions. The Logan county area had been identified as a desirable location several years ago. It is near the Tennessee border and between the I-65 corridor and the western Kentucky region that is home to several stocker and backgrounding operations.

This year's theme, "Pursuing Greater Profits", lays the foundation for this year's conference. Speakers from South Carolina, Kansas, Tennessee and Kentucky will be providing valuable information to assist the stocker and backgrounding operations in the region to find additional profit margins in their business. Confinement housing considerations, recent findings in mineral supplementation, and alternative forage options topics are slated to kick off the educational sessions. Participants will have time to view the trade-show and visit with vendors in the morning, lunch and early afternoon to learn about products and services available. In the afternoon, topics include accessing international markets, virtual tours of local operations, managing health of feeder cattle and a cattle market outlook will round out the program.

Early-bird registration is \$50 and ends January 31, 2018. After January 31<sup>st</sup>, registration will increase to \$65. You may register either online or by mailing in the registration form. Additional information on how to register and the complete agenda can be found on the Mid-South Stocker website housed by UT at <https://ag.tennessee.edu/midsouthstockerconference> You may also contact Dr. Jeff Lehmkuhler, [jeff.lehmkuhler@uky.edu](mailto:jeff.lehmkuhler@uky.edu) or 859-257-2853 for additional information. We look forward to seeing you in March in Logan county.

### **Time to Double Check Your Heifer Development Program**

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

The first week of January is an important “check-point” in spring heifer development programs. The key to proper heifer development lies in understanding the factors that influence conception in yearling heifers. One key factor regulating heifer fertility is age at puberty. Most producers don’t consider age at puberty of their heifers to be a major problem, yet few know how many heifers are actually cyclic at the beginning of the breeding season. A Nebraska study demonstrated that the proportion of heifers that were pubertal on the first day of the breeding season varied greatly over 5 consecutive years in a single herd. The percentage of heifers that were pubertal on the first day of the breeding season ranged from only 21% to as high as 64% over the 5-year period. For maximum fertility and reproductive performance, heifers must have had at least one estrus **before** the beginning of the breeding season. Our goal then is to incorporate reproductive management techniques to reduce the age of puberty, increase fertility, and shorten the interval to conception.

One of the largest factors that regulate puberty in the heifer is weight. For puberty to occur, heifers must weigh at least 65% of their mature weight. This weight is referred to as their target weight. Most heifer development programs require that heifers reach their target weight, approximately 65% of their expected mature weight, by the onset of their first breeding season. Because fertility increases until the third estrus after puberty, heifers should reach their target weight at least 30 days before the start of the breeding season. I refer to this date as the target date.

January is the time to determine if your heifers are “on track”. Most yearling heifers will need to reach 700-800 pounds (their projected target weight) by mid-April to ensure high fertility assuming that the heifer breeding season starts about mid-May. Weigh your heifers to determine how much they have left to gain to reach their target weight. If the heifers weighed on average 600 pounds and their target weight is 750 pounds then they will need to gain 150 pounds or 1.5 - 1.6 pounds each day to reach their target weight by mid-April. Heifers should reach a BCS of 5.0-5.5 by their target date.

The next important phase in heifer development occurs one month prior to the start of the breeding season. At this time, heifers should be vaccinated (Vibrio fetus, Leptospirosis, and the respiratory disease complex which includes PI<sub>3</sub>, BRSV, BVD and IBR; modified-live vaccine is preferred), dewormed, and pelvic area measurements should be obtained. Heifers with small pelvic areas and especially large heifers will small pelvic areas tend to have greater difficulty calving. Now is the time to contact your local veterinarian to schedule this pre-breeding work.

Producers should consider estrus synchronization and/or AI. Estrous synchronization and AI has many advantages which include: higher pregnancy rates, heavier, more uniform calves at weaning, and increase production and labor efficiency. The greatest advantage of AI is the ability to use superior, more predictable sires. Since a majority of calving problems in a herd occur when calving first-calf heifers, it seems only logical to synchronize and AI your heifers to proven calving ease bulls. Contact your local AI technician to schedule a time to breed your heifers. Next month, I will discuss various methods for estrous synchronization.

Proper heifer development is one of the key components to profitability in a beef cattle operation. Understanding the principles of heifer development can enable producers to incorporate management techniques to improve the efficiency of the operation.

