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

OFF THE HOOF

Kentucky Beef Newsletter April 2018

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

Contents

This month's newsletter includes:

Timely Tips

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

Spring Calving Cow Herd

- Watch cows and calves closely. Save every calf (you can cull/sell them later). Calves can be identified while they are young and easy to handle. Commercial male calves should be castrated and implanted. Registered calves should be weighed at birth.
- Cows that have calved need to be on an adequate nutritional level to rebreed. Increase their feed after calving. Don't let them lose body condition. Keep feeding them until pastures are adequate.
- Don't "rush to grass" although it can be really tempting. Be sure that grass has accumulated enough growth to support the cow's nutritional needs before depending solely upon it. Cows may walk the pastures looking for green grass instead of eating dry feed. This lush, watery grass is not adequate to support them. Keep them consuming dry feed until sufficient grass is available to sustain body condition. We've spent too much money keeping them in good condition to lose it now!
- *Prevent grass tetany!* Provide magnesium in the mineral mix until daytime temperatures are consistently above 60ºF. Mineral supplement should be available at all times and contain a minimum of about 14 percent magnesium. Make sure that your mineral mix also contains adequate selenium, copper and zinc. You can ask your feed dealer about the UK Beef IRM High Magnesium Mineral.
- Make final selection of heifer replacements. Consider vaccinating with a modified-live BVD vaccine.
- Purchase replacement bulls at least 30 days prior to the start of the breeding season. Have herd bulls evaluated for breeding soundness (10-20% of bulls are questionable or unsatisfactory breeders). Get all bulls in proper condition for breeding.
- If you are going to use artificial insemination and/or estrus synchronization, make plans now and order needed supplies and semen.
- Prebreeding or "turn-out" working is usually scheduled for late April or May - between the end of calving season and before the start of the breeding season (while cows are open). Consult your veterinarian about vaccines and health products your herd needs. Make arrangements now for products needed and have handling facilities in good working order. Dehorn commercial calves before going to pasture.

Fall Calving Cow Herd

- Pregnancy check cows now and cull open ones at weaning.
- Reimplant feeders.
- Consult with your veterinarian about a preweaning working of the herd.
- You may let calves creep-graze wheat or rye, if it is available. Calves will benefit from extra feed until spring grass appears.
- Plan marketing strategy for feeder calves.

Stockers

- Don't go to pastures too soon, give plants some growing time. Then stock at two to three times the July rate and rotate rapidly.
- "Condition" purchased calves prior to grazing. They should be processed and fed a conditioning diet prior to being placed on pasture. You can also use this time to introduce them to electric fences which are used in rotational grazing.
- Provide a good mineral supplement which contains a rumen modifier (Rumensin, Bovatec, etc.) along with adequate levels of copper and selenium.

General

- We've made a muddy mess this winter, so be prepared to reseed bare spots.
- Make plans to improve hay feeding areas to avoid muddy conditions like we have faced this winter. Consider geotextile fabric with gravel or concrete feeding pads.
- Prepare for the grazing season. Check fences and make necessary repairs. Check your corral, too.
- Get everything ready to make high quality hay in May! Have equipment serviced and spare parts on hand. Order baler twine now. Be prepared to harvest an adequate supply of hay when you have the opportunity. Re-supply the extra hay that you fed out of the barn. This past winter caused most producers to exhaust their hay supply, so it's time to re-stock.
- Plan now for fly control ... decide what fly control program that you will use but don't put insecticide eartags on cattle until fly population appears.

"This is a Family Business!?"

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

After more than forty years of visiting farms, I still cringe when folks describe their farming operation as a "family" business. That's the way it should be and there's no better place to raise a family, but I still find that statement "cringe worthy". It's because family is family and Business is Business! A family business may have to ultimately decide whether it is a family or a business. And sadly, business principles usually win out. I've seen that too many times.

Dave Pratt, a ranch management consultant, says that we have only three choices in any business: (1) We can be profitable, (2) We can subsidize the business, or (3) We can go out of business (bankruptcy). Many family farms choose the second option until they are sometimes forced into the third one. Any business needs to be profitable and all family members or employees need to work toward that goal.

