

OFF THE HOOF

Kentucky Beef Newsletter – January 2016

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Timely Tips

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

Spring-Calving Cow Herd

- Keep replacement heifer calves gaining enough to reach their "target" breeding weight (65% mature weight) by spring.
- Start cows on the high magnesium mineral supplement soon. Consider protein supplementation if hay is less than 10% crude protein. If cows are thin, begin energy (grain) supplementation now.
- Study the performance of last year's calf crop and plan for improvement. Plan your breeding program and consider a better herd sire(s). Select herd sires which will allow you to meet your goals and be willing to pay for superior animals.
- Get ready for calving season! See that all equipment and materials are ready, including obstetrical equipment, record forms or booklets, ear tags, scales for obtaining birthweights, etc. Prepare a calving area where assistance can be provided easily if needed. Purchase ear tags for calves and number them ahead of time if possible. Plan for enough labor to watch/assist during the calving period.
- Move early-calving heifers and cows to pastures that are relatively small and easily accessible to facilities in case calving assistance is needed. Keep them in good condition but don't overfeed them at this time. Increase their nutrient intake after they calve.
- Consider vaccinating the cows to help prevent calf scours.

Fall Calving Cow Herd

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

General

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

Is “Fat” a Four-letter Word?

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

Is fat a bad word? Not necessarily. Simply put, fat is just the body's storage form of energy. If an animal consumes more energy than it uses, the excess calories will be stored as fat – money in the bank to be used in an energy shortage (think cows calving in late winter). Fat also imparts flavor to food (like a T-bone steak) but it also adds calories. So managing fat can be a delicate issue in the cattle business.

Presently, eating quality of beef is estimated to a large degree by the amount of marbling (intramuscular fat) that it contains. Tenderness is also important but is generally a function of age (younger is better). Marbling generally increases after the animal attains some maturity and external fattening has occurred. External fat is frequently used as an indication of when cattle will have enough marbling to grade choice or prime. I know what you are thinking – why don't we just measure marbling. We're getting to that with ultrasound technology and it would allow us to avoid over finishing (high yield grades) of fed cattle. Ideally, marbling would occur in feedlot cattle with very little external fat being present. We would like to have Choice and Prime quality grades with yield grades of 2 or 3 for our fed cattle. But If we bred cattle to meet this criterion, what would it mean to the beef cow herd? Don't ever take fleshing ability away from the brood cow herd! It will have a negative effect on reproduction.

It is important to understand how cattle fatten so that we can manage cattle accordingly. Fat is “laid down” from front to back and top to bottom. The fore ribs and spinous processes are covered first then the fat cover continues backward and downward. That's why folks look for cod fat (in the scrotal area) as an indicator of when cattle are finished. It is the last place to fatten. Loss of body fat happens in reverse order. Fat cover is the basis for condition scoring in beef cattle.

Body condition has a definite impact on reproductive performance. Cows should generally be at a Body Condition Score (BCS) of five at the beginning of the breeding season. A cow with a BCS of 5 will have some fat reserves – with fat cover over all the ribs. As cows lose condition (in the reverse order that it was put on) a BCS 5 would become a BCS 4 when they lose condition so there is no cover over the last two ribs. This would mean that the cow has very marginal energy reserves for good reproductive performance. If this loss of condition (fat reserves) continues so that you can see the foreribs (BCS 3), then you have a real problem. Conception rates will suffer.

Loss of condition generally happens after calving when dietary energy needs have increased dramatically and feed supplied isn't meeting those needs. The cow has to "withdraw, from the bank" to meet her nutritional needs. It is important that some energy reserves are available.

And what about the herd bulls(s)? We need some energy reserves so that bulls can stay active during the breeding season but ... bulls are athletes. They should have muscling, sound feet and legs and be able to sire a large number of calves in a short period of time. At least that is what we say we want but then we frequently buy young, fat bulls that look great at the start of the breeding season and are a wreck before the season is over.

Why does this happen? Probably because we confuse fat with muscling. We are looking at thickness as a sign of muscling but it could just be a layer of fat. Fat can "plaster over" thin-muscled cattle. Fat doesn't move but muscles will "ripple". Watch the animals as they move. Observe the hindquarters and shoulders. Remember – "if it ain't movin', it ain't muscle"!

So managing fat (or condition) is important in the cattle business, especially in the cowherd for optimum reproduction. Fat is important – both too much or too little can be a problem. Astute producers recognize the importance of efficient cattle that can maintain adequate energy reserves without wasting feed resources.

