



FEEDER INFORMATION HIGHLIGHTS

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Cover photo by James Lorimor
of Lane County Feeders, Dighton, KS

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The Economics Lesson

The events of the last few weeks have certainly turned heads of those in the cattle business. Volatility peaked, and cattle prices fell almost as fast as the roof on the Tyson Fresh Meats plant in Holcomb, Kansas. Questions were everywhere. How would the packers absorb the additional numbers? What about the workers in southwest Kansas? What about the plant?

For their part, Tyson has been firm on their commitment to rebuild and get employees back to work as soon as possible. Published reports say the company will continue to pay full time workers, which is a definite feather in Tyson's cap. The packing industry as a whole rose to the occasion, making up ground just a week after the fire with increased kill numbers.

The markets took a beating, but at press time showed some positivity. According to Cassie Fish, author of "The Beef," some believe the market has bottomed after feeling the shock of temporarily losing a plant. Volatility is a solid theme, but Fish believes the market is attempting to find some stability as it recovers

from the shock.

Although the markets are a crazy ride with the funds playing a big part, let's take a minute to look at a basic economics lesson. Dr. Darrell Peel, Livestock Economist with Oklahoma State University offered his insight into how the markets handle disasters with supply and demand. He points out that normally markets ensure that supply and demand are in equilibrium, or close to it, with countless small adjustments constantly being made by producers and consumers. Thus market adjustments are usually not that noticeable.

"However, sudden, large shocks disrupt the balance of supply and demand and reveal how dramatic

sure that we don't waste products, especially perishable ones.

"Watermelon prices drop dramatically when the seasonal supply becomes available to make sure that all watermelons are consumed. Fed cattle ready for slaughter are no less perishable and the current drop in fed prices ensures that all possible adjustments are used to absorb the cattle into remaining industry capacity. Prices decrease enough initially to provide ample incentive to change existing production plans and cover the additional costs of shifting logistics and timing of production," he states.

He added that drastic movements in the market is a very common response to reestablish supply

"Prices decrease enough initially to provide ample incentive to change existing production plans and cover the additional costs of shifting logistics and timing of production..."

— Dr. Darrell Peel

market actions occur that help reestablish equilibrium," he explained. "The recent fire at the Tyson beef plant in Finney County, Kansas, is just such an example. It is much like throwing a rock into a pond resulting in a big initial splash and ripple effects spreading out in all directions. The initial splash of the plant closure included a dramatic set of market reactions."

In his economics lesson, he points out that supply and demand are how markets make sure that we don't run out of things: "With fresh beef production suddenly decreased, boxed beef prices rose sharply to ration a suddenly limited supply. Choice boxed beef prices increased by over \$22/cwt. or 10.3 percent in one week."

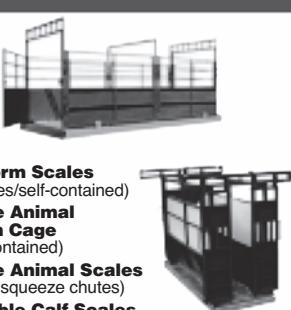
But likewise, markets also make

and demand balance quickly. "The sudden shock of the current situation and the resulting big initial market reactions encourage buyers and sellers to change plans; incur additional costs; and react quickly to new arbitrage opportunities."

So what's next? Pointing toward history, Peel said that negative impacts on fed cattle prices in December, 2000 lasted three to six weeks after the ConAgra plant in Garden City burned and never reopened. He anticipates this event could impact markets longer due to tighter capacity.

It's been 25-plus years since I sat in an economics class, but Dr. Peel's lesson was a good one. His complete article is available online at <http://feedlotmagazine.com/the-role-of-markets-in-a-disaster/>

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High Moisture Corn Management



If putting up high moisture corn (HMC) is part of your repertoire, I am going to challenge you to manage the entire process in order to achieve success. From an

agronomic standpoint, HMC expands the harvest season and reduces in-field grain loss by 3-6%. From a feeding standpoint, HMC improves both gain and conversion

while typically resulting in less shrink than dry corn. While the benefits of HMC are apparent for both farming and feeding operations, success is in the details.

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Most importantly, HMC must be stored at the right moisture level to maximize cattle performance. The ideal moisture range for harvesting HMC is 28-32% moisture, with maximum energy density and cattle performance between 30-31% moisture. Once the kernel reaches black layer, HMC harvest should begin in order to realize the most value. Timing is critical because by the time corn dries down to 23% moisture, it will feed with essentially the same energy as dry corn, but average energy value increases approximately 0.3% per point of moisture between 23 and 31%. Additionally, corn that is stored above 30% moisture becomes more digestible over time compared to corn stored at 24% moisture or less. In summary, ideal HMC harvest should start once black layer is achieved and be completed by the time corn has dried down to 28% moisture, resulting in an average

moisture in the pile of 30-31%.

Every year, some corn is harvested for HMC below 26% moisture. When you expect that to happen, your process should be adjusted to gain more value out of drier corn. Our recommendation is to begin adding water when corn moisture drops below 28%, and focus on adding enough volume to bring the corn back to 30% moisture. In order to allow the corn to take in more moisture, it may be necessary to reduce the particle size of the grind. When corn drops below 23-24% moisture it is very difficult in most systems to reconstitute the corn to 30% moisture, and therefore we recommend a cutoff of 24% moisture for corn that is to be ensiled.

Particle size is the next critical point of HMC management. The correct particle size is very feedlot dependent, and is influenced by infrastructure, bunk management, and other available feedstuffs.

Infrastructure is important, as it can limit the amount of HMC a feedlot can process in the ideal moisture window, and because the type of equipment present determines the best way to process corn. The ideal particle size at an operation will strike a balance between harvest efficiency, energy density, and the risk of digestive disturbances.

Feedlots that grind HMC with a hammer mill (tub grinder) generally create a finer grind that packs tighter, but ferments more quickly in the rumen resulting in greater risk of acidosis and bloat. Dry matter conversion of cattle fed hammer-milled HMC is usually better than those fed roller-milled HMC but dry matter intake and gain are usually lower. Monitoring particle size is important, with an achievable goal being no more than 3-4% whole kernels and not more than 20% fines (<1mm). Commercially ►

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BRIEF SUMMARY: For full prescribing information, see package insert.

INDICATION: RESFLOR GOLD® is indicated for treatment of bovine respiratory disease (BRD) associated with *Mannheimia haemolytica*, *Pasteurella multocida*, *Histophilus somni*, and *Mycoplasma bovis*, and control of BRD-associated pyrexia in beef and non-lactating dairy cattle.

CONTRAINdications: Do not use in animals that have shown hypersensitivity to florfenicol or flunixin.