I was on a recent farm visit when I suddenly realized that I had been there before – many years before. This farm had been the home of a herd of registered cattle and its owner was also a seemingly successful businessman – a family business. The family business consisted of the father and his two grown children. The father was so proud of his cattle that, on that particular farm visit some thirty years ago, after we had left the farm he turned around and went back. There standing in the fence row under some trees was the lone cow that he had forgotten to show me. And last week I was standing in that exact spot again.

I inquired about the history of this particular farm. It seems that the past owner had lost his farm and business because of bad business practices by the family. The same business practices that would never be acceptable in a normal business yet are frequently seen as normal in a "family" business. Things like unchecked spending, taking money out of the till, operating without a real plan, bad habits and, perhaps, a sense of entitlement. Communication would seem to be easy but it is generally a problem. Accountability is also lacking. The loss of a family business is very traumatic to the entire family, especially those family businesses and farms that have been held for several generations. Bankers have a saying that money lasts for three generations – the first one makes it, the second saves it and the third spends it. That's not always true but it does shed some light on how difficult it is to pass farms and wealth to subsequent generations.

Sometimes the third or fourth generation may feel entitled and not realize how difficult it can be to hold everything together. Young folks might benefit from working elsewhere and becoming successful in their own right before rejoining the family operation. Some people are just lazy – like "Ralph". His brothers caught him napping and told him that he had just won five dollars for being the laziest man in the county! Ralph said "just roll me over and put it in my back pocket". Would a real business keep a "Ralph" as an employee? What about family?

The most important piece of equipment in a family business may be the kitchen table. Sit down frequently and talk about what each family member's goals are. Then develop a mission statement and vision statement that is shared by all parties. Have a clear vision of each person's responsibilities – too many cooks spoil the stew. Someone has to be in charge. That position is usually held by the parent until they choose to give it up. A succession plan for retirement and death is a good idea but most people don't want to talk about it. If the younger generation is going to plan for the future, those things need to be ironed out. Don't wait until you die and leave your family with a legal mess.

Many family farms that had been held for several generations were lost in the farm crisis of 1981. Take the time and make the effort to be sure that you are not the generation that loses your family business. Obtain legal and financial advice from experts and keep your affairs in order. Operate your family farm as a real business. This tax season is a good time to review your operation. Do it for your family.

Seedstock Cattle Symposium: Still Time to Register!

Ben Crites, IRM Coordinator, University of Kentucky

There is still time to register for 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 the program attendees and is included in the $25 registration fee.

Registration for the symposium is still available! Producers interested in participating in the program can register either by mail or online. Please contact your local ANR agent for the registration form and for more details. Please remit payment and completed registration form to the Trimble County Extension office. Checks can be made payable to "University of Kentucky." To register for the event online, please use the link below.

Online Registration: https://www.eventbrite.com/e/kentucky-seedstock-cattle-symposium-tickets-43481838349

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).

Dewormers - Are They An Extremely Valuable Non-Renewable Resources?

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

A "non-renewable" resource is a resource with economic value that cannot be readily replaced on a level equal to its consumption. Petroleum and coal are two familiar examples of valuable non-renewable products used daily but known to exist in limited supply, and formation of new product takes billions of years. Dewormers, on the other hand, are products that can be purchased from almost any farm or veterinary supply store and online. There are many different kinds, fairly inexpensive, and seemingly effective at killing parasites in the digestive tract of cattle and certain types also control flies, ticks and lice. They come in many forms and can be delivered to cattle by mouth as a liquid, paste or in block form, by injection, or simply by pouring it down the topline. Given this situation, how could dewormers ever be classified as "extremely valuable non-renewable resources"? In a recent veterinary continuing education meeting at the UKVDL, Dr. Ray Kaplan, an internationally-known veterinary parasitologist from the University of Georgia, used that very phrase to describe the dewormers used every day in cattle operations.