Growing piles of evidence show we've created an unsustainable and less-profitable or unprofitable cow herd in this nation.

Alan Newport, Drovers Cattle Network, December 11, 2015

Statistics from several states show calf weaning weights, on the average, haven't gone up in more than 20 years, despite steady selection for bigger weaned calves. The Southwest Standardized Performance Analysis (SPA) database for herds in Texas, Oklahoma and New Mexico shows this trend.

Database manager and Texas A&M economist Stan Bevers says the only significant changes in calf weights are traceable to wet and dry years. That is exaggerated by the huge dip in weights in the drought of 2011. Data in the accompanying chart from Southwest SPA, from Kansas farm management records and from North Dakota Cow Herd Appraisal Performance Software shows this flat trend. All this is despite a steadily climbing genetic trend for yearling weights, which isn't happening under range conditions.

We've had record calf prices in recent years, but they have been matched by record cow costs. This trend is shown in the SPA database and in the accompanying graph.

Most heifers need to be fed to get big enough to breed for calving at 2 years of age. Again, this is energy deficiency in nature compared with what the animals have been bred for.

"Feeding to maximize reproductive rate does not result in differential retention between females with high and low feed requirements," says Andy Roberts, USDA-Agriculture Research Service (ARS), Miles City, Mont. "In contrast, managing cows under reduced feed inputs would more likely result in culling of cows with high feed requirement due to reproductive failure."

Remember, things haven't always been the way they are now. Cattle were once developed entirely on grass, or in a few cases with low-quality supplements gleaned from processing facilities.

More milk!

In addition, most modern cows can't get nearly enough energy in their native environments to produce their genetic capacity for milk. This excessive milk drags them down as it does a dairy cow not getting enough grain.

Research at the USDA-ARS station at El Reno, Okla., just a few years back showed Brangus cows that had genetic potential to produce more than 11 to 15 pounds of milk actually produced less milk because they couldn't keep up with the demand in that native-range environment. Eleven to 15 pounds was the optimum.

Yet milk EPDs for most of the major breeds have climbed steadily and probably stand well above optimum by this time in many, if not most, environments.

The statistics also tell us weaning rate and rebreeding rate have not improved in 20 years. For a long time, calf mature size kept growing and cow frame size along with it. David Lalman, Oklahoma State University (OSU) animal scientist, says this has finally ceased. But Lalman has been collecting and sharing some haunting data in recent years about the state of cows in America.

By 2012, he had rounded up data from Montana, Arkansas and Oklahoma showing that 100 pounds of additional weight in each cow adds 6 pounds, at most, in her calf. The variation was from 4 to 6 pounds. Based on that, he worked with OSU economist Damona Doye to show that added calf weight, at the time, was worth \$5 to \$7. It is worth perhaps a little more now but will not be forever. They calculated the cost for carrying that outsized cow at \$42. It was a net loss of about \$35 per cow unit.

Even if we add in some recent data from an Arkansas study which said there was a 17-pound increase in calf weaning per 100 pounds of cow weight in one herd, at that revised upper range it still wouldn't pay for the extra cow maintenance.

Lalman adds that a study back in 1988 showed higher milk production brought about higher year-long maintenance costs, perhaps because it demands a higher visceral mass of major nutrient-demanding organs like the rumen, small and large intestines, liver, heart and kidneys.

In addition, higher milk yield does not convert well to calf weight, either, according to the scientific literature. Multiple studies have shown that each added pound of milk essentially produces less pounds of calf growth than the pounds of milk that preceded them. It can be represented as a bell curve, somewhat like added pounds of fertilizer beyond a certain point begin to produce less crop.

More feed required

Neither are cows getting more efficient. Lalman dug up Oklahoma data on the amount of hay produced, and presumably fed, per beef cow. In 1974, it was less than one-half acre. In 2014, it was nearly 2 acres per cow, roughly a fourfold increase. Whereas some of this may be attributable to long-term declining range condition under a majority condition of continuous grazing, it's likely a bigger part of it derives from the growing demands of our modern big cows.

In the feature story on Wyoming ranchers on page 6 of this issue, researchers in Wyoming showed bigger cows of 1,300 to 1,400 pounds needed 9.5 pounds of forage to wean 1 pound of calf. Smaller cows of 1,000 to 1,100 pounds needed 7.6 pounds of forage to wean 1 pound of calf.