WARNINGS: NOT FOR HUMAN USE. KEEP OUT OF REACH OF CHILDREN. This product contains material that can be irritating to skin and eyes. Avoid direct contact with skin, eyes, and clothing. In case of accidental eye exposure, flush with water for 15 minutes. In case of accidental skin exposure, wash with soap and water. Remove contaminated clothing. Consult a physician if irritation persists. Accidental injection of this product may cause local irritation. Consult a physician immediately. The Material Safety Data Sheet (MSDS) contains more detailed occupational safety information.

For customer service or to obtain a copy of the MSDS, call 1-800-211-3573. For technical assistance or to report suspected adverse reactions, call 1-800-219-9286.

Not for use in animals intended for breeding purposes. The effects of florfenicol on bovine reproductive performance, pregnancy, and lactation have not been determined. Toxicity studies in dogs, rats, and mice have associated the use of florfenicol with testicular degeneration and atrophy. NSAIDs are known to have potential effects on both parturition and the estrous cycle. There may be a delay in the onset of estrus if flunixin is administered during the prostaglandin phase of the estrous cycle. The effects of flunixin on imminent parturition have not been evaluated in a controlled study. NSAIDs are known to have the potential to delay parturition through a tocolytic effect.

RESFLOR GOLD®, when administered as directed, may induce a transient reaction at the site of injection and underlying tissues that may result in trim loss of edible tissue at slaughter.

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ADVERSE REACTIONS: Transient inappetence, diarrhea, decreased water consumption, and injection site swelling have been associated with the use of florfenicol in cattle. In addition, anaphylaxis and collapse have been reported post-approval with the use of another formulation of florfenicol in cattle.

In cattle, rare instances of anaphylactic-like reactions, some of which have been fatal, have been reported, primarily following intravenous use of flunixin meglumine.

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High Moisture Corn... from previous page

available sieve shakers work well for determining particle size distribution, and should be used at least twice daily to determine if adjustments are needed.

Roller-milled HMC creates fewer fines, which result in lower risk of digestive deads along with increased dry matter intake and gain compared with hammer-milled corn. On the other hand, fewer fines mean roller-milled corn is more challenging to pack. Some manufacturers offer roller mills with differential drives on at least one set of rolls in order to create enough fine particles to assist in packing HMC. If milling HMC with a roller mill, strive for essentially no whole kernels and you should still be able to keep fines (<1mm) under 10%. In a perfect world, each kernel would be split into roughly 6 equal pieces. However, corn processed in such a manner does take more time to pack, so there is a time-saving advantage to creating more fines.

After moisture and processing, correctly packing HMC is next on the list. The goal is to remove all the oxygen or air pockets. In general, adequate packing requires a pack tractor for each 4-5,000 bushels per hour of grinding capacity. Pack tractors should not be sitting between loads, but constantly on the move. There is a fallacy that pushing corn up is enough during

the day if you pack it well at the end of the day. The truth is, only the uppermost 6 inches of corn in the pile gets packed, so each load should be packed as it comes in. A well-packed HMC bunker will contain at least 45 lb of dry matter per cubic foot. Once packed, HMC should be covered immediately after completion of the pile to achieve the highest quality.

Another consideration for HMC production includes inoculants, which is a decision you should make in conjunction with your nutritionist, based on the cost of inoculation relative to the value of corn – and your ability to correctly apply inoculant. Also try to feed at least 6" off the face of the pile daily and maintain a vertical, flat face with no loose corn at the base of the pile to minimize shrink during feed-out.

With some planning and quality control, and some help from Mother Nature, you can put up a tremendous volume of HMC in a short period of time. Because the process needs to occur quickly, it is tempting to rush through processing and not focus on quality. This year, take the time to manage the process for a short period of time so you can enjoy the results throughout the rest of the year.

Dr. Jeremy Martin is a nutritionist with Great Plains Livestock Consulting, Inc. For more information, visit www.GPLC-Inc.com.

FL



GIVE BRD THE 1-2 PUNCH

A large, stylized graphic in the center of the page. The word 'GIVE BRD THE' is curved along the top edge. Below that is a large '1-2' with a horizontal bar between the digits. In the center of the '2' is a dropper bottle with a single drop falling. Below the '1-2' is the word 'PUNCH' in large, bold letters.

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¹ Exhibits bactericidal activity against some strains of *Mannheimia haemolytica* and *Histophilus somni*.

² The correlation between *in vitro* susceptibility data and clinical effectiveness is unknown.



Not All Gain is The

BY WESLEY MOORE, BEEF TECHNICAL SPECIALIST, CARGILL ANIMAL NUTRITION

Optimal gain for the stocker/backgrounder segment is difficult to discuss because the common answer when asked to define "optimal" is "it depends on your goals." There's truth to that, because not every business approach or set up is the same. Targeting optimal gain can be challenging because the gain program that maximizes profitability depends on your specific situation. That said, maximizing efficient gain or only focusing on least cost of gain may not be the most profitable decision for your business or those operations purchasing your feeder calf downstream.

Cattle sex, genetics, your implant program, and feed cost are all important factors to consider when optimizing gain on your operation. Out of those, I'd call out your marketing program and feed cost as the two most critical pieces that enable you to advance the rate of gain and profitability in your backgrounding operation.

For example, if weaned calves are purchased and taken to finish, any method to push cattle to maximum energy intake and gain is likely the right decision for your operation in terms of feed efficiency and grade. Research has demonstrated that high energy density early in the finishing phase leads to an increase of gain efficiency and a higher quality grade. Then, this drives you to a lower cost of gain

and an improved quality grade at comparable fat thickness despite lower finishing weights. On the flip side, if your goal is to sell maximum value feeder calves to a finishing operation, slower lean gain might be the right decision. Although it is a more expensive gain, cattle have the potential to capture more value as feeders because they are capable of achieving higher carcass weights and gain during the finishing period. These are things the feedlot operator can count on when purchasing feeder cattle.

Another element to consider is how drastically quality grade has evolved in the last three years, with seven to eight percent prime quality grade cattle now becoming the norm. The largest influence on quality grade appears to be genetics, while nutrition allows for expression of genetic potential. The biggest unknown is what carcass quality premiums will be at the time cattle are marketed. From a hedged margin standpoint, achievement of higher carcass weights can be of more value than "hoping" for a premium in quality grade at the end of the feeding period. This is why "fleshy" weaned calves that have been exposed to starch earlier in life still trade at a discount to lean yearlings at the same weight, despite fleshy calves who will likely have higher quality grade at the end of the feeding period.

One thing research is clear on is the impact of health on both performance and carcass quality. This is a strong reason for us to consider preconditioning or backgrounding calves prior to marketing them to a feedlot or grower operation. When cattle are subject to health challenges, primarily bovine respiratory disease (BRD), genetic potential for gain or carcass quality will be lost. A BRD treatment has costs beyond financials. Cattle never truly recover, which shows up as lower gains and a reduced quality grade, leading to a significant decrease in revenue on top of the increased cost to produce that calf.