## Be Aware when Feeding Ionophores to Cattle - an Overdose May Prove Deadly

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

A special thanks to Dr. Jeff Lehmkuhler (UK Beef Extension Specialist) for his valuable input and comments in the development of this article.

Ionophores have been used for many years in the beef and poultry industries for improved feed efficiency and control of coccidiosis. Generally, ionophores are considered safe and effective in the correct (target) animals receiving the recommended amounts. However, poisonings do occur and are often due to accidental contamination of feed and feed supplements for the wrong species (horses, for example) or errors in feed mixing resulting in excessive concentrations in the diets of cattle. The ionophores approved for use in cattle include monensin (Rumensin®), lasalocid (Bovatec®) and laidlomycin propionate (Cattlyst®). Although all ionophores can be toxic, this article will focus on monensin, simply because more information is available due to its longstanding and widespread use in the cattle industry since the mid-1970s.

In the US, monensin (trade name “Rumensin”- manufactured by Elanco Animal Health) is a feed additive for cattle indicated "for improved feed efficiency, for increased rate of weight gain, and for the prevention and control of coccidiosis caused by *Eimeria bovis* and *Eimeria zuernii*". Monensin is technically considered a “monovalent carboxylic polyether ionophore antibiotic” produced by the fungus *Streptomyces cinnamonensis*. Although originally developed for poultry, monensin has beneficial health and growth-promoting properties when fed to cattle. In the rumen, monensin decreases the proportions of acetic and butyric volatile fatty acids and increases propionic acid production, the most efficiently utilized of the ruminal fatty acids. It also selectively kills bacteria that produce methane, resulting in less carbon loss and greater energy efficiency. Lastly, it reduces the ruminal degradation of protein, which improves protein utilization. When monensin is used correctly, cattle weight gains can be maintained with less feed, resulting in significant feed savings. Other beneficial effects of feeding monensin to cattle include reduction in bloat (less methane production), less rumen acidosis, and fewer cases of acute respiratory distress syndrome or “fog fever”. When used incorrectly, toxicity caused by an overdose may cause symptoms ranging from decreased feed intake all the way to death due to heart failure. There is no antidote or specific treatment for poisoning due to ionophores except general supportive care. Of primary importance is the recognition of a potential feed problem and removal of suspect feeds until testing can confirm or deny excessive exposure. Unfortunately, samples of feed taken for testing may not represent what the cattle actually ate, especially in cases of incomplete mixing of ingredients. Feed samples should be taken as soon as a problem is suspected and, if possible, from the trough where the animals were fed to get the most accurate picture of what was consumed.

The toxicity of monensin for cattle and other species is well-documented and is known to be dose dependent. Lethal dose (LD) is one way to measure the short-term poisoning potential (acute toxicity) of a material and is usually expressed as the amount of chemical administered in milligrams per kilogram of the body weight of the animal. LD stands for "Lethal Dose" and LD<sub>1</sub> is the amount of a material, given all at once, which will cause the death of 1% of a group of animals. The normal safe range used in stocker and feeder calves for increased rate of weight gain and prevention/control of coccidiosis is 50-200 mg/head/day. The LD<sub>1</sub> (lethal dose in which 1% of exposed cattle die) of monensin is estimated to be 2.5 mg/lb of body weight. Using this estimate, for a calf weighing 500 lbs, the dose where 1% of exposed animals would be expected to die would be 1250 mg/head/day. Although this seems difficult to achieve, it is a relatively easy mistake to make, given the very small amount of monensin used (measured in grams) in a ton of feed.

In cattle, the clinical signs of acute monensin toxicity are:

1. Loss of appetite, reduced feed intake or completely off feed (24 to 36 hours after consuming a high dose)
2. Diarrhea, signs of abdominal pain
3. Dullness, lethargy, depression
4. Weakness, ataxia, incoordination, loss of balance, stumbling, muscular stiffness



5. Difficult, rapid and/or labored breathing
6. Recumbency (down) and death usually within 3 to 14 days of the ingestion of the contaminated feed
7. Ionophore toxicity will usually involve a recent change in feed supplementation and will generally involve more than one animal with clinical signs

Cattle that recover from the initial poisoning event may die suddenly from heart failure if exercised or stressed. Later development of congestive heart failure can occur as a consequence to an earlier poisoning. With heart failure, cases may look very similar to pneumonia with difficult, labored breathing due to fluid buildup in and around the lungs. Deaths can occur for extended periods after exposure has stopped depending on the severity of the permanent heart damage.