Many people say the average slaughter cow today weighs than 1,400 pound. But remember, cull cows are more often than not thin cows, and if their condition was adjusted up to a body-condition score (BCS) of 5, they would weigh even more.

In 2007, the National Market Cow and Bull Beef Quality Audit showed these facts: An average BCS for 2,800 head of cows was 4.53. Average slaughter weight was 621 pounds, which converts to a live weight of about 1,320 pounds. If that is adjusted up to the standard of BCS of 5, which is still a fairly thin cow, the average weight would have been about 1,370 pounds. Wanna bet it's as big or bigger today?

Even if this data still is correct, it means roughly half the cows in the country weigh more than 1,400 pounds.

So all this tells us our modern, heavy-milking cows are poor-doing cows that can't support themselves in most, if not all, natural environments, and that they don't produce enough additional calf weight for all that extra upkeep they need.

Beefing up

Lalman has data that suggests our cattle are getting heavier muscled, too. He shows real average yearling weight for Angus heifers is now over 850 pounds, and for Angus bulls it is nearing 1,175 pounds. This has been climbing steadily since the 1970s, when yearling heifers weighed a bit over 600 pounds and bulls weighed about 850 pounds.

He displays a chart showing that since 1982 the weight per inch of height has grown significantly. It was just over 15 pounds per inch then and is at about 17.5 pounds now.

U.S. Meat Animal Research Center researchers show the ribeye area for all the major breeds has been shooting up since 1990, with Angus leading the way. This is a move toward heavier muscling.

Lalman says the science is unclear on whether this heavy selection for muscle by itself is negative. He notes more muscle requires a minor increase in energy to maintain and increases mature weights. That's clear from the data.

The bigger problem is that more muscle generally means less fat, or that fat deposition is dramatically delayed until larger maintenance needs are met. Yet fat is the thing cows need to get through the winter and to keep reproduction a priority. It takes about twice the calories to lay on fat as muscle, so this says cows must be thrifty enough to meet maintenance easily before they can fatten.

Lalman adds that a 1998 Nebraska study showed lower fat levels in a bovine's body composition is associated with:

- Older age at puberty
- Lower conception rate
- Lower calving rate.

These are major reproductive issues, and almost everyone agrees the most important trait for a cow is consistent, annual production of a live calf.

Which direction?

Lalman has been doing presentations on this topic for several years now, and he has developed an actionable list for producers to consider. Among the things he suggests:

- ✓ Moderate size, milk and muscle.
- ✓ Cull open cows.
- ✓ Resist the temptation to gradually modify the environment.
- ✓ Keep only early-born heifers.
- ✓ Buy or keep bulls out of cows that always calve early.
- ✓ Purchase bulls out of cows that are managed like yours, or worse; have never missed a calf; and calve early.

Reproduction for long-lived animals such as cattle is the canary in the coal mine — it's the first thing to go. So it's a great focal point. The biological programming is when things get tough, reproduction drops because the organism expects to live on and, therefore, reproduction can wait for a better day. When nutrition and health are in great shape, then reproduction can be a priority.

The way you manage and select for or against truly reproductive cattle is the key to making your herd more sound and profitable.

From Drovers Cattle Network, December 11, 2015

Treat Calf Scours Early for Best Results

Michelle Arnold, DVM (UK Ruminant Veterinarian)

Diarrhea in neonatal calves is one of the leading causes of morbidity (sickness) and mortality (death) in North America and Europe and continues to be a major cause of economic loss to the beef cattle industry. There are five major infectious causes of diarrhea in calves less than 21 days of age: *E. coli* K99, Rotavirus, Coronavirus, Cryptosporidia, and *Salmonella*. Other factors such as inadequate colostrum, poor sanitation, stress, and cold weather can make calf survival almost impossible. Regardless of the cause, diarrhea results in loss of electrolytes and water in the feces of calves and decreases milk intake. Ultimately, this leads to dehydration, metabolic acidosis (the blood is more acidic than normal), electrolyte abnormalities, and a negative energy balance from the lost nutrients and lack of milk. Oral electrolyte solutions have typically been used to replace fluid losses, correct acid-base and electrolyte levels in the blood, and provide nutritional support with the added benefit of being relatively inexpensive and easy to administer. Recent research has resulted in better methods to assess and treat a calf with diarrhea as well as better guidelines for choosing an oral electrolyte solution.