Other important drivers of optimizing gain in any backgrounding operation are resources and feed cost. The definition of nutritional consulting is to optimize the use of nutrient resources to maximize profitability on your operation. For example, if you can achieve a grazing cost of gain of \$0.50 per pound vs. the cost of \$0.80 per pound of gain with TMR fed drylot cattle, the difference in total cost of gain for 350 pounds is \$105 more per head in your TMR fed drylot cattle. This difference will likely trump any premiums in quality grade if cattle are owned until finish.

In any partnership, clear communication of your goals is the most critical component to developing your best plan to grow a profitable

Same



calf. With current technology and genetics, we have the capability of meeting just about any goal of your operation. Technically, the design of the operation and segment of ownership really drive the gain targets during the backgrounding phase. It is also important to remember that health and implant programs are also essential components to any growing-finishing program.

In summary, you pay for the gain in one way or another. The biggest decision your business needs to make is how you'll optimize practices to maximize profitability. If your goal is to develop feeder cattle and own until harvest, the right thing might be finishing cattle earlier at lighter weights to maximize profitability of the calf. If your goal is to sell a value added feeder calf, perhaps growing cattle gains of <3 pounds are the right thing to consider. When you look at managing risk, it is safe to assume that additional carcass weight will always yield more gross dollars regardless of quality grade. On the other hand, purchasing quality cattle with the genetic potential to generate margin will always be of value, it just depends on how much you can count on that value when the cattle are closed out. This is where you can analyze your resources and work with your trusted advisors to define a nutrition program that's right for you. **FL**

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BRIEF SUMMARY: for full prescribing information use package insert.

INDICATIONS: Zuprevo® 18% is indicated for the treatment of bovine respiratory disease (BRD) associated with *Mannheimia haemolytica*, *Pasteurella multocida*, and *Histophilus somni* in beef and non-lactating dairy cattle, and for the control of respiratory disease in beef and non-lactating dairy cattle at high risk of developing BRD associated with *M. haemolytica*, *P. multocida*, and *H. somni*.

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Trade, Consumer Demand, Impending Corn Crop Among Critical Issues for U.S. Cattle Industry

Herd expansion, export markets, corn crop expectations and swine fever ramifications are among the factors that will have an impact on the upcoming U.S. cattle market, Randy Blach, CEO of CattleFax, told more than 700 attendees of the 2019 Cattle Industry Summer Business Meeting near Denver July 30, 2019. Blach was keynote speaker at the Opening General Session of the meeting, a gathering for leaders of the National Cattlemen's Beef Association, Cattlemen's Beef Board, American National Cattle-Women and National Cattlemen's Foundation.

Blach told the group that U.S. cattle herd expansion had slowed to a crawl, with the lion's share of growth behind the industry. That slowing had been expected, he said. Record beef, pork and poultry supplies are having an impact on the market. For that reason and with record meat consumption expected next year, it's critical for export markets to be opened and trade policy questions to be answered, he said.

Blach's comments were before the fire at the Tyson plant, which has added volatility to the markets as the packer and feedyards adjust.

However, consumers have responded well to the increased quality of beef production in this country, Blach said. There has been a 50 percent increase in prime and choice production over the past 15 years, and 80 percent of U.S. beef is now Prime and Choice. Beef has captured an additional 7 percent of market share of meat spending from poultry and pork. "It's a great,

great success story," Blach said. "We have to continue to be the highest quality protein provider, delivering products we can stand behind that consumers love."

Blach pointed out that the average consumer works only 12 minutes to be able to pay for one pound of high quality Choice beef. "That's a bargain," he said.

Corn crop uncertainty centered around the number of acres planted and yield potential is also of concern, as the impact of wet weather in grain producing segments of the country will be unknown until the middle of August, Blach said. Furthermore, ramifications of swine fever in China will add some unknowns to the equation. "We're looking at a lot of volatility as a result of what's happening in that part of the world," he said.

"We have to remember that only 4 percent of the world's consumers live in this country," Blach added. "Currently 14 percent of beef and beef by products are exported. More than 20 percent of the value of every fed steer is generated by exports. We need to have more outlets for not only our beef, but our poultry and pork."

Blach said that while an economic recession could have some serious repercussions on the beef cattle industry, the bottom line for producers is profitability, which in general the industry has seen in recent history. "If we're not profitable, we're not sustainable," he said. "I do believe we're going to stay profitable as we go through this cycle."

FL



— ANOTHER MORNING OF —

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2/18 BV-ZUP-FEED-56199-TEXT





Research Looks at Congestive Heart Failure in Feedlot Cattle

Some cattle at high elevations suffer pulmonary artery hypertension, which leads to congestive heart failure, but more cattle are susceptible to bovine congestive heart failure (BCHF), showing up in feedlot animals. BCHF is an untreatable, fatal condition involving pulmonary hypertension that culminates in right ventricular failure, but may begin with left-heart dysfunction. This makes it different from right heart failure at high altitudes because BCHF affects both sides of the heart.

Dr. Milt Thomas, Colorado State University says the heart problem at high altitudes occurs much earlier in the animal's life, while BCHF generally occurs in the finishing phase in the feedlot.

"We're doing a USDA-funded project to try to understand feedlot heart disease. We have a feedlot facility in Akron, Colorado (Eastern Colorado Research Center, at 4100 feet elevation) and a client

who feeds 500-plus commercial Angus-type steers there every year, with high incidence of feedlot heart disease. That client allowed us to buy 107 steers for our research," says Thomas.

"We treated those steers like any other steers in the feedlot, and have now taken them to slaughter, and have our initial data—and found feedlot heart disease," he says.

"We did PAP (pulmonary arterial pressure) testing like we do in high-altitude cattle, to know which ones were tolerating the process of getting fat and which ones were not. These steers had never been above 6000 feet elevation but we found a lot of high-PAP cattle. There were so many that we created a high-PAP and a low-PAP group to study, evaluating their feed intake in our Grow-Safe Feed Intake Unit," he says.

"Out of those steers, death loss was 5.5%. One died early in the



feeding phase—which may have been related to stress of shipping fever. The others died late in the feeding period when they should have been past the early risks, and they all died from feedlot heart disease."

All steers were slaughtered at the Global Food Innovation Center (GFIC) on the CSU campus. "Even though some of them died, we still had 12 high-PAP and 12 low-PAP steers we slaughtered and we are studying their heart and lung tissues and performance data," says Thomas.

"All the low-PAP animals had normal-looking hearts and the high-PAP steers had severely malformed hearts. These were the steers that made it to slaughter. All the steers that died in the late feeding period had severely malformed hearts," he says.

