OFF THE HOOF

Cooperative Extension Service
University of Kentucky
Beef IRM Team

KENTUCKY BEEF CATTLE NEWSLETTER MARCH 3, 2025

Each article is peer-reviewed by UK Beef IRM Team and edited by Dr. Les Anderson, Beef Extension Specialist, Department of Animal & Food Science, University of Kentucky

This month's newsletter includes:

Timely Tips

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

Spring-Calving Cows

- Observe spring-calving cows closely. 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 that 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.
- 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.
- 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.
- Prepare bulls for the breeding season. Increase feed if necessary to have bulls in adequate condition for breeding. Obtain Breeding Soundness Evaluation (BSE) on bulls, even if they were checked last breeding season. Only use bulls that pass the BSE.
- Finalize plans for your spring breeding program. Purchase new bulls at least 30 days before the breeding. Order semen now, if using artificial insemination.

Fall-Calving Cows

- Bull(s) should be away from the cows now!
- Plan to pregnancy check cows soon. Contact your herd veterinarian to schedule. You can also blood test for pregnancy as early as 30 days after bull removal.
- 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. Be sure that feed bunks are low enough that calves can eat with the cows.
- Calves intended for feeders should be implanted.
- Consider adding weight and selling your fall calves as "heavy" feeder calves. Keep them gaining!

General

- Repair fences, equipment, and handling facilities.
- If you have a dry, sunny day, buse 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.
- Watch for lice and treat if needed.

Antibiotic Selection in Bovine Respiratory Disease

Dr. Michelle Arnold, DVM-Ruminant Extension Veterinarian (UKVDL)

"Antimicrobial or antibiotic resistance" occurs when bacterial populations change in some way that reduces or eliminates the effectiveness of the drugs designed to remove them. When antibiotic treatment fails, it is often assumed that resistance has developed, and changes must be made in treatment protocols such as using combinations of antibiotics or using a different sequence of drugs to improve the outcome. While the threat of resistance development is real, there is much more involved in recovery from bovine respiratory disease (BRD) than the interaction of a chosen antibiotic with the bacterial pathogens in lung tissue. In other words, antibiotic selection is important but is only one piece in the very complex puzzle of treatment success or failure.

The antibiotic's ability to stop the growth of bacteria ("bacteriostatic") or kill bacteria ("bactericidal") depends on its mechanism of action and the concentration of the drug at the infection site. Once an antibiotic is given, it is absorbed then distributed by the bloodstream throughout the body. The liver, kidneys, and other organs then chemically change or metabolize the antibiotic to allow it to be excreted through urine or feces. The chemical properties of the drug and how it is ultimately metabolized affect its ability to penetrate infected tissues and contact the bacteria inside them. How quickly this process works depends on the individual animal's physiologic state (hydration, acid/base status) and the chosen antibiotic. Successful antibiotic therapy depends on early exposure of pathogenic bacteria to effective concentrations of the right drug for an optimum period of time.

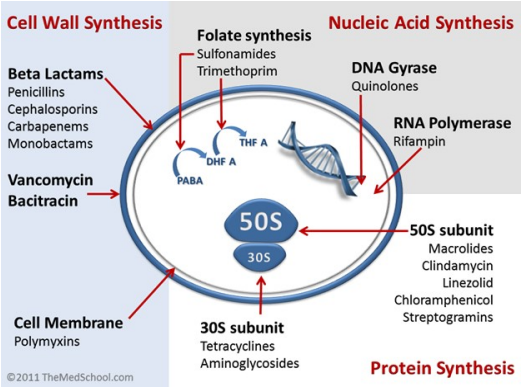

Figure 1: Drawing of a bacterium illustrating the ways different "classes" of antibiotics fight against them. By Kendrick Johnson (Own work) [CC BY-SA 3.0 (http://creativecommons.org/licenses/by-sa/3.0)], via Wikimedia Commons