Diagnosis of monensin toxicosis is not a simple task. The clinical signs and lab findings can be mimicked by other ionophores, toxic plants, and vitamin and/or mineral deficiencies that can cause similar types of muscle damage. Cattle that die from ionophore overdoses normally have evidence of heart failure, but it is not uncommon for nothing to be found in an animal that dies very quickly. In the diagnostic lab, typical findings at necropsy associated with monensin toxicosis in cattle are cardiac (heart) and skeletal muscle degeneration that look like pale or yellow areas in the muscle and secondary problems of fluid buildup in the and around the lungs (pulmonary edema) due to the inability of the damaged heart to pump adequately. In addition to examination of a dead animal, samples of the suspected diet must be analyzed as well. One complicating factor which is poorly understood is the interaction of monensin with other compounds (such as use of tiamulin, oleandomycin, chloramphenicol, erythromycin, sulfonamides, or furazolidone) that has also resulted in death, even though monensin was given in the approved range. This is seen more often in other species (poultry and swine) but has been described in cattle, too. One potential reason this occurs is certain types of antibiotics may delay clearance of monensin by the liver, resulting in accumulation to toxic levels. Whatever the case may be, information on tissue and blood concentrations following overexposure to ionophores is lacking which makes a definitive diagnosis challenging.

Careful use, avoidance of overdosing, and reading label recommendations will help prevent the occurrence of adverse effects associated with this class of compounds. One consistent mistake made by many producers is offering a medicated mixing mineral to their cattle free-choice. “Mixing minerals” are designed to be mixed in feed before offering to cattle to control intake. “Free choice” products, on the other hand, are formulated to limit intake and reduce the risk of overconsumption. The feeding directions on the label should be followed and cautions observed (see Figure 1). If mineral feeders are allowed to stay empty for a period of time or the mineral becomes like concrete due to excess moisture, the potential exists for overconsumption of monensin when a new bag of mineral is finally offered. Additionally, excessive rain can dissolve salt forms of minerals which, if leached from the mineral feeders, can increase the concentration of ionophores remaining.

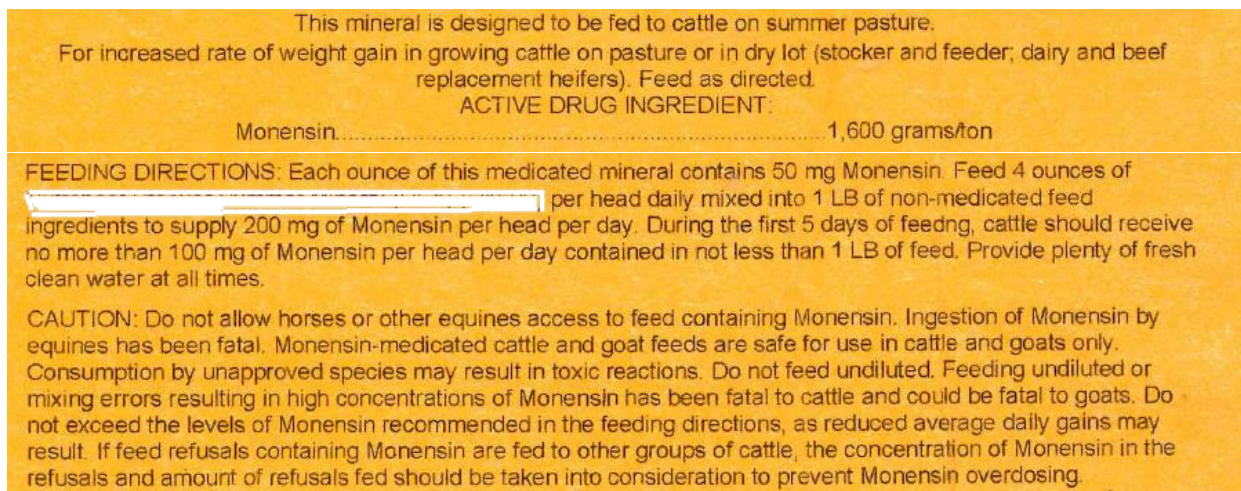


Figure 1: Example of a mixing mineral label. Note the feeding directions include mixing with feed and the caution states not to feed this product undiluted (free-choice).