"With feedlot heart disease, they often perish near the end of the finishing phase—very expensive losses. One hypothesis is that some of these cattle are highly stressed by fattening because they are high-PAP cattle, and when they get a secondary challenge like respiratory disease or heat stress it pushes them over the edge," he says.

"The high-PAP steers had poor average daily gain in the final phases of feeding and feed conversion was terrible. By contrast, the low-PAP steers had very good average daily gain, very good feed conversion. The closer we got ►

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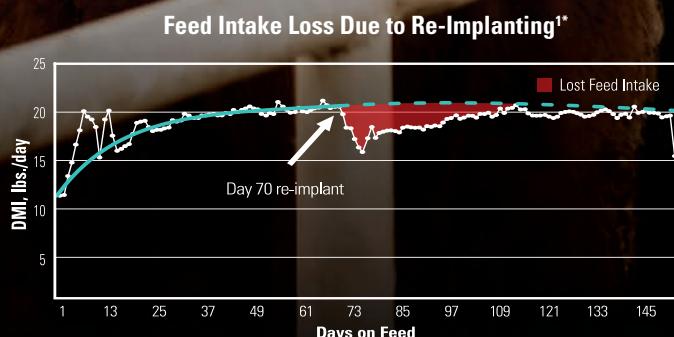
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1. Study Number HR-25: Evaluation of Implants Containing Reduced-Dose Combinations of Trenbolone Acetate and Estradiol on Performance and Carcass Merit of Finishing Steers.

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Heart Failure... from previous page

to finishing, the more the performance declined on the high-PAP steers," he explains.

Some people wonder if this is occurring because we've selected cattle for fast growth and easy fattening. "The only way we can know would be to find some old semen and create some 1950-era cattle to compare with today's cattle," he says.

"We find this problem in every breed but there are genetic differences in the high-altitude problem—some breeds and some family lines are less susceptible. In general, cattle have high PAP, however, so anything that stresses them could be a problem."

There are correlations between obesity and heart disease. "If an animal already has fairly high PAP plus some of the issues that arise from fattening, we see more heart failures," he says.

Some people wonder if it's the kind of feed, amount of gain, or the breed. "I think we can say that it is none of the above and all of the above. There are many factors—not just any one cause," says Thomas. For a feedlot producer, or cow-calf producer retaining ownership through feeding, it's crucial to know more about this.

Greta Krafur, DVM is a pathologist who did her PhD work on congestive heart failure in feedlot cattle. She is now assistant professor in the Department of Veterinary and Biomedical Sciences at South Dakota State University and also employed by the University of Colorado Denver Anschutz School of Medicine Cardiovascular Pulmonary Research Lab where she works with human physicians whose expertise in pulmonary hypertension and heart disease have influenced her thinking regarding the complex problem of bovine congestive heart failure.

For several years she's been working with Milt Thomas. "As a pathologist I was in charge of the



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tissue harvest to make sure we got all the tissues needed for this study. We have many collaborators in this research. We're not only collecting tissues for the cattle industry but also for human medicine," says Krafsur.

"I'm now in the process of trimming all tissues so they can go to the lab to be made into slides. I also collected fat from around the heart, as well as visceral abdominal fat, and now analyzing the proteomic, metabolomic and lipidomic signatures, because I suspect that these cattle have a unique inflammatory metabolic condition. The ones that develop pulmonary hypertension and congestive heart failure have this unique signature that is pro-inflammatory and have glycolytic metabolism and also tend to have a lot of heart fat. I think the cattle that suffer from this condition have a genetic variance when it comes to how lipids are transported and metabolized," she says.

"We put a high premium on marbling, and some of these hearts are well marbled but this is not where we need marbling! My research is looking at the influence of heart fat and inflammation in the heart and if it's setting these cattle up for this problem."

"We've also looked at grass-fattened animals versus grain-fed. Microscopically the grass-fat cattle hearts do not look any healthier than the corn-fed conventional-ly-fattened animals. Many people think these problems are due to what we feed them and the way we feed them, but I'm not sure," says Krafsur. It may be a factor, but the animal's own metabolism may be the bigger key.

"Researchers at the Genetics, Breeding, and Animal Health Research Unit at the USDA, ARS, U.S. Meat Animal Research Center in Clay Center, Nebraska and at the Great Plains Veterinary Educational Center at Clay Center say this problem is now happening earlier in the feeding period, with



the cattle they have studied. In this last group of cattle that we did with our USDA grant, I would agree," she says.

If these animals could be pinpointed earlier, they could be taken out of the typical feedlot program and managed differently. They might be fed differently and slaughtered earlier. "I'm trying to determine what's going on with them, but at the same time trying to verify certain biomarkers used in the human medical population to classify and predict human heart failure with pulmonary hypertension patients. A couple biomarkers that are very prognostic with humans are significantly different in cattle that develop pulmonary hypertension and congestive heart failure. These are promising biomarkers that we could also use in cattle—where we could just take blood samples and measure them," she says.

"Unhealthy fat is very pro-inflammatory, and sets up an environment for fibrosis in the heart, and more inflammation. Some of these genes have something to do with lipid metabolism. It's been shown in human patients with congestive heart failure that many of them go on to develop pulmonary hypertension and ultimately right heart failure. Those patients do worse than any other class of pulmonary hypertension patients. Heart fat is a key player in the whole complex pathophysiology of that disease. I need to look at this in the cattle and

see if it is a similar issue."

Although management and feeding regimens in feedlots are similar across the industry, there's a subset of cattle that develop BCHF for reasons unknown. "I think some cattle do not respond favorably to the high demands imposed by excess calories, aggressive growth and fat body condition during feeding/fattening. This subset of cattle seem to experience systemic inflammation and metabolic and lipid dysfunction that lead to cardiopulmonary remodeling and dysfunction. This condition is invariably fatal and we need to find biomarkers predictive of disease that can be used to assess risk and inform management decisions," she says.

Why do we see this problem in the feedlot but not in adult cows and bulls? Is it because we're not pushing them to grow so fast? Mature cattle are larger frame size than several decades ago yet we're not seeing BCHF except for high altitude disease in certain bloodlines. Perhaps it's because we develop heifers and bulls slower—for longevity rather than swift fattening for slaughter—but we don't know.

"Perhaps there is an underlying genetic problem, and certain things about the environment—what and how we feed—and when the two come together there may be a subset of cattle that don't respond favorably. Under different conditions you might never see the problem," she says.



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INDICATIONS

ZACTRAN is indicated for the treatment of bovine respiratory disease (BRD) associated with *Mannheimia haemolytica*, *Pasteurella multocida*, *Histophilus somni* and *Mycoplasma bovis* in beef and non-lactating dairy cattle. ZACTRAN is also indicated for the control of respiratory disease in non-lactating dairy cattle at high risk of developing BRD associated with *Mannheimia haemolytica* and *Pasteurella multocida*.

