

OFF THE HOOF

Kentucky Beef Newsletter February 2018

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 Herd

Get ready for calving season this month!

- Have calving equipment, supplies and labor ready for the spring calving season. Some supplies which may be needed are: eartags and applicator (put numbers on eartags now), tattoo pliers and ink, record book, scales for calf weights, iodine for calves' navels and colostrum supplement. Calving equipment (puller and chains, etc.) and facilities should be ready and clean.
- Overall condition of the cow herd should be evaluated. Cows losing weight now are more likely to have weak or dead calves. These cows will likely be a poor source of colostrum milk for the newborn calf. Feed cows, if necessary to keep them in good body condition.
- Heifers may begin head-start calving in early February. Move them to a clean, accessible pasture, away from cow herd and near facilities so that calving assistance can be given. Cows may start calving later this month. Signs of calving are relaxation of pelvic ligaments, enlargement and swelling of the vulva, and enlargement of the udder. Expect calving difficulty if (1) calf's head and two feet are not visible, (2) only the calf's tail is visible, and (3) the cow has been in labor for 1½ hours. Be sure calf is being presented normally before using calf puller. Recognize situations that are beyond your capability and seek professional help as early as possible. Calves that aren't breathing should receive assistance. Try sticking a straw in nostril to stimulate a reflex or try alternate pressure and release on rib cage. Commercial respirators are also available. Calves should consume colostrum within 30 minutes of birth to achieve good immunity.
- Record birthdate, cow I.D., and birthweight immediately (use your Beef IRM calendar). Identify calf with eartag and/or tattoo. Registered calves should be weighed in the first 24 hours. Male calves in commercial herds should be castrated and implanted as soon as possible.
- Separate cows that calve away from dry cows and increase their feed. Increase feed after calving to 25-27

pounds of high quality hay. Concentrate (3-4 lb. for mature cows and about 8 lb. for first-calf heifers) may be needed if you are feeding lower quality hay. Supplementation may have a beneficial effect on date and rate of conception. The most important time to feed a beef cow is after calving. Thin cows don't come into heat very soon after calving. We must have cows in good condition, if we plan to breed them early in the season for best pregnancy rates, especially on high-endophyte fescue pastures.

- Sub-zero weather can mean death for newborn calves. During extremely cold spells, bring the cow(s) into a sheltered area as calving approaches to protect the calf. Be prepared to warm-up and feed newborn, chilled calves. Calving in mud can also cause problems.
- Watch for scours in newborn calves. Consult your veterinarian for diagnosis, cause, and treatment. Avoid muddy feeding areas so that cows' udders won't become contaminated and spread scours. Don't confine cows to muddy lots.
- Replacement heifers should be gaining adequately to reach target breeding weights by May 1. Be sure that their feeding program is adequate for early breeding.
- Start looking for herd sire replacements, if needed.

Fall-calving Herd

- Breeding season should end this month – maybe Valentine's Day. Remove bulls and confine them so that they regain condition.
- Consider creep feed or creep grazing (wheat, etc.) to supply extra nutrition to fall-born calves which may have to depend solely on their dam's milk supply for growth. They are not getting much except their dam's milk now (i.e. there is nothing to graze). February/March is the worst time of the year for fall-born calves.
- Provide windbreaks or clean shelter for calves.

General

- Increase feed as temperature drops. When temperature falls below 15 degrees, cattle need access to windbreaks. For each 10 degree drop below 15 degrees, add three pounds of hay, two pounds of corn, or six pounds of silage to their rations.
- Provide water at all times. Watch for frozen pond hazards. If cattle are watering in a pond, be sure to keep ice "chopped" to keep cattle from walking on the ice and, possibly, breaking through. Keep automatic waterers working.
- You should be feeding a mineral supplement with adequate magnesium to prevent grass tetany (~ 15% Mg) now. The Hi-mag UK Beef IRM mineral can be used now.
- Control lice. Watch for signs such as rubbing.
- Begin pasture renovation. You can overseed clover on frozen or snow-covered pastures.

How Cold Is It?

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

How cold is it? As I write this the temperature is in single digits. Thus far December and January have been cold! But dealing with cold weather can be different depending on where you are and what you are doing.

A few years ago our Beef IRM team had taken a group of agents and cattle producers on a "Value-added study tour" to the Biltmore Estate in North Carolina. It was March and, although the weather started off nicely, there was a spring-time blizzard on the way. We were meeting inside until lunch and then we were going to be outside – in the snow. No big deal if you're dressed for it.