The most common mistake made in the use of oral electrolyte replacement therapy is waiting too long before administering these formulas or not giving them often enough to affected calves. Administered early and frequently, these fluids help the calf maintain strength and normal body temperature and allow it to continue nursing. Administering fluids too late, when the calf is already depressed and down, or administering too little so that the calf continues to lose more fluid than it is receiving orally, allows the dehydration to worsen and the calf's condition to deteriorate. When dehydration and acidosis get severe enough, the gastrointestinal tract loses function and orally administered fluids are no longer of any value. In these cases, the only effective means of preventing death is to have a veterinarian administer intravenous fluid therapy.

A quick assessment of a calf with diarrhea will determine if oral fluid therapy or if intravenous (IV) is needed. The choice depends on the severity of both dehydration and metabolic acidosis (low pH of the blood). Dehydration is relatively easy to monitor by how far the eyeball is set back into the skull and the loss of skin elasticity. Metabolic acidosis is assessed by the calf's ability to stand and suck. In general, a standing calf with a strong to moderate suckle reflex or that demonstrates a "chewing action" can be given oral fluids. Mildly dehydrated calves showing mild skin tenting when the skin on the neck is pinched, minimal sinking of the eye into the head, eyes and mucous membranes are still moist, and extremities are still somewhat warm are ideal candidates for oral fluids.

Thumb rules for the use of oral electrolyte fluid supplements for scouring calves:

1. Reconstitute the oral electrolyte supplement and administer it according to manufacturer's recommendations.
2. Administer the reconstituted fluid formulation at approximately 5% of body weight, which is 2 quarts for an 80 pound calf. How many times per day this is necessary depends on how much fluid the calf is receiving by nursing and how much fluid is lost through the diarrhea. In many cases, the progression of the disease is not very rapid and the problem lies only in the missed opportunity to administer oral fluids at an earlier stage when response is best. Continued assessment of the scouring calf's condition is required in order to make good decisions regarding the frequency of fluid administration.
3. Only administer oral fluids if the calf still has a suckle response. It is usually better to administer oral fluids by bottle with voluntary suckling. This enhances passage of the fluid to the abomasum via the esophageal groove. Oral fluids can be given by esophageal feeder when the suckle reflex is weak, but this method places fluids into the rumen. Any calf with a very weak or absent suckle reflex should be given IV fluid therapy because, if oral fluids are given to a calf with ileus (no gut motility), the fluid is not absorbed but instead pools in the rumen resulting in bloat and/or rumen acidosis. ANY calf that is severely depressed and unable to stand requires intravenous fluids.
4. It is extremely important that the oral fluids chosen for rehydration will be able to increase blood pH from an acidic state to a more neutral state. This is normally accomplished by alkalinizing agents such as bicarbonate, acetate, or propionate found in oral electrolytes. Although all have similar effects, acetate and propionate are preferred over bicarbonate in nursing calves because they do not interfere with milk digestion.
5. If calves are depressed and refuse to nurse, a hypertonic oral electrolyte product such as Calf-Lyte II HE or Enterolyte HE can be used. A "hypertonic" oral electrolyte product has a very large amount of glucose (sugar) in the preparation and has "HE" on the label (for "high energy"). Hypertonic solutions can give greater nutritional support because of the higher glucose level yet they can cause abomasal bloat and increased diarrhea if the calf is unable to absorb this large amount of sugar. If nursing is not resumed within 12 hours, calves will get too weak to respond to oral treatment alone.
6. Milk or milk replacers should NOT be withheld from scouring calves. None of the oral electrolyte formulas provide adequate protein and energy to replace milk. Some experts used to recommend a "rest the gut" approach, suggesting that continued milk feeding worsens diarrhea. However, research has shown that milk feeding does not prolong or worsen diarrhea, nor does it delay healing of the intestines. Calves should be maintained on their full milk diet (continue nursing) plus oral electrolytes when possible as long as they exhibit diarrhea.

Electrolyte fluid administration is by far the most effective treatment for calves with scours. Because affected calves are often weak and chilled, additional nursing care may be necessary for survival. In this

regard, providing warmth, dry bedding, protection from the elements, and adequate nutritional support are all critical. Fluid therapy is most effective when it is administered aggressively and early in the course of the disease. The most critical factor may be the early recognition of affected calves. Caught early, most calves will respond very favorably to oral fluid therapy. **Remember milk is better at maintaining a normal blood glucose level than any electrolyte solution so allow the calf to continue nursing.** If the calf becomes so severely dehydrated it is weak and unable to rise, or if it has no suckle, intravenous fluid therapy may be the only way to save the calf's life. Other treatments, such as antibiotics, may be beneficial but they are far less important than fluid and electrolyte replacement when it comes to calf survival.