Broadly, livestock antibiotics target one of three sites: the bacterial cell wall, the bacterial nucleic acid or at a site of bacterial protein production on the ribosome. An antibiotic is classified within a family based on its mechanism of action used to fight against bacterial organisms (see Figure 1). The Beta-lactam antibiotic class that includes penicillin, ampicillin (Polyflex®), and ceftiofur (Excede®, Naxcel®, Excenel®), inhibits production of the bacterial cell wall that protects the cell from harm, causing bacterial death. Aminoglycosides (spectinomycin, gentamicin, and neomycin) and Tetracyclines (LA-300®, Biomycin®, and many others) interfere with protein synthesis by binding to the machinery in the 30S subunit of the ribosome needed to build essential proteins for replication. Macrolides (Draxxin®, Micotil®, Zactran®, Zuprevo®, Tylan®) and Chloramphenicol derivatives or "phenicols" (Nuflor®, Resflor®) also interfere with protein synthesis although at a different location (the 50S subunit) on the ribosome. The Fluoroquinolones (Baytril®, Advocin®) block genetic replication by interfering with nucleic acid (DNA and RNA) synthesis while Sulfonamides (Albon®, Sulfamethazine) block production of folic acid necessary for bacteria to survive. The beta-lactams, aminoglycosides, and fluoroquinolone families are generally considered to be bactericidal while the macrolides, phenicols, and tetracyclines are classified as bacteriostatic. If a calf requires retreatment, selection of an antibiotic from a different class will attack the bacteria through a different route and will often enhance treatment response. Current research is exploring the difference in treatment response based on the order of drugs used; some studies suggest that using a bacteriostatic drug followed by retreatment with a bactericidal drug may increase the risk of BRD relapse. Similarly, if using combination therapy (two different antibiotics given at the same time), selection of antibiotics from different families theoretically should increase the chances of at least one of the drugs being effective. However, it has long been taught that using a "cidal" and "static" drug at the same time increases the potential for antagonism and poor treatment success. Unfortunately, much of the antibiotic research to date has been conducted *in vitr*o, otherwise known as "in the lab", rather than out in the field. As more studies are conducted on the calves themselves, the differences between "static" and "cidal" antibiotics have become less distinct and are not considered nearly as important as in years past.

Besides the mode of action, antibiotics also differ in their "pharmacokinetic (PK) curves". The minimum inhibitory concentration (MIC) is the lowest concentration of an antibiotic that stops the growth of a certain strain of bacteria. Some antibiotics (Beta-lactams, Tetracyclines, Chloramphenicol derivatives) are considered "time dependent", meaning their effectiveness depends on reaching the MIC threshold and staying there over a certain length of time to be effective. If label directions are not followed and a second dose is required for a time-dependent drug but not given, treatment is less likely to be effective because the drug cannot stay above the MIC for the necessary minimum target time. "Concentration dependent" or "dose dependent" drugs such as macrolides and fluoroquinolones require bacterial exposure to a critical concentration above the MIC to be effective. If a partial dose is administered of a concentration-dependent drug, its effectiveness is severely compromised.

An important part of antibiotic selection and use is duration of therapy. Research has shown that at each retreatment, the BRD bacteria become more resistant to multiple antibiotics and response rates decline. Additionally, many of the bovine respiratory pathogens today contain a piece of genetic material known as an Integrative Conjugative Element (ICE) which codes for resistance to up to 7 antimicrobial families and may be transferred from one bacterial species to another through a process known as conjugation. Treatment protocols in many feeder cattle operations consist of one antibiotic used on arrival for metaphylaxis, a 2nd antibiotic or combination for first pulls, a 3rd antibiotic for the next treatment and possibly a 4th antibiotic for a final treatment before calling the calf a "chronic" and treatment ceases. To make these antibiotics effectively last throughout the first month on feed and decrease drug resistance, it is important to understand and observe the antibiotic's "post-treatment interval" or PTI. This interval is the time when an effective antibiotic is already in the calf and the treated animal is not eligible for retreatment until the end of this period. All the upper tier respiratory antibiotics, including Draxxin®, Excede®, Baytril®, Zactran®, Zuprevo®, Micotil®, Advocin® and Nuflor®, have a 5 to 7-day PTI. During the PTI, the antibiotic suppresses and delays disease onset while the calves are fighting the infection, adapting to their new environment, feed, social structure, and daily activity. Conversely, by shortening the treatment interval and becoming overly aggressive with retreatments, the antibiotic choices are essentially used up before the disease risk has passed for the group. Although it is very difficult to refrain from retreating an expensive calf that is not showing improvement after 1-2 days with an antibiotic on board, conserving antibiotic effectiveness for the rest of the calves has got to be a priority.