I noticed that one older cattleman from eastern Kentucky left the room that morning and was walking across the parking lot toward town. I hurriedly got the van and caught up with him to give him a ride. I inquired if everything was alright and he said that he was fine just going to get some warmer clothes before the cold

weather arrived. It was plain to see that this man wasn't wanting to make a big deal out of this but I asked if cold weather bothered him. I will never forget his reply.

“Well, I was in World War Two and spent the winter in the Ardennes Forest. I made myself a promise that, if I made it, I would never be cold again as long as I had a penny in my pocket.”

Ironically, I had been watching “Band of Brothers” on television and had just seen a depiction of the hardships of that war. In December, 1944 and January, 1945 American forces battled a German Panzer division in the Ardennes Forest as part of the Battle of the Bulge. Our American forces endured the cold weather while living in foxholes and being attacked by the Germans.

I realized that I was in the presence of a Kentucky cattleman that was a real American hero. We were going to find some warm clothes! He was a very humble man and said to me “I appreciate you doing this”. No Sir! I appreciate what you did! He was truly part of Tom Brokaw’s “Greatest Generation”.

I have also noticed that the people that have done the most seem to talk the least. When I was a young college student, my uncle was in our house and looked curiously at some ROTC things that were lying out. He asked me what we were studying and I said “military history”. He inquired again “what part?”. I knew that he had been a decorated machine gunner in World War II. I told him that we were studying World War II – the invasion of Leyte (Leyte was an island in the Philippines and the battles there were some of the bloodiest in the Pacific and was the beginning of the end for the Japanese). I asked if he knew where that was. He kinda shrugged, said “Yeah, I was there” and changed the subject.

Now back to the cattle, as we deal with the discomfort of cold weather, we can keep things in the proper perspective. We are truly blessed and caring for our animals is a rewarding experience. I personally wish that it would warm up enough that our water systems and pipes wouldn't freeze but that it would stay just cold enough so that the ground would stay frozen during this winter feeding period. Maybe we could eliminate the mud and not tear up our pastures so much. At any rate, let's hope that it will warm up some before we start spring calving.

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 7th, 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 31st, 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 or 859-257-2853 for additional information. We look forward to seeing you in March in Logan county.

Seedstock Cattle Symposium: Coming to Shelby County

Ben Crites, IRM Coordinator, University of Kentucky

Make plans to attend the inaugural Kentucky Seedstock Cattle Symposium. Speakers from Kansas State University and the University of Kentucky will present timely information to assist producers on bull development and selection practices. Designed for seedstock cattle producers, the program will focus on nutrition strategies for bull development along with several techniques used when making sire selection decisions. These techniques include utilizing Expected Progeny Differences (EPD's), incorporating genomics technology, and understanding selection indices. The event is scheduled to take place on Wednesday, April 25th, at the Shelby County Extension Office. The program will begin at 9:00 am EST with registration. Lunch will be provided to participants and is included in the \$25 registration fee.

Date: Wednesday, April 25th, 2018

Time: 9:00 am EST

Location: Shelby County Extension Office
1117 Frankfort Rd
Shelbyville, KY 40065

For more information about the program, please contact Evan Tate (evan.tate@uky.edu), Kevin Perkins (kevin.perkins@uky.edu), Jeff Lehmkuhler (jeff.lehmkuhler@uky.edu), Darrh Bullock (dbullock@uky.edu), or Ben Crites (benjamin.crites@uky.edu).

The CPH Report – 2017 Summary

Kevin Laurent, Extension Associate, University of Kentucky and Tim Dietrich, Kentucky Department of Agriculture

The CPH Report expands the analysis of CPH-45 sales to estimate the economic value of preconditioning calves prior to marketing. This analysis consists of two main components. First, is the **CPH Advantage** – which compares prices received in the CPH Sale to the average weekly statewide prices reported by the Market News Service of the Kentucky Department of Agriculture. The second component is the **Estimated Net Added Return** – which compares the CPH Sale value of the calf to the estimated value of the calf at weaning. In these estimates we use a 60 day preconditioning period and an average daily gain of 2.5 lbs. per day. Costs incurred during the preconditioning period such as feed, health program, interest, death loss and differences in sales commission are subtracted from the added value to arrive at an estimated net added return per head. The following table is an analysis of all fifteen CPH-45 sales of 300 head or more held in calendar year 2017. Sales were held in Guthrie, Lexington (including Stanford location), Owensboro, Springfield, Paris, and Richmond. Several items to note:

- Owensboro sells with a 2% pencil shrink.
- Owensboro, Guthrie and Springfield charge less commission for CPH calves.
- Only weight classes of 20 or more head were used in comparisons.
- Steers with weaning/starting weights of less than 350 pounds were not included in the analysis.