Dr. Kaplan is considered a leading expert on the rapidly developing problem of "anthelmintic resistance" which means the dewormers available are losing their effectiveness in the field with no new products on the horizon to take their place. He explained that although new drug "classes" entered the market every decade from the 1950s to the 1980s, it has now been over 30 years since ivermectin was introduced in 1981. Basically 'we have what we have' which is 3 major chemical classes or families of dewormers known as the Benzimidazoles (SafeGuard®/ Valbazen®/Synanthic®), the Macrocyclic Lactones (Ivomec®/ Cydectin®/ Eprinex® & LongRange®/Dectomax®) and the Imidazothiazoles/ Tetrahydropyrimidines (Rumatel®/ Strongid®/ Prohibit® or Levasol®). "Resistance" is the term used for the ability of a parasite to survive after treatment with a dewormer given at the right dose, at the right time and in the right species. What was once a sheep and goat problem is now a growing cattle concern. The first case in US cattle was reported in 2004 and serious problems are now recognized worldwide. Resistance is most common in Cooperia, but increasingly reported in Haemonchus, Ostertagia and Oesophagostomum. Resistance to chemical dewormers is caused by a slow buildup of "resistance genes" in parasites from repeated drug treatment over many years. These genes accumulate undetected over time until the point when so many resistant worms survive there is an obvious treatment failure. Resistant worms are not more aggressive or deadly but they simply survive in high numbers after deworming, causing disease. So why, if livestock has been raised for hundreds of years and dewormers have only been around for the last 50 of those, are such dramatic effects seen if drugs fail? Unfortunately, this reliance on chemical deworming has allowed selection of bulls and replacement females with high production numbers but ignored their genetic inability to resist parasite issues. As Dr. Kaplan explained, we have developed "wimpy" animals when it comes to fighting parasites. Additionally, chemical deworming has allowed neglect of husbandry and pasture management factors that keep worm burdens naturally low. For example, overstocking a pasture means more feces, more worm eggs and larvae after egg hatching, shorter grass and more parasites in animals. This is a management problem and not the fault of the animal or the dewormer.

Parasites are a normal part of the ecosystem and it is also normal for grazing animals to be infected with parasites. "Infection" in this sense means there are worms in the digestive tract and is not the same thing as "disease". In cattle, "clinical disease" from parasites includes signs of diarrhea, anorexia ("off feed"), rough hair coat and, depending on the parasites involved, anemia (low number of red blood cells) and hypoproteinemia (low blood protein). However, the bigger concern is often “subclinical disease” where there are no overt signs of a problem yet there is actually decreased intake and decreased nutrient utilization resulting in severe reductions in weight gain. Most animals develop good protective immunity from parasites but this can only happen if the immune system gets stimulated by worms inside the animal (similar to how a vaccine works). Development of immunity to parasites largely depends on age of the animal. Calves under a year of age have poor immunity so clinical disease is possible and production losses are certain from Cooperia and Ostertagia without proper control. Two-year olds have moderate immunity so clinical disease is less of a problem but production losses likely without good control as more Ostertagia (the brown stomach worm) are active in this age group. Three-year olds and above have good immunity with little clinical disease and only slight production losses from parasites. This immunity can be maintained throughout their productive lifespan as long as nutrition is satisfactory. Those without good immunity formed early in life are at higher risk for disease. “Premunition” is the term used for this immunity that is stimulated by a resident population of worms and actually restricts the establishment of new worms. Treatment too often in young animals removes worms and eliminates the state of premunition.

How is it possible to know if dewormer resistance is a problem in a herd? The best way to test is a Fecal Egg Count Reduction Test (FECRT) based on the premise that dead worms don’t lay eggs. Fecal samples are taken from 20 animals before deworming then the same 20 are re-sampled in 2-3 weeks (depending on which dewormer was used). The number of parasite eggs should be reduced by >95% between pre- and post- treatment samples. If <90% reduction, resistance to that family of dewormers is certain. The test is best run in weaned animals under 16 months old and is not as reliable in adult cattle. Once parasites become resistant to a drug family, they never go back to being susceptible. For this reason, it is wise to do a FECRT on any newly purchased/leased breeding stock to avoid contamination of the farm with resistant parasites before allowing them to mix with the rest of the herd.