BRD is not a disease complex managed solely through a needle. Purchased calves should be assessed on arrival as either at high, medium, or low risk of respiratory disease and managed according to risk. The known factors predisposing calves to BRD include recent weaning, commingling, long distance transportation, castration and dehorning, bad weather (hot or cold), overcrowding, and poor-quality air and water. Disease control should begin with exceptional management and nutrition to minimize the stress on incoming calves. Successful treatment of bronchopneumonia is not simply a matter of grabbing a bottle of the latest and greatest antibiotic, drawing up a dart-full, shooting it in the sick calf and waiting for the magic bullet to take effect. Instead, full recovery is a joint effort between the calf's immune system and the selected drug to stop the growth of bacteria and destruction of lung tissue. Timing is crucial; if calves are treated early in the course of disease, antibiotics will have the best chance of making it into the tissues and increasing the odds of recovery. Conversely, if calves are treated late in the course of the disease, nothing will work.

Antibiotic selection needs to be intentional. Strategic and correct use of antibiotics will continue to be of importance for the cattle industry from this point forward. Careful attention to timing of treatment, drug selection, dose, and handling of the product will reduce the human factors that contribute to antibiotic failure. Calf factors including overwhelming stress, exposure to the bovine viral diarrhea (BVD) virus through a persistently infected (PI) calf, environmental or nutrition-related factors must also be addressed for the calf's immune system to work together with the antibiotic to stop disease progression. A veterinarian is well-trained in the complexities of antibiotic selection and is the best source of information when choosing or changing any BRD treatment regimen.

Price Risk Always Exists, even in a Bull Market

Dr. Kenny Burdine, University of Kentucky

I doubt many would take issue with me calling the last couple of years a "bull market" for cattle. The combination of tight supplies and strong demand has resulted in cattle markets tracing an upward trajectory over the last couple of years. As an illustration, the chart below tracks the daily nearby CME© feeder cattle futures price over the last 26 months. In January of 2023, the nearby feeder cattle futures price was in the $180's. As I write this article in mid-February of 2025, the nearby feeder cattle futures price is in the $260's.

While it is hard to dispute the overall strength of the recent cattle market, it is also important to note that during the last 26 months there have been multiple times when markets saw significant downward swings. The most recent of these occurred since the end of January and was likely sparked by the resumption of live cattle imports from Mexico, continued talk of trade disruptions, Avian Influenza, and any number of other factors. The market also fell by more than $40 per cwt from September to December of 2023 and more than $30 per cwt from late May to early September of 2024. For producers who sold cattle during those pullbacks, the impact on returns was significant.

There are a lot of potential strategies to manage price risk and the simplest may be a forward contract. By forward contracting cattle, price risk is largely eliminated as the seller and buyer agree on a purchase price prior to delivery of the cattle. A similar strategy would be selling cattle through an internet auction and specifying delivery at a later time. In both cases, the seller entering the forward contract still has production risk as they must meet the specifications of the contract (weight, quality, etc.), but market swings are no longer a concern.

Futures and options markets are also common tools for price risk management. Short futures positions allow producers to capitalize on the expectation of cattle prices in the future that are manifested in CME© futures prices. When utilizing a short futures position to offset potential decreases in cattle prices, farmers are essentially exchanging price risk for basis risk. Producers utilizing short futures positions also need to plan for potential margin calls if markets move substantially higher. Put options give producers the right to sell a future contract if they choose and they pay a premium for this flexibility. This effectively sets a price floor for cattle as the strike price on the put option and the premium paid sets a minimum price for the cattle being sold.

Finally, I have talked more about Livestock Risk Protection (LRP) insurance than any other risk management strategy recently. It works almost exactly like a put option but has the advantage of flexibility on scale. Unlike several of the other price risk management tools, LRP insurance can be

purchased on any number of head, which is much easier for smaller operations to utilize. LRP has been made more attractive over the last several years through increased premium subsidies and allowing producers to pay premiums after the ending date of the policy.

The specific tool or strategy that cattle producers utilize to manage price risk is less important than their overall risk management plan. I encourage producers to know what risk management tools are available to them, understand how changes in sale price impact their profits, and plan to cover themselves from downside price risk. I still feel good about the fundamentals of the cattle market, but I think the first couple weeks of February have been a good reminder that price risk always exists, even in a bull market!

University of Kentucky Extension and Kentucky Beef Network offer Free BQCA Certifications in April and September

Kentucky Beef Network, University of Kentucky

The Kentucky Beef Network and University of Kentucky Extension are pleased to announce that they will be offering free Beef Quality and Care Assurance (BQCA) certifications in April 2025 and September 2025.