More details on how these figures were calculated can be found in the column definitions below. Also, visit the CPH-45 website at www.cph45.com. If you are interested in selling in a CPH-45 sale, contact your local County Extension Agent for Agriculture and Natural Resources.

Summary of prices and net added returns per head for all CPH-45 sales in 2017										
Location	Date	No Head	Wean Weight (lbs)	Wean Price (\$/cwt)	CPH Weight (lbs)	CPH Price (\$/cwt)	State Avg. Price (\$/cwt)	CPH Advantage (\$/cwt)	Feed Cost (\$/lb gain)	Net Add Return (\$/head)
Guthrie	1/23/2017	586	519	115.62	669	126.04	118.04	8.00	0.60	128.86
Lexington (Stanford)	1/24/2017	736	496	121.85	642	130.85	122.28	8.56	0.56	122.14
Owensboro	2/2/2017	959	516	121.19	663	125.31	119.65	5.66	0.60	96.42
Lexington (Stanford)	3/14/2017	381	473	126.26	620	130.84	129.54	1.30	0.54	101.58
Owensboro	4/27/2017	725	488	134.33	632	149.02	139.67	9.35	0.52	188.11
Lexington (Stanford)	6/13/2017	363	445	151.93	587	160.05	153.48	6.56	0.43	170.87
Springfield	6/22/2017	529	449	154.52	590	152.50	149.66	2.84	0.42	120.76
Guthrie	7/10/2017	627	481	159.33	626	147.11	144.00	3.10	0.45	65.49
Owensboro	8/10/2017	1168	515	162.01	663	143.75	140.48	3.27	0.53	22.61
Guthrie	12/4/2017	976	527	146.42	676	146.11	138.98	7.13	0.53	111.01
Paris	12/5/2017	775	507	149.11	655	147.12	140.75	6.37	0.51	101.29
Springfield	12/6/2017	314	513	148.05	663	145.38	139.26	6.12	0.53	103.43
Owensboro	12/7/2017	1020	529	145.93	674	146.86	139.39	7.48	0.53	115.74
Richmond	12/12/2017	827	479	148.16	623	148.91	142.48	6.43	0.47	119.88
Lexington	12/13/2017	599	491	147.69	638	149.38	141.71	7.67	0.49	124.51
	Average	10,585	495	142.16	641	143.28	137.29	5.99	0.51	\$112.85
	Wt. Avg.	10,585	501	142.65	647	142.83	136.71	6.11	0.52	\$107.46

Column Descriptions

Wean Weight	CPH weight minus 150 lbs. (minus 100 lbs for cattle less than 500 lbs at the CPH sale)
Wean Price	average price of LM 1-2 calves at the calculated weaning weight 60 days prior to the CPH sale as reported by KDA
CPH Weight	average weight of calves at the CPH sale
CPH Price	average price of LM 1-2 calves at the CPH sale
State Avg. Price	average price of LM 1-2 calves as reported by KDA during the week of the CPH sale
CPH Advantage	CPH price minus state average price
Feed Cost	average feed cost per pound of gain using current feed prices for the 60 day preconditioning period prior to the CPH sale
Net Add Return	net return per head after feed, vet(\$12.00), mineral(\$3.75), interest(6%), mortality(0.5%) and commission(varies by sale)

Interpreting New Vaccine Research-Be Careful Before Making Changes to Your Protocol Michelle Arnold, DVM (Ruminant Extension Veterinarian, UKVDL), University of Kentucky

One of the most common questions in cow/calf production is what vaccines are needed yearly in Kentucky to keep the herd healthy. Many popular beef magazines offer articles concerning what types of vaccines work “the best” or are “safest” according to the latest research. Oftentimes, upon further review of the specific experiment conducted, the conclusions are not nearly as useful as they originally seemed. Most research is designed to study one specific result rather than address the overall situation and needs of a cow/calf herd. For example, a study may attempt to find a difference in conception rates depending on whether a modified live (MLV) or a killed vaccine (KV) was used prior to breeding in a group of heifers. The protocol was to give naïve heifers either a dose of MLV or a dose of KV at the same time as the AI synchronization protocol started and see how many conceived to the fixed-time AI or to the bulls for the next 14 days. Straightforward, right? Think again. It is very well known and accepted not to give MLV vaccine to a naïve female close to breeding because it will interfere with her estrous cycle and decrease conception. What is a “naïve heifer” anyway? In research trials, not only is a naïve heifer one that has never been vaccinated previously but often she is further tested to insure she has also never been exposed naturally. This is why the vaccination guideline for heifers states “If this is her very first dose of a modified live viral vaccine, make sure it is given at least 4 weeks (preferably 6 weeks) before breeding.” Another common problem in interpreting research trials regarding vaccine safety is that many are not carried out in the face of disease challenge. In other words, the conception rates may be better with Vaccine A over Vaccine B and this is reported as the “safer” experimental result. However, if the same females are exposed to the BVD virus, Vaccine A may not be protective while Vaccine B may keep the developing fetus free of disease and this finding is NOT stated. Why? Because that specific experiment was not trying to answer