How can we slow the development of resistance to dewormers? Reducing unnecessary treatment with dewormers, making sure the dewormers used are effective, and strategic culling all contribute to fewer resistant genes in parasites. The following are Dr. Kaplan’s recommendations:

1. Reduce treatment frequency and/or modify treatment strategies. In cattle, treat only 80, 90 or 95% of adult population of the herd, leaving heaviest and best-looking untreated. In practical terms, if you deworm twice a year (spring and late summer/early fall), limit the slick, fleshy cows to just one time per year. This leaves a proportion of the worm population untouched by a dewormer (including the worms in untreated animals and also any eggs and larvae on pasture at the time of treatment). Parasitologists refer to this proportion of worms unexposed to the chemical effects of the dewormer as “refugia”. The greater the proportion in refugia (protected or “in refuge” from chemicals), the slower the development of resistance. Unfortunately, the common recommendation for many years has been strategic parasite control by deworming when environmental contamination is at a minimum in the summer. This practice actually promotes resistance because very few worms are in refugia.

2. Ensure the treatments we administer are very effective. Given the common state of dewormer resistance, use of drug combinations is essential. Combinations slow resistance because they kill more resistant worms! An example of this is using LongRange® injectable and using a drench dewormer (SafeGuard®/ Valbazen®/Synanthic®) at the same time. The purpose of the second drug is to kill any worms that survived the first drug, resulting in much fewer worms left to reproduce. Conversely, if drugs are underdosed or administered in a manner with reduced bioavailability or absorption, then partially resistant worms are more likely to survive and mate to produce fully resistant worms.

3. Culling the “wormiest” animals. The 80/20 Rule is in effect when it comes to parasites in cattle. Approximately 20-30% of animals in the herd have 80% of the parasites. Culling the wormiest-looking animals removes a significant number of parasites and stops the passing of genetic “wimpy-ness to

parasites" to their offspring.

In summary, it is impossible to eradicate parasites and, the harder we try, the faster resistance develops. The goal is not to eradicate parasites but to keep them at a level that does not cause detrimental health effects. Reliance on less chemical control and incorporating strategies based on our knowledge of parasites in the pasture (see box) will help preserve the effectiveness of current dewormers. Viewed this way, dewormers meet the definition of "extre

Environmental management to reduce exposure of the host animal is central to parasite control. The following list of practices will help create safer pastures with lower worm numbers and result in less need for anthelmintic (dewormer) treatment:

1. Resting of pastures for 6 months during cool or cold weather or 3 months during the hot and dry season will have a significant negative effect on the survival of worm larvae.
2. Clipping pastures, tilling and reseeding, or removing a cutting of hay will decrease existing worm burdens.
3. Exposure to ultraviolet light (sunshine) kills larvae, so removal of extensive overgrowth of pasture or heavy thatch is recommended.
4. Stocking rate is exceptionally important, as overgrazing forces consumption of forage close to the soil surface where the larvae are concentrated. Most larvae never migrate higher than 4-6 inches on forage.
5. Pasture rotation provides nutritious forage for growth and development but is usually not rested an adequate length of time to decrease the level of worm contamination. Allowing calves to creep graze in clean pastures ahead of adults in a rotational grazing situation will minimize the exposure of the most susceptible animals.
6. Areas of highest risk are those where animals congregate, such as watering troughs, shady areas, or sheltered areas, because manure buildup and high moisture are conducive to larvae survival.
7. Grazing after the dew dries in the morning decreases consumption of larvae from pasture, since moisture is necessary for larval movement up a blade of grass.
8. If practical, cattle and small ruminants can be grazed together or alternately, where each consumes the parasites of the other. This reduces available infective larvae for the preferred host species.

Spring Nitrogen for Improved Pastures
Mr. Brandon Sears, Madison County ANR Agent, University of Kentucky

Kentucky is one of the largest forage producing states in the southeastern U.S. Often, our cool season grass pastures could produce more forage for grazing with a bit of added fertilizer. Many cattlemen miss this opportunity.