The Kentucky BQCA program takes national BQA practices one step further to provide a holistic program for Kentucky producers, by adding cattle handling and animal care components to the training modules. Educational modules provide the best management practices for handling cattle and providing for their well-being, in addition to training on the core principles of BQA.
The cost of BQCA enrollment is $5 for in person training through their local county extension office and $10 for online training, however from April 1- 30, 2025 and September 1-30, 2025 the Kentucky Beef Network and University of Kentucky Extension will be sponsoring the enrollment costs, making it free for producers.

Producers interested in taking advantage of this opportunity can visit www.kybeefnetwork.com to access the online training platform or contact their county extension office for training opportunities. “We are very excited for this partnership for our Kentucky cattlemen to continue to tell their story to consumers through sound management practices,” says Kevin Laurent University of Kentucky Co-BQCA Coordinator.

The Kentucky Beef Network and University of Kentucky merged their Cattle Handling and Care Program with the National BQA program to create a new program, aptly named the Beef Quality and Care Assurance (BQCA) program. This program was implemented to raise awareness of practices that ensure the proper handling and welfare of cattle while keeping farmers safe and continuing to supply healthy beef to consumers. In turn, this program enables beef and dairy producers to enhance their product, maximize marketability and strengthen consumer confidence.

Selling vs Marketing

Kevin Laurent, Extension Specialist, University of Kentucky

Do you "sell" your calves, or do you "market" your calves? With cattle prices at record levels, the difference between the two doesn't seem to really matter that much, or does it? We are in unprecedented times in the cattle industry. Beef cow inventory is as low as it's been since many of us were born. Carcass weights are at record highs and input costs continue to rise. With light weight calves hitting $4.00 cwt it's hard to argue against the mindset of load them up and haul them off, but I think we need be careful to not let these good times change our mindset.

We are fortunate in Kentucky to have an excellent Market News division at Kentucky Department of Agriculture and lately I have poured over numerous KDA market reports working on PVAP closeouts. I thought I would share some of what I found. Table 1 shows the number of steers and bulls by weight (300-699 lbs.) and grade, large and medium frame, muscle score 1-2 (LM 1-2) vs large and medium frame, muscle score 2-3 (LM 2-3) as reported by the KDA Market News reporters for the week of December 8-14. I chose to summarize this particular report since it represents one of the largest marketing weeks in 2024 (24,085 feeder cattle). Note that 34% of the calves weighing 300-699 lbs. were bulls. This ranged from 60% for 3 wt. calves to 20% in the 6 wt. category. If you calculate the number of LM 2-3 calves, both steers and bull, you will see that 892 calves out of 7,413 (12%) failed to have the muscling and quality to make the LM 1-2 grade. So how does this affect price?

Table 1. Number of steers and bulls by weight and grade
KDA Market News (12/8/24 - 12/14/24)

Weight	LM 1-2 Steers	LM 2-3 Steers	LM 1-2 Bulls	LM 2-3 Bulls	Total Head	% Bulls	% Bulls + LM 2-3
300-399	219	41	314	75	649	60%	66%
400-499	746	92	606	144	1588	47%	53%
500-599	1584	48	698	190	2520	35%	37%
600-699	1929	198	425	104	2656	20%	27%
Total	**4478**	**379**	**2043**	**513**	**7413**	**34%**	**40%**

Table 2 gives the corresponding weighted average prices ($/cwt.) reported in that same week. Discounts for bulls vs. steers of similar quality (LM1-2) ranged from -$14.41 for 3 wt. calves to -$30.18 for 6 wt. calves. More severe discounts were reported for LM 2-3 steers and bulls with a range of -$30.34 for 6 wt. LM 2-3 steers to a high of -$75.15 for 3 wt. LM 2-3 bulls. This means that 40% of calves weighing between 300 and 699 lbs. experienced discounts ranging from $14 to upwards of $50 plus per cwt. Per head discounts on a 500 lb. calf ranged from $125 per head for selling a LM 1-2 bull up to $283 per head for selling a lower quality light muscled LM 2-3 bull. For the average 25-30 cow Kentucky cow herd, this could easily total $2000 or more of lost revenue. The good news is these discounts can be avoided by simply castrating calves and using quality bulls with adequate muscling. The common argument against castration is added weight at weaning and the risk involved. Both of these concerns