that question. Similarly, when tables of numbers and percentages are presented, it is important to understand that the numbers do not tell the whole story, especially when the experiment involved very low numbers of cattle. A good example is the following statement from a recent published article: “For vaccinated groups of cows, 3 of 23 or 13% Group A cows aborted and 1 of 22 or 5% Group B cows aborted.” Which Group’s vaccine was better? When the statistics were completed, there was actually no difference in abortion rate between the two groups although just looking at the numbers would tell otherwise. Finally, and perhaps most importantly, cattle herds are unique entities with different risks for disease on every farm. Researchers often pose a question and try to answer it by comparing two groups that are exactly alike in every way except one group receives the “intervention” (vaccine, treatment, etc.) while the other group (called the “control” group) does not receive the intervention and then the groups are followed out in a very controlled environment to some end that can be measured. This allows certain specific questions to be answered but the findings must be interpreted in light of the real world. Cattle are not raised in a bubble so it is important to apply the scientific findings correctly rather than jump to erroneous conclusions and make changes that may shipwreck a sound herd health protocol.

These vaccination guidelines spell out what is needed *before* breeding season begins and what the calves need, too. What products to use and when to administer them are best decided by the producer and his or her veterinarian. Every farm has different disease risks in addition to the challenges of labor and facilities needed to work the cattle. Your veterinarian is equipped with the knowledge and skills to determine what will work best for your unique situation. ***Consult your veterinarian before instituting any health protocol.***

Cows and Bulls 4-6 weeks Prior to Breeding

1. Viral respiratory vaccine (IBR, BVD, PI₃, BRSV) with *Campylobacter fetus* (Vibriosis) and 5-way Leptospirosis
 - a. If the cows are open at the time of vaccination, use of a modified live (MLV) vaccine is strongly recommended and should be administered 30 days prior to breeding.
 - b. Fetal Protection (FP) products are available that are formulated to protect the fetus from becoming persistently infected with the BVD virus and born a “PI” calf. While no vaccine provides complete protection, recent studies using MLV vaccines have demonstrated fetal protection rates in the range of 85-100%.
 - c. An “HB” at the end of the vaccine name stands for the strain of *Leptospira* known as “Hardjo bovis”, a common cause of abortion in cattle.
 - d. If the cow is pregnant at the time of vaccination or within 30 days of breeding, use a killed vaccine product to reduce the risk of interference with conception or accidental vaccine-induced abortion.
 - e. Although certain modified live vaccines are labeled for use in pregnant animals, this is now under intense scrutiny by USDA. New research has proven that after administration of two pre-breeding doses of MLV vaccine, revaccination of **pregnant** heifers or cows with a killed vaccine stimulates excellent protection without the risk of abortion. If unsure, ask your veterinarian for clarification.
2. 7-way Clostridial (Blackleg) - necessary if under 2 years of age. Optional as the cow ages depending on the exposure risk of the herd.
3. Deworm - perform at least twice per year (spring and summer). If only once is possible, deworm in late June or July. Deworming in the fall is a good practice to reduce the number of worms that overwinter in the cow but is not as important as the spring and summer seasons when larvae are active in the pasture. Consider a white drench dewormer (Safeguard®, Valbazen®, Synanthic®) in the fall as an alternative to more commonly used pour-on and injectable products.
4. Tag cattle for identification and/or re-tag those that have lost tags.
5. Breeding Soundness Exams are highly recommended for herd bulls. Bulls need the same vaccinations and deworming as the cow herd.

Heifers 6 weeks Prior to Breeding

1. Viral respiratory vaccine (IBR, BVD, PI₃, BRSV) with *Campylobacter fetus* (Vibriosis) and 5-way Leptospirosis.
 - a. Modified live products are recommended. **If this is her very first dose of a modified live viral vaccine, make sure it is given at least 4 weeks (preferably 6 weeks) before breeding.**
 - b. Killed products require a booster so be prepared to revaccinate the herd according to label directions (usually 2-3 weeks after the initial dose). All vaccinations should be completed at least 28 days prior to the onset of breeding.
 - c. Fetal Protection (FP) and Hardjo bovis (HB) products are recommended.
2. 7 way Clostridial (Blackleg)
3. Deworming is important! A heifer is under increased nutritional demand because she is still growing and trying to cycle at the same time. Deworming is important because parasites compete for essential nutrients and calories that heifers need.
 - a. Use a product other than an ivermectin due to resistance concerns. Young animals (under 2 years of age) do not have the immunity to parasites that adult cattle possess and some parasites (especially *Cooperia*) are becoming increasingly resistant to ivermectin products in young stock.