In the spring of 2016, UK Extension Beef Cattle Specialist Dr. Jeff Lehmkuhler and I conducted a simple nitrogen fertility demonstration on a local beef cattle farm. Soil test results indicated that improved nitrogen fertility would provide additional grazing which was limiting at the time. The pasture we used was a cool season grass pasture approximately 0.3 acre in size. This area was excluded with temporary electric fencing to prevent beef cattle from grazing. On March 31st, one-half of the area received nitrogen fertility in the form of urea at a rate of 75 lbs per acre (35 units of N). On May 10th, three random quadrats within the nitrogen-fertilized and -unfertilized areas were clipped. Samples were weighed, sub-sampled, and then a single combined sample for each fertilized and unfertilized treatment was sent to a commercial laboratory for analyses.

In this particular situation, applying urea resulted in a 2,030 lb/acre increase in tall fescue dry matter (water removed) from March 31 until May 10th. This increase in yield, assuming a 60% grazing utilization, would provide an additional 35 grazing days per acre of nitrogen fertilized pasture for a beef cow consuming 35 lbs of dry matter each day. An additional benefit was that crude protein levels in the tall fescue increased from 12% to 14.5% with our urea application. The large increase in yield and improvement in crude protein content helped confirm that soil nitrogen levels were limiting forage production in the area we tested. Using current bulk urea prices, the additional 2,030 lbs of grass growth cost us less than a penny per pound! However, this does not include spreading costs and labor.

Understandably, it is difficult to spread only 75 lbs per acre of urea with a cone spreader, truck, or fertilizer buggy. We used an ATV and small electric spreader in this demonstration since we had a small area. Although we used a lower rate in our demonstration to show the impact of even small rates of nitrogen, research has shown the most efficient cool season grass nitrogen fertilizer rate is around 65 lbs per acre or about 150 lbs/ac Urea. This rate, applied in early spring, will typically provide the most additional grass growth per dollar spent. Plus, at 150 lbs of Urea per acre, we can use common fertilizer spreading equipment to make the application. Over the years, much has been said about the timing of applying nitrogen fertilizer to cool season grass pastures in KY. To me it depends on how much grazing you need and when. Assuming typical stocking rates, we usually have more grass in the spring than can be practically grazed. Grass could get too mature before grazing and overall inefficiency is lowered in this case.

One thought is that if you need increased grazing or grass growth for haymaking, apply urea from late March to early April. On the other hand, if you want to extend grazing opportunities further into summer, apply urea in May (be sure to use a Urease inhibitor to prevent volatilization losses at this time of year).

On a final note, the additional grass growth observed in our demonstration resulted from timely nitrogen application. However, soil test levels of phosphorus and potassium as well as pH were already adequate for cool season grass. Had these other nutrient requirements not already been met, I would not expect as much additional growth as what we saw. Proper pasture fertility allows us to take full advantage of additional nitrogen applications. Overall, increased forage yield is expected to result in greater animal performance, higher calf weaning weights and improved profit margins for your beef cattle operation.

Cow-calf Profitability Expectations for Spring 2018 (Fall Calving Herd)

Dr. Kenny Burdine and Dr. Greg Halich, University of Kentucky Agricultural Economists

Spring is the time of year when fall calving cow-calf operations wean their fall-born calves and summer stocker operators place calves into summer grazing programs. Last month, we wrote an article that examined the profitability outlook for a summer stocker operation and the purpose of this article will be to examine the profitability of cow-calf operations that have recently sold, or will soon sell, their fall born calves. A very similar article was written last year that took this same basic approach and overall profitability is very similar to where it was at that time.

Table 1 summarizes estimated spring 2018 costs and returns to a traditional fall-calving cow-calf operation. Every operation is different, so producers should modify these estimates to fit their situation. Average weaning weight is assumed to be 550 lbs and the steer / heifer average calf price is assumed to be $1.45 per pound. This price is based on the mid-April 2018 market, which actually decreased slightly from March. Weaning rate is assumed to be 90%, meaning that it is expected that a calf will be weaned and sold from 90% of the cows that are managed and exposed to a bull. This is a relatively high weaning rate as this analysis will generally assume a well-managed operation and reflects more favorable weather during the breeding and calving seasons for fall calving cows. Based on these assumptions, calf revenue per cow is $718.