Improved diagnostics are now available to ascertain the cause of neonatal calf diarrhea. The UKVDL has a Calf Diarrhea Multiplex PCR panel which tests for the major diarrhea pathogens in calves less than 21 days old including: *E.coli* K99, Rotavirus, Coronavirus, *Salmonella* spp., and Cryptosporidia. Submit one fecal sample per calf early in the course of disease and before any treatment has been given. The test is highly accurate as it detects the DNA or "molecular fingerprint" of the various pathogens and results are available within 1-2 days. At least 5 grams of feces must be submitted in a labeled, leak-proof container maintained at a cool temperature during transport. Do not submit fecal samples in gloves; screw cap tubes or vials are preferred in the laboratory. Call the UKVDL (859) 257-8283 or check the website <http://vdl.uky.edu> for more information.

Kentucky Beef Cattle Marketing Update

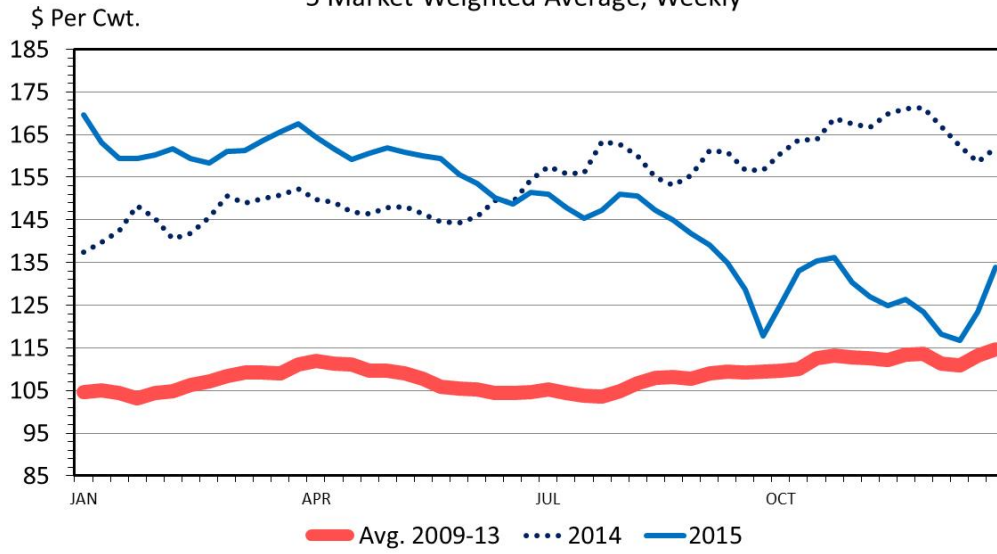
Dr. Kenny Burdine and Dr. Greg Halich, University of Kentucky

The new year has brought a bit more optimism to feeder cattle markets. Nearby CME© Feeder Cattle futures traded below \$150 per cwt early-mid December before seeming to find what looks like a "bottom". Since, they have pushed well into the \$160's at the time of this writing (January 6, 2015). As often happens, feeder cattle markets seemed to have followed fed cattle markets upward as fed cattle prices pushed back into the \$130's per cwt for the last week of 2015 (see graph below). While this is well below where we were six months ago, things are certainly more encouraging now than they were as I wrote last month's update.

It is probably a bit early to be thinking about implications for spring, but the current level of fall 2016 CME© Feeder Cattle futures would likely support a 550# steer calf price in Kentucky in the \$170-\$180 per cwt range by April. Of course, if this were to be the state average, larger groups of high quality calves would likely approach \$200 per cwt. No doubt, this market will continue to evolve over the coming months, but it certainly points to a considerable improvement in the calf market from our fall 2015 lows if the recent rally is sustained.

As we start thinking broader about 2016, it is very likely that this will be the year that we see beef production truly increase. There are a lot of heavy cattle currently on feed that will work their way through the beef system early in 2016. Later in the year, the larger 2015 calf crop will start to reach harvest. Production increases are also expected for pork and poultry, which will continue to present more competition in the meat case. With production increases likely, the export trade picture will once again have a significant impact on prices as it will determine how much change is seen in domestic protein availability.

SLAUGHTER STEER PRICES 5 Market Weighted Average, Weekly



Data Source: USDA-ERS and USDA-FAS
Livestock Marketing Information Center