Calves 1-3 months of age:

1. Identify with tag and match calf's tag number to dam's tag number.
2. Vaccinate with 7 way Clostridial (Blackleg) vaccine-Although the calves are too young to mount a great immune response, this dose of vaccine will initiate ("jump start") the immune process.
3. Dehorn, Castrate-the earlier these practices are completed, the better.
4. Optional Practices:
 - a. Implant steers at the time of castration (unless you plan to sell calves in an organic or natural market)
 - b. Viral Respiratory Vaccine-Killed, MLV *, or intranasal (intranasal is preferred for young animals)
 - c. Deworm-Begin deworming calves at 4-8 weeks old depending on time of year and expected level of pasture contamination with parasite larvae. If the grass is actively growing, the calves will likely benefit from deworming.
 - d. Test for BVD-PI (ear notch)-Consult your veterinarian if this is something to consider. If BVD has been diagnosed in an animal from your farm or there is a history of unexplained abortions in the herd, testing all calves is the proven first step to find persistently infected (PI) animals.

Additional Considerations:

1. *Modified Live Vaccines (MLV) provide fast, broad immunity, stimulate production of higher levels of antibodies and are excellent stimulators of cell-mediated immunity. Only use modified live vaccines **in nursing calves** if the cows were vaccinated with MLV in the last 12 months (check label for specific requirements). If this requirement is not met, a killed vaccine must be used until the cow is open and the calf is weaned.
2. Killed vaccines provide safe, protective immunity but must be given twice (usually 2-3 weeks apart) if it is the first time a killed viral respiratory vaccine is administered. Onset of immunity may be delayed 4-6 weeks from the time of the initial vaccination. Yearly boosters are required after the initial two-shot sequence. Not following the initial 2-shot protocol will result in vaccine failure.
3. Scours Vaccine-Administer prior to calving to help prevent a scours outbreak in baby calves. Products vary on when to administer them so follow label directions carefully.
4. Keep good vaccination records. Record date, vaccine name, serial numbers and expiration dates at a minimum.
5. Interpreting the letters in a vaccine name:
 - a. IBR, BVD, BRSV and PI₃ : Diseases included in a viral respiratory vaccine. BVD is sometimes split into Type I and Type II.
 - b. An "FP" in the vaccine name stands for "fetal protection" and means added protection against fetal infection and abortion due to the BVD virus.

- c. An “HB” in the vaccine name stands for the strain of *Leptospira* known as “Hardjo bovis” that is a common cause of abortion in cattle.
- d. “HS” stands for “*Histophilus somni*” (formerly known as *Hemophilus somnus*)
- e. “L5” stands for the 5 strains of Leptospirosis.
- f. “V” stands for “Vibriosis”

In summary, vaccination programs must be designed around the specific risks facing your cattle. There are numerous vaccines available on the market for other diseases (for example: Pinkeye, Brucellosis, Anaplasmosis, Trichomoniasis, *Clostridium perfringens* Type A, Foot Rot, Papilloma or Wart Virus) but they may or may not be needed in your particular situation. Always discuss your concerns with your veterinarian to develop the plan that will work the best for you.

Increasing Frost Seeding Success!!!

Dr. Chris D. Teutsch, Forage Extension Specialist, University of Kentucky Research and Education Center at Princeton

The importance of legumes in pastures has long been recognized. They bring nitrogen into grassland ecosystems via symbiotic nitrogen fixation, improve forage quality and animal performance, and dilute the toxic effects of the endophyte found in tall fescue. It is estimated that commonly used pasture legumes will fix between 50 and 200 lb nitrogen per acre per year. Frost seeding clover and in some cases annual lespedeza is a simple and effective way to reintroduce legumes back into pastures. The following suggestions will help to enhance the success of frost seedings.