The pasture stocking rate is assumed to be 2 acres per cow-calf unit and pasture maintenance costs are assumed to be relatively low. At $25 per acre, this would include one pasture clipping and seeding some legumes on a portion of the pasture acres each year. Producers who apply fertilizer to pasture ground would likely see much higher pasture maintenance costs and these costs should be adjusted accordingly. Producers should also consider the stocking rates for their operation as this will vary greatly, especially for fall calving herds. Stocking rate impacts the number of grazing days and winter feeding days for the operation, which has large implications for costs on a per cow basis.

The primary cost difference between a fall-calving herd and a spring-calving herd is winter feed. Since fall calving cows are lactating during the winter, their nutrient requirements are higher when stored feed is typically fed. For the initial purposes of this analysis, fall calving cows are assumed to consume 2.5 tons of hay through the winter and that hay is valued at $90 per ton. This hay value is considerably above "market" price in most areas, but is high due to the greater hay quality needs of fall calving cows. In some settings, fall calving cows may be fed lower quality hay, in which case weaning weights (and revenues per cow) would be lower. An alternative strategy for some operations might be to feed lower quality hay and supplement cows during the winter. If this is done, both the cost of the supplemental feed and the additional feeding labor should be considered. Regardless, winter nutrient needs are higher for fall calving cows, and this comes at an additional cost. Mineral cost is set at $35 per cow, veterinary / medicine costs $25, trucking costs $10, machinery costs $20 (primarily for feeding hay as this does not include machinery for hay production or pasture clipping as they are included in those respective costs), and other costs $25. Marketing costs are assumed to be $30 per cow, but larger operations may market cattle in larger groups and pay lower commission rates.

Breeding stock depreciation is a key cost that is often overlooked. Breeding stock depreciate just like any other asset on the farm. For example, if the "typical" cow entered the herd as a bred heifer valued at $1,700 and her expected cull value was $700, then she would depreciate $1,000 over her productive lifetime. If we assume a typical cow has 8 productive years, then annual cow depreciation is $125 using a straight line depreciation method. This is the assumption made in this analysis, but the actual depreciation will vary across farms. When buying bred replacement heifers, this cost is obvious. With farm-raised replacements, this cost should be the revenue foregone if the heifer had been sold with the other calves, plus all expenses incurred (feed, breeding, pasture rent, etc.) to reach the same stage as a purchased bred heifer.

Finally, breeding costs are assumed to be $40 per cow and are one of the most misunderstood costs on a cow calf operation. Breeding cost on a per cow basis should include annual depreciation of the bull and bull maintenance costs, spread across the number of cows he services. For example, if a bull is purchased for $3,500 and sold two years later for $2,500, the bull depreciated $500 each year. Then, if his maintenance costs were $500 per year (feed, pasture, vet / med, etc.), his ownerships costs are $1,000 per year. If that bull covers 25 cows, breeding cost per cow is $40. A similar approach can be used for AI, but producers should be careful to include multiple rounds of AI for some cows and the ownership costs of a cleanup bull, if one is used. Breeding costs per cow may be much higher for many operations as these assumptions are likely conservative.

Note that based on our assumptions, total expenses per cow are roughly $585 and revenues per cow are $718. So, estimated return to land, labor, capital, and management is $133 per cow managed. This is very similar to our estimates for spring 2017. At first glance, this return can be misleading, so some additional discussion is warranted. A number of costs were intentionally not included in this analysis because they vary greatly across operations. Notice that no value is placed on the time spent working and managing the operation, no depreciation on facilities, equipment, fences, or other capital items is included, and no interest (opportunity cost) is charged on any capital investments including land, facilities, and the cattle themselves. So, the return needs to be thought of as a return to the operator's time, equipment, facilities, land, and capital.