CONTRAINDICATIONS

As with all drugs, the use of ZACTRAN is contraindicated in animals previously found to be hypersensitive to this drug.

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The material safety data sheet (MSDS) contains more detailed occupational safety information. To report adverse effects, obtain an MSDS or for assistance, contact Merial at 1-888-637-4251.

RESIDUE WARNINGS: Do not treat cattle within 35 days of slaughter. Because a discard time in milk has not been established, do not use in female dairy cattle 20 months of age or older. A withdrawal period has not been established for this product in pre-ruminating calves. Do not use in calves to be processed for veal.

PRECAUTIONS

The effects of ZACTRAN on bovine reproductive performance, pregnancy, and lactation have not been determined. Subcutaneous injection of ZACTRAN may cause a transient local tissue reaction in some cattle that may result in trim loss of edible tissues at slaughter.

ADVERSE REACTIONS

Transient animal discomfort and mild to moderate injection site swelling may be seen in cattle treated with ZACTRAN.

EFFECTIVENESS

The effectiveness of ZACTRAN for the treatment of BRD associated with *Mannheimia haemolytica*, *Pasteurella multocida* and *Histophilus somni* was demonstrated in a field study conducted at four geographic locations in the United States. A total of 497 cattle exhibiting clinical signs of BRD were enrolled in the study. Cattle were administered ZACTRAN (6 mg/kg BW) or an equivalent volume of sterile saline as a subcutaneous injection once on Day 0. Cattle were observed daily for clinical signs of BRD and were evaluated for clinical success on Day 10. The percentage of successes in cattle treated with ZACTRAN (58%) was statistically significantly higher ($p < 0.05$) than the percentage of successes in the cattle treated with saline (19%).

The effectiveness of ZACTRAN for the treatment of BRD associated with *M. bovis* was demonstrated independently at two U.S. study sites. A total of 502 cattle exhibiting clinical signs of BRD were enrolled in the studies. Cattle were administered ZACTRAN (6 mg/kg BW) or an equivalent volume of sterile saline as a subcutaneous injection once on Day 0. At each site, the percentage of successes in cattle treated with ZACTRAN on Day 10 was statistically significantly higher than the percentage of successes in the cattle treated with saline (74.4% vs. 24% [$p < 0.001$], and 67.4% vs. 46.2% [$p = 0.002$]). In addition, in the group of calves treated with gamithromycin that were confirmed positive for *M. bovis* (pre-treatment nasopharyngeal swabs), there were more calves at each site (45 of 57 calves, and 5 of 6 calves) classified as successes than as failures.

The effectiveness of ZACTRAN for the control of respiratory disease in cattle at high risk of developing BRD associated with *Mannheimia haemolytica* and *Pasteurella multocida* was demonstrated in two independent studies conducted in the United States. A total of 467 crossbred beef cattle at high risk of developing BRD were enrolled in the study. ZACTRAN (6 mg/kg BW) or an equivalent volume of sterile saline was administered as a single subcutaneous injection within one day after arrival. Cattle were observed daily for clinical signs of BRD and were evaluated for clinical success on Day 10 post-treatment. In each of the two studies, the percentage of successes in the cattle treated with ZACTRAN (86% and 78%) was statistically significantly higher ($p = 0.0019$ and $p = 0.016$) than the percentage of successes in the cattle treated with saline (36% and 58%).

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The Impact of Trich Extends Beyond Lost Pregnancies

Trichomoniasis, more commonly known as "trich," is a highly contagious venereal disease that can wreck a herd's reproductive efficiency. A sound preventive program will help avoid abortions and ongoing losses at a time when every calf is vital to the bottom line.

"Preventing trich is one of the best ways to protect profits," said Eric Metteauer, DVM, a veterinarian in Beaumont, Texas. When Dr. Metteauer moved to southeast Texas in 2013, numerous herds in his client base were infected with trich. Now, with intense management, he hasn't had a bull test positive in two years.

"Trich can be devastating from an economic standpoint because of the high calf-crop losses," said John Davidson, DVM, senior associate director of beef cattle professional services, Boehringer Ingelheim. He has seen decreased calf crops in trich-infected herds of up to 50 percent.

"The economic impact of this venereal disease in a cow herd is felt through lower weaning weights due to delayed breeding, testing of potentially infected bulls, and replacement of infected cattle," Dr. Davidson added. "Beyond replacing cattle, ongoing surveillance to ensure the herd is trich-free plus vaccination of the herd cost money, too."

"The first trich-infected herd I dealt with had 36 of 50 bulls test positive," noted Dr. Metteauer, who provides service to beef herds in a 100-mile radius of his clinic, ranging from 20-cow herds to 8,000-cow herds. "We've seen trich in a wide array of herds with all kinds of management practices."

When herds have problems with conception rates and lower pregnancy rates, trich is often the diagnosis, but testing must be done to confirm. "If pregnancy rates are

reduced by a large amount, we want to palpate the cows and determine if they have had long-term damage to their reproductive tract, or if they are carrying mummified fetuses," Dr. Metteauer explained. "If this is the case, then we have to attack trich from the cow side and not just the bull side."

"The trich vaccine can help cows fight the disease and save a pregnancy with proper timing, although pregnancy is not a determining factor for infection in all cows," said Dr. Davidson. "The vaccine has been proven to reduce the shedding of *Tritrichomonas foetus*, the disease-causing organism, thereby helping to reduce the spread of the infection throughout the herd."

When the vaccine is given the first time, Dr. Davidson stresses the importance of giving a booster two to four weeks following the first dose. The second dose needs to be given 30 days prior to breeding season. This helps exposed animals fight the organism causing the disease. Cattle that have previously been vaccinated only require one dose.

"The problem with trich is there is no legal treatment in food animals," Dr. Davidson asserted. "Bulls become permanently infected and need to be disposed of properly. While cows can develop an immune response to the disease, about 5 percent are permanently infected, and the others often don't have a viable pregnancy."

He continued, "Leased bulls can be a problem as they are often not tested in between movement of cow groups. I recommend that a 30-day trich test be done on all bulls prior to turnout." When a herd tests positive and some bulls test negative, he said it is important to retest the negatives two weeks later to ensure their status.

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¹ Sifferman RL, Wolff WA, Holste JF, et al. Field efficacy evaluation of namithromycin for treatment of bovine respiratory disease in cattle at feedlots. *Intern J Appl Res Vet Med*. 2011;9(2):171-180.

² ZACTRAN product label

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Don't Skip Fall Deworming

Deworming is typically part of spring works, but one veterinarian says it's just as important to also deworm in the fall. It's simple economics going into winter – do you want to buy feed for your cow or her parasites?