- ✓ *Soil test and adjust fertility.* In order for pasture renovation to be successful proper soil fertility is required. Lime and fertilize pastures according to soil test results. Lime should be applied six months prior to renovation if possible.
- ✓ *Suppress sod and decrease residue.* The existing sod must be suppressed and plant residue reduced prior to seeding. The reduction in plant residue facilitates good soil-seed contact by opening the sod up and allowing the seed to reach the soil surface. This can be accomplished by hard grazing in late fall and early winter.
- ✓ *Broadcast seed on proper date.* Frost seeding legumes back into pastures is best accomplished in late winter to early spring (February 1 and early March 1). Frost seeding is accomplished by simply broadcasting the seed onto the soil surface and allowing the freezing and thawing cycles to incorporate the seed into the soil. Since frost seeding depends on the freezing and thawing cycles to incorporate the seed into the soil, it is especially that it is done on-time. *Prior planning and preparation are important so that seeding can be done in a timely manner.*
- ✓ *Ensure good soil-seed contact.* Good soil-seed contact is required for germination and emergence of frost seeded clover. One way to increase soil-seed contact is to drag pastures as you broadcast the seed or just after. This disturbs a small amount of soil enhancing soil-seed contact.
- ✓ *Use varieties that have been tested in Kentucky.* Choose varieties that have been tested in Kentucky and have performed well over multiple years and locations. Use either certified or proprietary seed to ensure high germination, seed genetics, and low noxious weed content. Cheap, low quality seed often cost more in the end due to lower production, decreased persistence, and thin stands.

- ✓ *Use correct seeding rate.* In Kentucky, a good mixture for frost seeding is 6-8 lb medium red clover and 1-2 lb of ladino or grazing white clover. Due to its low productivity, do NOT use common or Dutch white clover. In some cases, 10-15 lb of annual lespedeza per acre can be mixed with the red and white clover. Calibrate your seeder prior to planting (see box on calibrating forage seeding equipment).
- ✓ *Inoculate Legume Seed.* Always use pre-inoculated legume seed or inoculate it with the proper strain of nitrogen fixing bacteria prior to seeding. This is relatively inexpensive insurance that efficient nitrogen fixation will take place.
- ✓ *Check seed distribution pattern.* When using a spinner type spreader/seeder make sure and check your spreading pattern. In many cases small seeded forages are not thrown as far as fertilizer. This can result in strips of clover in your pastures rather than a uniform stand. Also check your seed distribution pattern. Single disk spinners often throw more seed to one side if not correctly adjusted.
- ✓ *Control Post-Seeding Competition.* Failure to control post-seeding competition is one of the most common causes of stand failures. Clip or graze the existing vegetation to a height just above the developing seedlings. This must be done in a timely manner to ensure that the competing vegetation does not get ahead of the seedlings.
- ✓ *Pray for rain.* Lastly and most importantly pray for rain. We can do everything just right, but if it doesn't rain success will be unlikely.

Forage Seeder Calibration at a Glance

- ✓ Planting too much seed increases establishment costs.
- ✓ Planting too little seed results in thin stands, increased weeds, and lower yields.
- ✓ Seeding charts can vary greatly from actual seeding rate.
- ✓ Seeders should be calibrated under field conditions whenever possible.
- ✓ The area covered and amount of seed dispensed must be known for calibration.
- ✓ **Seeding rate = amount of seed ÷ area covered**
- ✓ Area covered (acres) = seeder width (ft) x distance traveled (ft) ÷ 43,560
- ✓ Determining amount of seed (always tare scale for weighing container):

Collection: Seed is collected for a known area.

Difference: The difference between the original amount of seed in the seeder and the amount remaining for a known area.

Run out: Seeder is run until known quantity of seed runs out and area is determined. This is the least precise method.

For more detailed information on calibrating forage seeding equipment, visit <http://pubs.ext.vt.edu/418/418-121/418-121.html> or contact your local Virginia Cooperative Extension office and ask for Publication 418-121, Calibrating Forage Seeding Equipment.

For more information on frost seeding contact your local extension agent or visit Kentucky Forages at <http://forages.ca.uky.edu/>. A YouTube video on *Frost Seeding Clover* can be viewed at <https://youtu.be/dmBBBaLVg-Y?list=PLrq6psn95pUxr2iC0Mxn93wcYPxTJvWfl>.

Tall Fescue and its endophyte - Implications for your farm

Dr. Jimmy Henning, Livestock Forage Specialist, University of Kentucky

The story of Kentucky 31 tall fescue reads like a soap opera. Found on a Menifee County Kentucky hill side in 1931, it quickly became a rival to Kentucky bluegrass as the most important grass in Kentucky. Its yield and persistence made it look unbeatable, but its animal performance numbers were sometimes poor or worse. The decision by the University of Kentucky to go forward with the release of Kentucky 31 was filled with about as

much drama as you will ever find in an academic setting.