Important take-home points:

- 1) Some feed ingredients, if given incorrectly, can be toxic to cattle. Feed ingredients need to be monitored carefully and precautions taken to prevent toxic situations. The greatest risk of intoxication occurs when cattle receive a feed containing monensin for the first time because the rumen microflora are not adapted to the new ingredient. The first sign of a problem is feed refusal.
- 2) It is important to monitor feed ingredients when they are delivered and initially fed. Rapid recognition of clinical signs with the introduction of a new feed, followed by the prompt removal of the new feed until testing can be completed, may help avoid more severe consequences and losses.
- 3) Development and implementation of standard operating protocols can reduce the risk of mistakes occurring.
- 4) Employee training is essential. Assuming that employees new to feeding cattle know the differences in feed ingredients and the importance of correct measurement of feed ingredients can lead to disaster. Communicate what employees need to do, why it is important then follow-up, follow-up, and follow-up to insure it is done correctly.
- 5) Minimizing sorting of feed ingredients is critical to ensure consistent intakes. Additionally, sound mixing techniques are necessary to ensure even distribution through the diet. Be careful if offering feed with ionophores that a free-choice medicated mineral is not accessible at the same time.

## **Kentucky Beef Cattle Market Update**

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

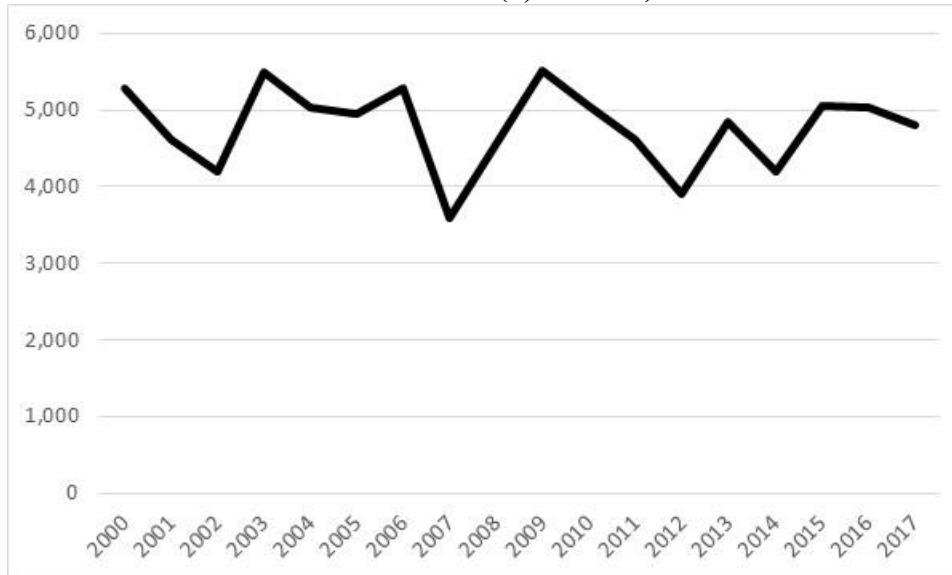
Happy New Year! The feeder cattle market closed 2017 on a weaker note and after trying to rally early in 2018 has seemed to move back to where it ended last year. As I write this on January 12, 2018, spring CME® Feeder Cattle futures prices are in the low \$140's and fall contracts are in the \$144 to \$146 range. Cash fed cattle prices pushed above \$120 in December and stayed there for the first week of January. I have written previously about the spring-summer break in CME® Live Cattle futures and it continues to be large. As I write this, the August CME® Live Cattle contract is trading at a \$10 discount to the April CME® Live Cattle contract. Kentucky prices have generally held their ground since December. For the first week of January, 550 lb feeder steers were still trading around \$150 per cwt on a state average basis and heavy feeder continue to surprise me with their strength, given where summer fed cattle futures are trading.

Next month, I will be able to discuss the January 1, 2018 cattle inventory report, which will help quantify the size of the US beef herd. This month, I thought it might be nice to take a departure and discuss hay production and hay stocks, which are always important for Kentucky's beef cattle sector. USDA-NASS just released their estimates for 2017 hay production and December 1, 2017 hay stocks, so the topics is timely as well.

Let's start with some background on the data. For the purposes of production, stocks, and prices, USDA tracks two hay categories – (1) Alfalfa and Alfalfa Mixes and (2) All Other Hay. For Kentucky, I typically think about the Alfalfa and Alfalfa Mix category as being most representative of higher quality hay that is typically sold into the equine and dairy markets. The All Other Hay category is most representative of the grass-type hays that are primarily produced and fed on cattle operations. To avoid confusion, I often refer to this as non-Alfalfa hay production.