As one thinks about quantifying these additional costs, it likely makes sense to start with land. Cow-calf operators should at least cover the rental potential of that pasture ground. Similarly, there is a great deal of capital investment on a cow-calf operation in facilities, fencing, and equipment that should be considered. Finally, a cow-calf operator should expect some return to the time they spend managing the operation. This might be best illustrated by using a simple, bare-bones illustration. At a relatively low land rental rate of $30 per acre, this would represent another $60 per cow in opportunity cost given the two acres per cow stocking rate. A similarly low $50 per cow estimate for depreciation and interest on equipment, fencing, facilities, etc. (this would not include hay equipment as hay is valued at market price in the analysis) and $30 value for the operator's labor and management, would suggest that return to land, capital, labor, and management would need to be $140 per cow. Again, these numbers are likely low and variable across operations, but thinking through them is important to understanding current cow-calf profitability. Put simply, well-managed fall calving herds are likely covering cash costs and breeding stock depreciation right now, but are not likely receiving anything but minimal returns to the their capital investment, labor, and management.

Table 1: Estimated Returns to Fall Calving Cow-calf Operation: Spring 2018					
Revenues					
Steer / Heifer Calf Average		**550**	lbs	**$1.45**	**$798**
Discount for Open Cows		**10%**	open		**$80**
Total Revenues per Cow					**$718**
Expenses					
Pasture Maintenance		**2.0**	acres	**$25.00**	**$50**
Hay		**2.5**	tons	**$90.00**	**$225**
Mineral					**$35**
Vet					**$25**
Breeding					**$40**
Marketing					**$30**
Machinery					**$20**
Trucking					**$10**
Breeding Stock Depreciation					**$125**
Other					**$25**
Total Expenses per Cow					**$585**
Return to Land, Labor, and Capital					***$133***

It is likely that the two most variable factors impacting cow-calf profitability are calf prices and hay / winter feed costs. So, table 2 shows estimated returns to this same fall calving cow-calf operation given a range of winter feed costs and calf prices. Note that the center of the table, which represents a steer / heifer average price of $1.45 and hay costs of $225 per cow perfectly matches the detailed budget shown in table 1. From there, calf prices are increased and decreased by $0.10 and $0.20 per lb.

Winter feed costs are increased and decreased by $50 per cow in table 2. This is done to capture a wider range of hay costs, winter feeding days, or other nutritional approaches employed by the cow-calf operator. For example, at 2.5 tons per cow through the winter, a $50 increase in winter feed cost would value hay $20 higher per ton and a $50 decrease in winter feed costs would value hay at $20 less per ton. Producers should consider where their operation likely lies on table 2 to better estimate their likely profit levels in this environment. Both tables 1 and 2 should help producers understand current returns to a fall calving cow-calf operation.

Table 2: Estimated Returns to Fall Calving Cow-Calf Operation given Winter Feed Costs and Calf Prices: Spring 2018					
	Avg. Steer/Heifer Price, 550 lbs				
Winter Feed Costs	**$1.25**	**$1.35**	**$1.45**	**$1.55**	**$1.65**
$175	*$84*	*$133*	*$183*	*$232*	*$282*
$225	*$34*	*$83*	*$133*	*$182*	*$232*
$275	*-$16*	*$33*	*$83*	*$132*	*$182*
Note: Returns above are returns to land, labor, and capital based on the same assumptions used in Table 1.					

Much like last year, it appears that fall-calving herds are likely covering their cash costs and breeding stock depreciation. However, each operator should also consider what return they need to adequately compensate them for their investment in land, capital (including depreciation), labor, and management. For example, if a producer felt that they needed a minimum of $140 return to compensate them for their time and investment as was previously discussed, our initial estimates in table 1 suggest that we are not reaching that level. Once enough producers start to feel this way, we will start to see herd liquidation in response to unsustainable profit levels over time. In the meantime, cow-calf operations should work to better understand their cost structure and what calf prices are needed to reach their profit goals. This will help them determine their best strategy as they make long-term decisions about their cowherds.

Kenny Burdine is an Associate Extension Professor in Livestock Marketing and Management and can be reached at kburdine@uky.edu or 859-257-7273. Greg Halich is an Associate Extension Professor in Farm Management Economics for both grain and cattle production and can be reached at Greg.Halich@uky.edu or 859-257-8841.