We now know the poor animal performance AND the persistence of that early fescue was due to the presence of a fungus inside the plant (the endophyte; 'endo' for in plus 'phyte' for plant). When the endophyte is present,



Figure 1 Tall fescue is the dominant grass of Kentucky, and most is infected with a toxic endophyte. Much is known about this unusual combination of pasture plant and internal fungus. Management, clover interseeding and replacement will improve livestock performance.

that plant is said to be 'infected.' And when infected plants grow, the fungus produces compounds that result in the poor animal performance. These compounds are known as alkaloids, and ergovaline is the one used to assess fescue toxicity in the laboratory.

Early surveys in Kentucky found the majority of fescue did contain the endophyte of tall fescue. The scope of this problem led to massive amounts of research about the endophyte of tall fescue and how to mitigate its

effect on livestock across the fescue belt.

The following is a synopsis of our current understanding of this pasture grass and the toxic endophyte.

- The endophyte grows inside the plant, between the cells, but is never seen externally. There are no visual indicators to tell if tall fescue is infected.
- The endophyte is physically present in the stem bases, but the toxic compounds spread throughout the plant.
- The least toxic portion of the plant is the green, leafy tissue. The most toxic portion is the seed, with stem bases being intermediate. Managing to keep pastures leafy, not overgrazing, and preventing seedhead production are all effective strategies to manage the negative effects of the tall fescue endophyte.
- Ergovaline levels (the indicator of fescue toxicity) fluctuate seasonally and are highly variable year to year. Concentrations are highest in May/June and September/October. Toxin levels drop after the fescue experiences the cold temperatures of late fall and winter. In one Central Kentucky field, ergovaline numbers dropped 80% from October to December.
- Ergovaline levels are lower in hay than the standing forage from which it was made (another very positive thing).
- The toxic alkaloids cause constriction of the external blood vessels in cattle (vaso-constriction) leading to heat stress. Cattle eat less, gain less and breed less. The negative economic effects of infected tall fescue are significant, totally millions annually across the Southeast.
- Most Kentucky pastures contain tall fescue, but fields are seldom 100% tall fescue. The presence of other species buffer the effects of the endophyte – a very good thing. The diversity of our pastures and our milder summers mean that we suffer somewhat less than states to the south. However, toxic tall fescue is the single biggest agronomic drag on animal performance in Kentucky and must be mitigated for economic viability.

- Interseeding with clovers is the number one way to offset the effect of the endophyte of tall fescue. Clovers improve the protein and energy content of the pasture and will contribute nitrogen to the system from plant decomposition or from the manure and urine deposited from cattle consuming clover.
- Recent research by the USDA-ARS forage research unit showed that clover, especially red clover, will directly reduce the vaso-constriction in cattle consuming infected fescue. Fortunately, red clover is extremely well adapted and relatively easy to establish into existing tall fescue pastures.
- The endophyte is only spread by infected seed. Endophyte-free varieties are available.
- Early endophyte-free tall fescue varieties (such as Kentucky's 'Johnstone') did not prove as persistent as Kentucky 31 with the endophyte.
- Grazing tolerant varieties of endophyte free tall fescue are available. For a full report on their persistence under heavy grazing, consult University of Kentucky Progress Report PR-735, Cool-Season Grass Grazing Tolerance Report (<http://www2.ca.uky.edu/agcomm/pubs/PR/PR735/PR735.pdf>).

The Kentucky 31 brand put our state on the tall fescue map worldwide. The endophyte present in those early seedlots contributed to its persistence but also its current limitations on pasture performance. But just when you think you understand the toxic endophyte of tall fescue, along comes a non-toxic endophyte. Really. But that is a subject for the next column. See you then.

Happy Foraging!