Figure 1 shows Kentucky non-Alfalfa hay production from 2000 to 2017. According to the USDA Annual Crop Production Summary, Kentucky produced 4.8 million tons of non-Alfalfa hay in 2017 on 2 million acres. This was down slightly from 2016, primarily due to a slight decrease in acreage, which can be seen in figure 1. Also, note the obvious drought years of 2007 and 2012. Some decrease in hay acres also likely occurred in the last several years due to conversion of hay ground to row crop. Kentucky's 2017 production level is just above the 18 year average from 2000 to 2018, suggesting relatively normal hay production levels for 2017.

**Figure 1. Kentucky Non-Alfalfa Hay Production  
2000 to 2017 (1,000 tons)**



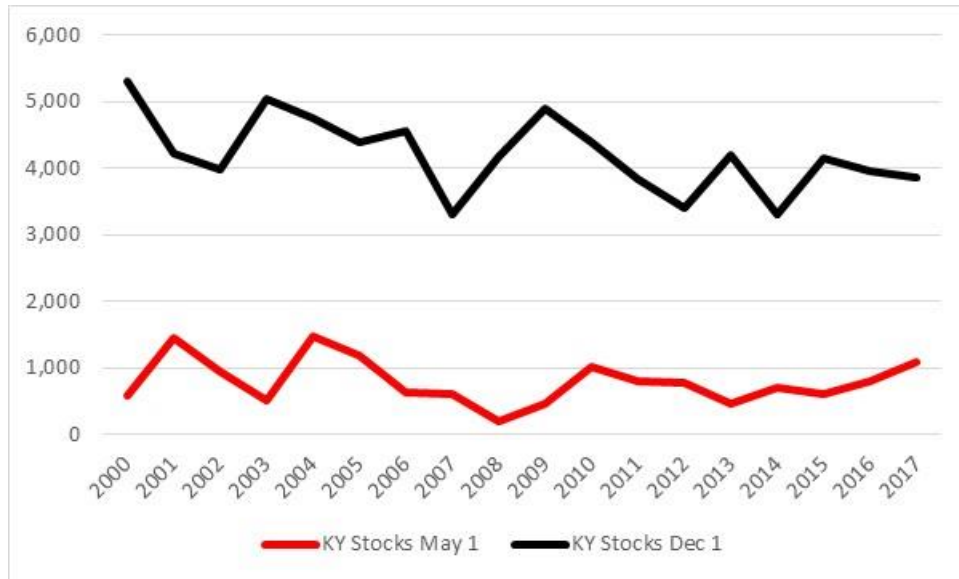
Source: USDA-AMS, Livestock Marketing Information Center, Author Calculations

In some ways, hay stocks are more relevant to cattle producers than hay production. USDA estimates hay stocks twice per year, the first of May and the first of December. I typically think of May 1 hay stocks as a measure of how much hay was left after winter feeding. While hay is often fed prior to December 1, the December number does give an indication of hay availability for the upcoming winter. Finally, one should be aware that unlike hay production, USDA does not break hay stocks out by type. So, hay stocks reported include both categories combined.

USDA hay stock estimates for Kentucky are shown in figure 2. Again, note the obvious drought years as December stocks were very low in 2007 and carried through to May 2008. A similar pattern can be seen following the 2012 drought. December 2017 hay stocks for Kentucky were estimated at 3.85 million tons, which was down slightly from 2016 and slightly below the 18 year average. While production was down slightly last year, I am still a little surprised by this number as fall grazing conditions were generally very good in 2017, which should have resulted in very little hay being fed prior to December 1 on most cattle operations. Still, if I were going to summarize the previous hay discussion, I would say that hay supplies are likely adequate going into this winter and current hay prices largely reflect that notion.

**Figure 2. Kentucky Non-Alfalfa Hay Stocks  
May 1 and December 1, 2000 to 2017 (1,000 tons)**





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

Later this month, USDA will release their cattle inventory estimates for January 1, 2018. They will also release state-by-state estimates and I am always curious what they will estimate for Kentucky. The first week of January, I took an informal poll of Kentucky's Agriculture and Natural Resource Agents to gauge their impressions of how cattle numbers may have changed in their counties over the course of 2017. As expected, there was a wide variation in responses across counties, but in aggregating their responses, I would not be surprised at all if Kentucky beef cow numbers were a little higher in 2018. We will discuss both national and state level cattle inventories in my article next month