As fall approaches and many ranchers are purchasing or putting up feed for the winter months, Marc Campbell, DVM, says in some parts of the country fall deworming could be more economically important than in the spring. Campbell is a Technical Services Veterinarian for Bayer Animal Health and says deworming is a good way to economize going into the winter months.

"We want to feed the cow, not the worms. Deworming can keep the cow in good body condition so she's more likely to calve in better body condition and ultimately breed back better," he says. "If she can maintain that body condition through the winter, it will help come spring calving."

Even in the south where you find some fall calving operations, it still makes sense. "Cattle may pick up parasites in the fall and winter, especially in the southern states. They get more rain and it's warmer so parasites are less likely

to go dormant."

Campbell says even in the south, most operations purchase some sort of protein to feed in the winter. Cleaning up the livestock going into the fall just makes economic sense. It's also a good time to treat for lice and liver flukes, depending on the region.

According to the University of Nebraska-Lincoln, lice can reduce weight gains by as much as 0.21 lb/day in calves and hurt body condition scores in adult livestock. In fact, the USDA estimates that livestock producers lose up to \$125 million per year due to the effects of lice infestations.

"Worms are a main problem we see everywhere. It's a universal issue. Lice can be an issue throughout the country but are most problematic in the Northern states." Other problems, like flukes, are more regional," Campbell comments. He encourages producers to talk to their veterinarian to see what is recommended for their particular situations, for example, moxidectin, which is available in pour-on or injectable.

Campbell says deworming stockers this time of year is also

critically important.

"We are going for gain in stockers. We want to get them as clean as we can before they go out on pasture. It's good to use a dewormer with persistency in those cattle." He says they are likely to pick up parasites in the pasture, especially in the fall and spring.

Stockers headed to wheat pasture are a slightly different scenario, Campbell explains. "You want them parasite free going out, but they aren't as likely to pick up parasites on tilled pastures," he says. Plowing prior to planting buries the parasites. However, a no-till situation is similar to a fall grass situation. There, calves could pick up just as many parasites as on pasture.

Lice is also important to treat on wheat pasture cattle.

"Once calves are turned out, if lice is a problem they go to rubbing. They get under a hot wire fence, or will tear stuff up trying to scratch," he explains. That and the loss of gain justify treatment.

Regardless of the situation – cow/calf or stockers – deworming livestock in the fall is economically important and sets an operation up for success the rest of the year. **FL**



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¹ Wiebusch, 2015. JAM.

² Caramalac et al., 2017. J. Anim. Sci. 95:1739-1750.

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Mindsets of Great Producers

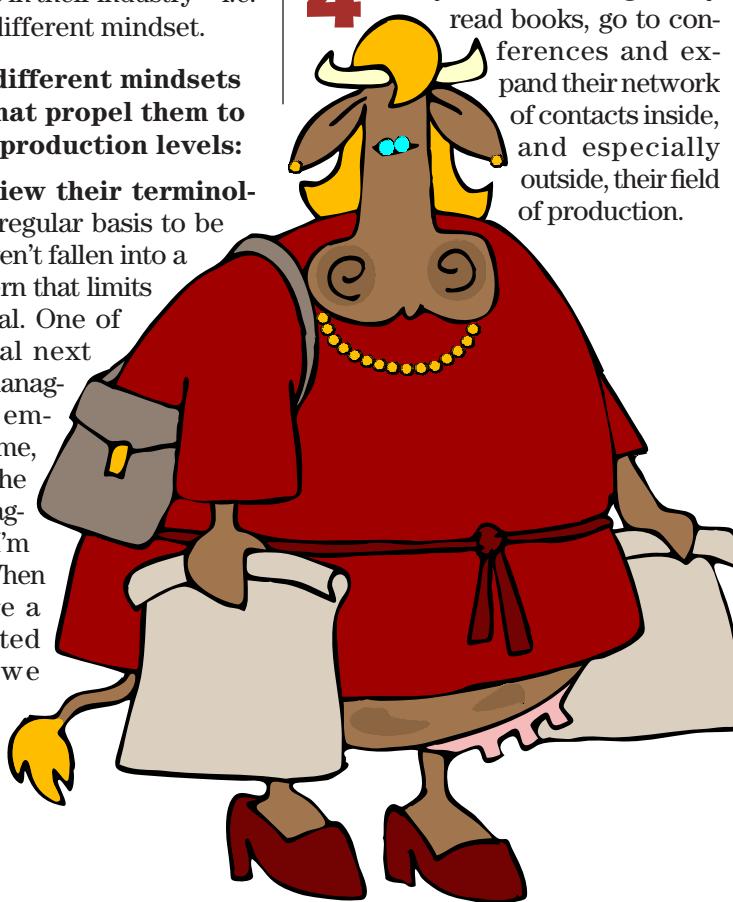
Several years ago, Jim Collins wrote "Good to Great" which detailed the process by which "Good" companies become "Great" ones. Though it was originally published in 2001 it is still the go-to book for many business leaders.

I was recently asked to provide a presentation at a conference for large ag operations on how the greatest grain and livestock producers, regardless of what they raise, seem to always have production that is 20 to 50% higher than national averages. The session led to a thought-provoking discussion for the participants who shared some of their own unique strategies.

In developing my presentation, I gleaned input from my clients as well as other producers who are at those levels. The results were clear. They don't have any proprietary knowledge, technology or systems. They simply think differently than everyone else in their industry—i.e. they have a different mindset.

Here are 8 different mindsets they have that propel them to unmatched production levels:

1 They review their terminology on a regular basis to be sure they haven't fallen into a thought pattern that limits their potential. One of my millennial next generation managers with 40 employees told me, "I don't use the term HR Manager anymore. I'm Farm Mom. When we say we're a family-oriented business, we mean it."



2 Regularly review your models: They realize that their industry changes rapidly and they need to be sure to not overlook a better system or a great opportunity. One of my walnut growers in California said they would never invest in a sheller because it was too technical and labor-intensive. A few years ago, they made that investment. It is now the highest-profit enterprise of their business, and it introduced them to new markets with even greater margins.

3 Learn to "Zoom in and Zoom out": They are able to stay 30,000 feet above the operation and monitor key production areas. If they see something that isn't quite right or needs close attention, they "Zoom in" to that area of the business for a few days to address specific needs, then "Zoom out" to prevent themselves from being there too long and micro-managing those people or that area.

4 Always be learning: They read books, go to conferences and expand their network of contacts inside, and especially outside, their field of production.

5 Use and stay with what works: Each level of improvement in production takes effort, and each increase takes greater effort than the last. It is important to continue to do what got you to this great level of production as you try new techniques and strategies.

6 Don't wait for ideal conditions: General Norman Schwarzkopf of the first Iraq war said, "You go to war with the army you have, not the army you want." One of my highest producing clients says, "Have a sense of urgency every day."