From Jan 18 Farmers Pride

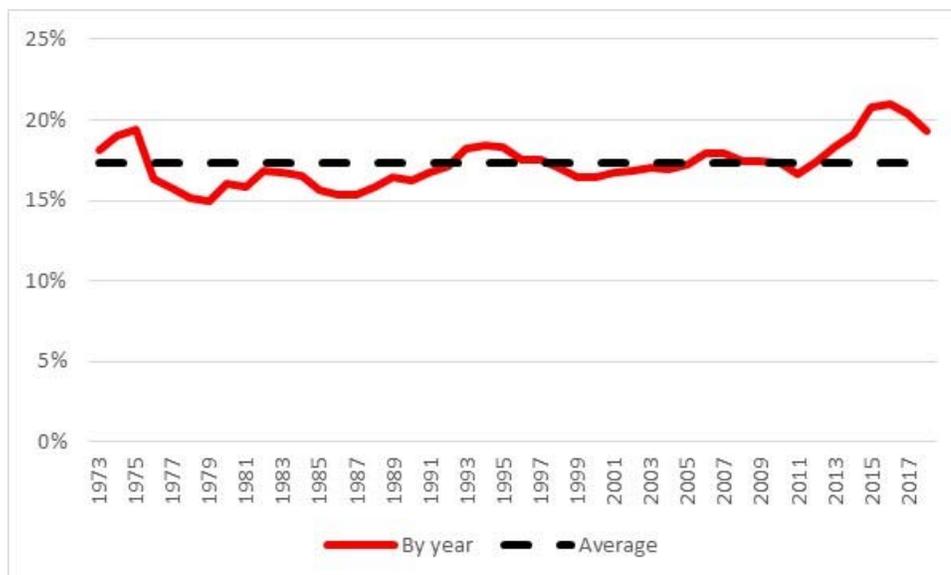
Beef Herd Continues to Grow

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

USDA released their January 1 estimates for cattle inventory late last month and I wanted to walk through some of the high points of this report. Beef cow numbers were estimated to have grown by 1.6% from 2017, which is a little less than half the increase that was seen in the prior year. Although growth in the US herd is clearly

slowing, beef cow inventory has increased by 9% since 2014.

Figure 1: Jan 1 Beef Heifer Retention as a % of Beef Cow Inventory (1973 to 2018)



Anytime the beef cowherd is expanding, heifer retention is of interest. Heifer retention for beef cow replacement was estimated to be down 3.7% from 2017. Often a decrease in heifer retention is seen as evidence of future decreases in cow numbers, but that is likely not the case this time. This point is probably best made by considering beef heifer retention as a percent of the total number of beef cows in the US, as shown in figure 1. Heifer retention as a percent of beef cow inventory has averaged 17.3% since 1973 and is depicted by the dotted line. The solid red line shows heifer retention as a percent of beef cattle inventory by

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

year. While this number has decreased from its high of 21% in 2016, it is still well above the long term average. So, while heifer retention is decreasing, it appears that we are still developing a sufficient number of heifers to see herd expansion continue. This really speaks to how high heifer retention was just a couple years

ago.

The largest change from 2017 was a 7% increase in the number of cattle on feed. Monthly reports (which survey only large feedlots) had been showing cattle on feed number above year-ago levels since spring, but had shown especially large increases since fall. Part of this is due to the size of the calf crop, which was 2% larger in 2017, but I think a larger issue involves winter grazing.

The annual inventory report also includes an estimate of cattle grazing small grain pasture on January 1st in Kansas, Oklahoma, and Texas. This estimate serves as a gauge of winter grazing, which has a significant impact on late fall and winter calf markets. USDA estimated a 13% decrease in the number of cattle grazing small grains this January as compared to 2017. I had an opportunity to visit with some of my colleagues in Texas and Oklahoma last week and they confirmed that fewer cattle were placed into winter grazing programs this year and some that were placed had to be sold early due to weather challenges. This would suggest that in addition to the larger calf crop, more light cattle were placed directly on feed this winter. Cattle placed on feed at lighter weights will tend to be on feed longer and finish at slightly lower weights.

Still, the combination of growing cattle on feed inventories and relatively inexpensive feed, should translate into a sizeable increase in beef production for 2018. Increases are also expected for both pork and poultry. This growing supply of meat will be the largest challenge for the beef sector in 2018.

The USDA report is summarized in table 1 and the full report can be accessed at: <http://usda.mannlib.cornell.edu/usda/current/Catt/Catt-01-31-2018.pdf>

Table 1: USDA January 1, 2018 Cattle Inventory Report

	2017 (1,000 hd)	2018 (1,000 hd)	2018 as % of 2017
All Cattle and Calves	93,704.6	94,399.0	101
Cows and Heifers That Have Calved	40,559.2	41,122.6	101
Beef Cows	31,213.2	31,723.0	102
Milk Cows	9,346.0	9,399.6	101
Heifers 500 Pounds and Over	20,132.0	20,244.8	101
For Beef Cow Replacement	6,368.2	6,131.2	96
For Milk Cow Replacement	4,754.0	4,7581.3	101
Other Heifers	9,009.8	9,332.3	104
Steers 500 Pounds and Over	16,383.5	16,352.2	100
Bulls 500 Pounds and Over	2,243.6	2,252.2	100
Calves Under 500 Pounds	14,386.3	14,427.2	100
Cattle on Feed	13,067.0	14,006.4	107
	2016	2017	2017 as % of 2016
Calf Crop	35,092.7	35,808.2	102

Source: NASS, USDA