Table 2. Weighted average price ($/cwt) comparisons of steers and bulls by weight and grade
KDA Market News (12/8/24 - 12/14/24)

Weight	LM 1-2 Steers		LM 1-2 Bulls		LM 2-3 Steers		LM 2-3 Bulls		LM 1-2 Bulls vs LM 1-2 Steers	LM 2-3 Steers vs LM 1-2 Steers	LM 2-3 Bulls vs LM 1-2 Steers
	avg.wt.	price	avg.wt.	price	avg.wt.	price	avg.wt.	price			
300-399	361	357.81	355	343.40	353	310.67	353	282.66	-$14.41	-$47.14	-$75.15
400-499	453	336.62	453	311.86	452	291.42	453	271.50	-$24.76	-$45.20	-$65.12
500-599	554	302.80	547	277.52	552	262.22	554	246.26	-$25.28	-$40.58	-$56.54
600-699	642	275.32	643	245.14	649	244.98	646	224.01	-$30.18	-$30.34	-$51.31

can be alleviated by castrating early (less than 3 months of age) and implanting. Early castration is easier on the calf and the person doing the castrating. Also, research has shown that early castration coupled with one growth promoting implant will result in similar weight at weaning as if the calf had been left intact.

So, what is the difference between "selling" and "marketing"? If the first step of marketing is avoiding discounts, maybe the second step is adding value. Weaned preconditioned calves continue to be in demand and the best place for a calf to be castrated and weaned is on the farm where it was born, and buyers recognize that. The Advanced Post Weaning Value-Added Program (PVAP) helps producers determine the profitability of weaning and preconditioning their calves prior to marketing. Calves must be weighed at weaning to determine the beginning value of the calves and expenses are recorded throughout the preconditioning period. When calves are sold, a one-page closeout detailing costs and returns and performance of the calves is provided to the participant. Table 3 is a summary of closeouts from the PVAP program during the marketing year April 2024 to January 2025. This summary contains the 25

Table 3. Summary of Advanced PVAP Closeouts (April 2024 - January 2025)

Date	No. Closeouts	No. Hd.	Wean Wt. lbs.	Wean Value $/cwt	Sale Wt. lbs.	Sale Value $/cwt	Total Gain lbs.	Days Fed	ADG lbs.	Feed lbs.	Prot. %	Feed $/ton	Feed Cost $/hd.	Forage lbs.	Forage Cost $/hd.	Ration Cost Gain $/lb	Price vs State $/cwt	Net Added Value $/head
2024 (All)	25	783	539	261.7	707	253.8	168	76	2.21	11.0	14.4	234	98.84	6.7	23.16	0.76	+7.01	$215.99
2024 (Fall)	16	555	546	252.2	703	257.5	157	74	2.12	10.1	14.0	225	84.87	9.1	25.60	0.73	+9.00	$277.66

Notes:

Wean Value = Weaning weight adjusted for estimated shrink (average shrink = 4.6%, with a range of 0-6) x price of average LM1-2 calves selling as close to the weaning date for the producer's sale barn of choice.

Sale Value = Average net value of the calves sold as listed on the sale check stub.

Health Costs = Includes cost of vaccines, dewormers, sale tags, prostaglandin, etc. necessary for preconditioning program. (**2024 Average = $15.70/hd.**)

Ration Costs = Includes cost of feed, forage, and mineral during the preconditioning period. (**2024 Average = $126.76/hd.**)

Interest = Interest rate of 6% was charged on the weaned value of the calf for the length of the preconditioning period. (**2024 Average = $17.15/hd.**)

Death Loss = A one half percent death loss was assumed. This low rate was chosen since these are low risk home raised calves. (**2024 Average = $6.82/hd.**)

Price vs State = weighted avg. sale price of preconditioned calves compared to the state average of non-value added calves sold the same week. (**2024 Average = +$7.01/cwt**)

Net Added Value = Sale Value - (Wean Value + Health Costs + Total Feed Costs + Interest + Death Loss)

closeouts that have been completed. Note that 2024 was a historically profitable year for preconditioning calves. Net added value per head averaged $216 vs selling the calf at weaning. Returns this fall were even higher, averaging $278 per head with several closeouts in the $300 plus range. Think about the "sellers" who sold their intact bawling bull calves straight off the cow in October vs the "marketers" who weaned their steer calves in October and preconditioned and marketed them in December. Market data and PVAP results from this fall indicate a potential $403 ($125 + $278) per head revenue advantage to the "marketer". Which for a typical 25 cow herd could have totaled an additional $4000 and this does not include added revenue for preconditioned heifers.