7 Re-think your people: Do I have the right people? Do I need to train my people better? Is each person in the best role for their skills and interests? Are these the people I need for the future of the company? One producer said, "We're realizing that a guy with an MBA and Spanish as a second language is more valuable as a manager for the future of the business than just a great cow guy."

8 Re-think yourself: The great producers realize they don't know everything. They don't assume they can figure out every problem on their own or that they always have the best ideas.

Wayne Gretzky, the great hockey player who still holds or shares 61 NHL records, was once asked how he scored so many more goals than everyone else. He said, "Everyone skates to where the puck is, I skate to where it is going." Gretzky thought differently than everyone else in the game.

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Always follow recommended label dose.

Do not overdose.

It is recommended that accurate body weight is determined prior to treatment.

Do not use concurrently with other injectable selenium and copper products.

Do not use concurrently with selenium or copper boluses.

Do not use in emaciated cattle with a BCS of 1 in dairy or 1-3 in beef.

Consult your veterinarian.

CAUTION:

Slight local reaction may occur for about 30 seconds after injection. A slight swelling may be observed at injection site for a few days after administration. Use standard aseptic procedures during administration of injections to reduce the risk of injection site abscesses or lesions.

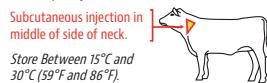
DIRECTIONS:

This product is only for use in cattle.

MULTIMIN® 90 is to be given subcutaneously (under the skin) ONLY.

It is recommended to administer the product in accordance with Beef Quality Assurance (BQA) guidelines. Minimum distance between injection sites for the MULTIMIN® 90 product and other injection sites should be at least 4 inches.

Inject under the loose skin of the middle of the side of the neck. Max volume per injection site is 7 mL.



SUPPLEMENTATION PROGRAM

BULLS	3 times per year
BEEF COWS	4 weeks before breeding 4 weeks before calving
DAIRY COWS	4 weeks before calving 4 weeks before insemination at dry-off
CALVES	at birth at 3 months and/or weaning
HEIFERS	every 3 months – especially 4 weeks before breeding

(program gives planned dates that can be varied to suit management programs)

DOSAGE TABLE

ANIMAL WEIGHT (lbs)	CALVES UP TO 1 YEAR 1 mL/100 lb BW	CATTLE 1 - 2 YEARS 1 mL/150 lb BW	CATTLE > 2 YEARS 1 mL/200 lb BW
50	0.5 mL	-	-
100	1 mL	-	-
150	1.5 mL	-	-
200	2 mL	-	-
300	3 mL	-	-
400	4 mL	-	-
500	5 mL	-	-
600	6 mL	-	-
700	7 mL	-	-
800	-	5.3 mL	-
900	-	6 mL	-
1000	-	6.6 mL	5 mL
1100	-	-	5.5 mL
1200	-	-	6 mL
1300	-	-	6.5 mL
1400	-	-	7 mL

Packaged in 100 mL & 500 mL size

NDC No. 49920-006-01 NDC No. 49920-006-05

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Implications of Rain on Next Year's Calf Crop

A snowy/rainy spring gave way to above average rainfall for the summer in much of the mid-section of the country. While most won't complain about rain, the moisture has sure presented challenges for this year's hay crop.

Abundant moisture resulted in rapid growth and maturity in

forages. The continued rain delayed cutting the forage, adding to the maturity of the crop, and a lot of hay has been rained on between cutting and baling. This is most certainly going to result in poor quality hay, even if tonnage is adequate.

Even forages that are intended for late summer, fall, or winter

grazing are likely to be lower in protein and energy than usual due to the rapid and abundant growth which resulted in a lot of stem and seed head production and not as much leaf material.

While it is always a good practice to test the nutrient content of forages and hays, this is going to be a very important year to test it and to feed or graze accordingly based on the nutrient content of the forage and the nutrient requirements of the cattle at various stages of production.

For example, research has shown that a greater percentage of cows will conceive when they are on an increasing plane of nutrition rather than on a decreasing plane of nutrition. Therefore, May calving cows and heifers may need supplemental protein and energy during the breeding season even though grass is abundant.

Early spring calving cows typically graze deferred forages in the winter and receive hay and supplement from calving time until green grass is available again. If the winter forage is lower in quality than most years, this could result in lower body condition of the cows coming into calving. Once calving ensues, the energy needs of the now lactating cow doubles, making this a difficult time for the cow to gain weight if necessary. Cows calving in a body condition score below 5 are less likely to rebreed and also have reduced immunoglobulins to pass onto the newborn in the colostrum. Therefore, maintaining a 5-6 body condition score during the winter is important and should be closely monitored.

Sending forage and hay samples to a commercial laboratory is an economical way to know what hay to feed at each production segment as well as how much supplement to feed to ensure requirements are met without overfeeding costly supplement.



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- Decrease shedding of *E. coli* O157:H7¹
- Reduce re-infection of *Salmonella*²
- Increase average daily gain³
- Improve feed to gain⁴

Probiotic strain *Lactobacillus acidophilus* BT-1386, available exclusively from Lallemand Animal Nutrition, was added to the 2015 pre-harvest production best practice (PBP) document released by the Beef Industry Food Safety Council (BIFSCo). It is commercially available for purchase under the brand names Micro-Cell FS and Micro-Cell FS Gold.



MICRO-CELL®

1 Production Best Practices (PBP) to Aid in the Control of Foodborne Pathogens in Groups of Cattle. Beef Industry Food Safety Council Subcommittee on Pre-Harvest. Spring 2015. Accessed March 19, 2015.

2 Tabe E5, Oloya J, Doetkott DK, Bauer ML, Gibbs PS, Khaitsa ML. Comparative effect of direct-fed microbials on fecal shedding of *Escherichia coli* O157:H7 and *Salmonella* in naturally infected feedlot cattle. J. Food Prot. May 2008; 3(7): 539-544.

3 Lallemand Animal Nutrition. Unpublished. United States. 1996.

4 Hutcheson D and Lallemand Animal Nutrition. Unpublished. United States. 1986.

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Grazing Cornstalk Residue Can Be Economical and Nutritious Feed Alternative



A cornfield's use for the year doesn't end with harvest. For those with land, or access to crop land, cornstalk residue left in the field after harvest can be an affordable feedstuff for cattle.

More than 20 million acres of Nebraska and Iowa farmland were planted to corn last year, and Kristen Ulmer, Nebraska Extension Beef Systems Educator, says much of that cornstalk residue goes unused as feed.

"There's great opportunity here for those producers who are open to the practice and follow good management practices," says Ulmer.