There are several other strategies that can enhance value and help you "market" your calves. Managing a tighter calving window will result in larger lot sizes. Upgrading genetics with breeders who offer buyback programs or special sales. Participating in stockyard precondition sales. Group selling with other producers with similar cattle and program. Whatever strategies you use, remember these prices won't last forever so use your profits wisely to position yourself to be a "marketer" and not just a "seller".

That First Calf Heifer is not a Mature Cow – So why would we treat her like one?

Dr. Katie VanValin, Assistant Extension Professor, University of Kentucky

Developing and first calf heifers are not the same as mature cows. While that seems like an obvious statement, there is still a common belief that heifers should be able to "get by" under the same management as mature cows. The thought is that we are selecting heifers that match available resources when we should be selecting heifers that *will become* cows that match our resources. Because heifers still have additional nutrient requirements for growth, they require different nutritional management than cows.

In the beef industry we talk about selecting "heifer-acceptable" bulls all the time, because we understand the need for emphasis on calving ease in heifers compared to mature cows. If we are going to keep back our own replacements or develop heifers, we also need to think about selecting a heifer acceptable feeding program.

Decades of research have helped us understand how heifers and cows prioritize nutrients (figure 1). The first priority is meeting maintenance requirements—these are the nutrients needed to keep the animal alive and maintaining their current body condition. Next up is supporting lactation, followed by growth (for growing females), supporting an existing pregnancy, and lastly the estrous cycle or the ability to breed back.

First-calf heifers are particularly vulnerable in a cow-calf operation. They must do everything a mature cow does— raise a calf and breed back—while also continuing to grow. The consequence of not meeting her nutrient requirements is the inability to breed back, often resulting in young females being culled from the herd. Developing heifers is a significant investment, with costs spread over the animal's productive lifetime. Research has shown that it takes at least 4-5 years for a heifer to pay for herself. When first-calf heifers fail to breed back and are culled, it almost always results in a net loss to the operation. Not only have we failed to recoup her development costs, but we've also lost out on potential income from her future calves.

Reproductive failure in these young females is often wrongly blamed on genetics, but we know reproductive traits are lowly heritable. The real blame is likely due to nutrition, or more specifically undernutrition. The good news is that nutrition is something we can manage and control. Young growing females are smaller than their mature cow counterparts which means that their feed intake will be less than that of the mature cow. With less feed intake, this means that heifers require diets with greater concentrations of energy and protein.

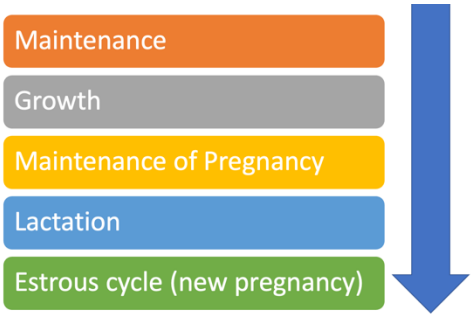

Figure 1: Nutrient partitioning for heifers and cows.

In a typical spring calving system, the herd will likely be consuming lush forages during the breeding season but looking at the critical time leading up to breeding season, most herds will be consuming conserved forages. When thinking about supplementing average quality cools season grass hay, a lactating cow may require 3 lbs. of dried distillers grains, whereas a heifer consuming this same hay would require 5 lbs. of dried distillers grains.

To ensure that heifers are meeting their nutrient requirements, consider managing these young females in a separate group from the rest of the cow herd. For smaller herds, it may also make sense to manage any mature cows that have a low body condition score with these young females. This can allow for strategic supplementation for cattle needing extra nutrition without overfeeding mature cows that are in good body condition.

Always test your hay, and consider feeding higher quality forages to heifers, which can reduce supplemental feed costs. Another benefit to hay testing is the ability to select supplemental feeds that provide the best value based on the amount of supplemental energy or protein required by the herd. Energy is often the most limiting ingredient in forage-based systems, and it is highly unlikely that average quality grass hay is going to be an adequate source of energy for developing heifers, lactating first-calf heifers, or even lactating mature cows. Careful consideration should be made to provide adequate energy as well as protein in the diet.

At the end of the day, it is important to remember that developing and first-calf heifers are simply not the same as the mature cows in the herd. Take care to manage these animals to set them up for long-term success and longevity in the herd.

Reclaiming Pugged Up Pastures

Dr. Chris Teutsch, UK Research and Education Center at Princeton

Wet conditions this winter have resulted in almost complete disturbance in and around hay feeding areas. Even well designed hay feeding pads will have significant damage surrounding the pad where animals enter and leave. These highly disturbed areas create perfect growing conditions for summer annual weeds like spiny pigweed and cockle bur. Their growth is stimulated by lack of competition from a healthy and vigorous sod and the high fertility from the dung, urine and decomposing organic material around hay feeding areas.

Our most common approach to revegetating these areas is trying to reseed cool-season perennial grasses (tall fescue and orchardgrass) and legumes (red and white clover) in mid- to late-spring. On the surface this seems to be a logical approach. However, it rarely works as well as we would like. The problem is that cool-season perennial grasses usually don't have enough time to become fully established before the weather turns hot. In addition, summer annual weed pressure can be fierce during establishment. The net result is that these attempts at reseeding pugged up pastures often fail. An alternative strategy involves planting summer annual grasses in late spring or early summer. This approach has a much higher probability of success. Summer annual grasses, especially sorghum-sudangrass or sudangrass, have very rapid emergence and canopy closure. This will prevent summer annuals weeds from germinating and provide forage for grazing or harvesting during the

Figure 2. Sorghum-sudangrass is easily established once soil temperatures research 60 F and provides rapid growth and canopy cover outcompeting common summer annual weeds.

summer months (Figure 2). Perennial cool-season grasses can then be reseeded under more ideal conditions in late or summer or early fall.

If you decide to use summer annuals grasses, there are several things that you can do to enhance your success. These are listed below.

Plant adapted summer annuals species. Always plant forages that are well adapted to Kentucky and the soils and conditions on your farm. Summer annuals that can be used to reclaim hay feeding areas include sudangrass, sorghum-sudangrass, pearl millet, and crabgrass. Detailed information on the adaptability, establishment, and management of these species can be found in AGR-229, Warm Season Annual Grasses in Kentucky.

Use the high end of the seeding rate. Seeding rates are normally given as a range. Make sure and use the high end of this range. Even with summer annuals, rapid canopy closure is critical for reducing summer annual weeds.

Plant after soil warms. For summer annuals grasses to germinate and rapidly emerge, soil temperatures at planting should be at least 60 degrees F. As a general rule, this is about two weeks after the "ideal" corn planting date. This should allow plenty of time to let the area dry out and to get it smoothed up prior to planting. If there is a delay in planting the summer annuals after final tillage, it may be a good idea to do one more pass of light tillage to disturb any weed seedling that may have germinated.

Control broadleaf weeds. Once warm-season annual grasses are established, some herbicides can be applied to control summer annual broadleaf weeds. If you plan to reseed cools-season perennials in the fall, make sure and check the label for reseeding restrictions prior to application. Always consult and follow label directions. For more information on using herbicides on summer annual grasses, contact your local extension agent.

Grazing summer annuals grasses. Allow taller growing summer annuals like sorghum-sudangrass and pearl millet to reach a height of 18-24 inches before grazing and stop grazing a to 8-10 inches. Regrowth can be stimulated be applying 40-60 lb N/A after each grazing, but the last. Crabgrass can be grazed once it reaches a height of 6 to 8 inches. Cattle should be pulled off once it has been grazed to a height of 3 to 4 inches.

Haying summer annual grasses. Allow taller growing to reach a height of 30 to 40 inches before mowing. This will optimize yield and forage quality. If regrowth is desired, do not mow close than 6 inches apply 40 to 60 lb N/A after each cutting, but the last. Crabgrass should be cut for hay at the late boot-stage. Care should be taken to not mow crabgrass closer than 3 to 4 inches.

Reseeding cool-season grasses in the fall. Pastures should be sprayed with a non-selective herbicide in late summer to control any remaining summer annual grass and any weeds that have germinated. Cool-season grasses can be no-tilled into the killed pasture area.

For more information on renovating pastures and no-till seeding techniques visit UK Forage Extension website at http://forages.ca.uky.edu/ or contact your local extension office.