In a survey of crop producers, the University of Nebraska-Lincoln found 63% allowed cattle to graze their cornfields. Of the 37% who did not, 47% cited concerns about soil compaction as the reason for their reluctance. Lack of infrastructure such as water source and fencing accounted for 49%, and 23% cited the producer's difficulty accessing

grazing livestock as a concern.

Using available research, Ulmer presented findings to answer some of those concerns at the Three-State Beef Conference held earlier this year in Greenfield, Iowa; Savannah, Missouri; and Syracuse, Nebraska. The annual conference is co-hosted by Iowa State University, University of Missouri and University of Nebraska Extension services.

A 16-year research study conducted by UNL shows when stocked properly, grazing corn residue in the spring or fall from fields in a no-till corn-soybean rotation has no effect on subsequent corn yields in the field and may even see a couple bushel boost in subsequent soybean yields. Those concerned about compaction will notice some pugging, or marking up of the field, but no root penetration and thus, no long-term compaction.

The key, says Ulmer, is the stocking rate.

UNL recommends 50% removal of cornhusks and leaves, and assumes there is 16 lbs. of husk and leaf dry matter produced for every bushel of corn grain. Using those numbers, a field that yielded 200 bushels per acre of corn will sustain one 1,200 lb. cow for 57 days.

The leaf and husk are the most digestible part of the plant. Corn

residue consists of 9% husk, 15% cob, 31% leaf and 45% stem, with the stem and cob providing little energy value. Modern harvesting methods leave less than 1% dropped grain in the field.

That means cattle will remove 13-15% of the total residue with proper grazing. If left in the field to eat more than 50% of the husk and leaf, energy consumption rates quickly decline.

So, using UNL Extension's calculations, a producer with 150 cows and an 80-acre field that produced 200 bushels of corn to the acre would provide 4,560 cow days of grazing. Dividing 4,560 cow days by 150 head means those 150 cows can graze the 80-acre field for 30 days.

"Grazing cornstalks is a system that creates good, long-term effects for both the cattle and the land," says Ulmer. Avoiding overgrazing leaves sufficient cover to protect the soil through the winter months, and manure from the cattle provides natural fertilization.

Supplemental nutrition

With a proper stocking rate, gestating dry cows are able to get adequate nutrition from corn residue when the weather is good; but stocker calves will require extra protein and energy. Distillers grains make a great supplement and also

provide rumen undegradable protein (RUP), important for skeletal and muscle growth in young calves.

UNL research suggests 600 lb. calves grazing irrigated cornfields supplemented with 3 lbs. per day of dry distillers grains (DDGS) (as-fed), will gain 1.3 lbs. per day. When DDGS supplement is increased to 6 lbs. per day (as-fed), gains increase to 1.8 lbs. per day.

In the feedlot

For those baling the cornstalks and feeding them in the feedlot to add forage to the diet, corn stalks are likely cheaper than hay. If the cornstalks are ammoniated (the process of applying anhydrous ammonia to break the cell walls of cornstalks and increase energy and protein value), they will provide feed similar to medium quality hay.

"Just remember, whether you graze or bale the corn residue, when you remove it from the field you are removing nutrients," says Ulmer. "So, be sure to calculate

the value of those nutrients, and do your soil sampling to ensure fields are ready for the next crop."

Water and fencing

For those citing infrastructure needs as an obstacle to grazing corn residue, creative solutions abound. "If you irrigate, you can attach an electric fence strand to your irrigation pivot," explains Ulmer. "Then you can move the fence around as needed. It's an innovative fencing solution." Ulmer adds it helps to condition calves to the electric fence. "Sometimes at the Eastern Nebraska Research and Extension Center (ENREC), young stocker calves are introduced to electric fencing with a strand placed at the edge of the feedlot apron," Ulmer explains. "They have to walk around it to get to the bunk, and then back into the lot. They learn to respect it."

Water access issues can possibly be solved using a water tank on a portable platform, or tapping an

irrigation well. When setting up a water source, keep in mind any possible ice removal issues.

Ulmer gives a reminder to work with your landlord, so that all have a positive experience. Following recommended stocking rates will leave fields in good condition and avoid strained relations. "If you rent the corn production acres, the residue is yours," says Ulmer. Renting land specifically for the grazing can be worth it. For example, assuming it costs \$15 per acre for that 200 bushel to the acre field, then adding an additional \$5 per acre for fencing and water, the \$20 per acre total washes out to about 35 cents per gestating cow per day. "That's pretty competitive for winter feed supply," Ulmer adds.

The University of Nebraska offers an online exchange for those looking for cornstalk grazing ground and those with corn residue to offer at cropresidueexchange.unl.edu



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¹Cole and Hutcheson, 1985. *J. Anim. Sci.* 60:772-780
²Hutcheson, 1990. *Feedstuffs* 62(11):14

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PRODUCT INFORMATION

NADA #141-450, Approved by FDA

Banamine® Transdermal
(flunixin transdermal solution)

Pour-On for Beef and Dairy Cattle 50 mg/mL

BRIEF SUMMARY: (For full prescribing information, see package insert)**Non-Steroidal Anti-inflammatory Drug**

Only for topical use in beef and dairy cattle. Not for use in beef bulls intended for breeding; dairy bulls; female dairy cattle 20 months of age or older, including dry dairy cows; and suckling beef calves, dairy calves, and veal calves.

CAUTION: Federal law restricts this drug to use by or on the order of a licensed veterinarian.**DESCRIPTION:** Each milliliter of Banamine Transdermal pour-on contains 50 mg flunixin (equivalent to 83 mg flunixin meglumine), 150 mg pyrrolidine, 50 mg L-menthol, 500 mg propylene glycol dicaprylate/dicaprate NF, 0.20 mg FD&C Red No. 40, and glycerol monocaprylate NF qs.**INDICATIONS:** Banamine Transdermal pour-on is indicated for the control of pyrexia associated with bovine respiratory disease and the control of pain associated with foot rot in steers, beef heifers, beef cows, beef bulls intended for slaughter, and replacement dairy heifers under 20 months of age.**CONTRAINdications:** NSAIDs inhibit production of prostaglandins which are important in signaling the initiation of parturition. The use of flunixin can delay parturition and prolong labor which may increase the risk of stillbirth. Do not use Banamine Transdermal pour-on within 48 hours of expected parturition. Do not use in animals showing hypersensitivity to flunixin meglumine.**USER SAFETY WARNINGS:** Not for use in humans. Keep out of reach of children. Flunixin transdermal solution is a potent non-steroidal anti-inflammatory drug (NSAID), and ingestion may cause gastrointestinal irritation and bleeding, kidney, and central nervous system effects.

This product has been shown to cause severe and potentially irreversible eye damage (conjunctivitis, iritis, and corneal opacity) and irritation to skin in laboratory animals. Users should wear suitable eye protection (face shields, safety glasses, or goggles) to prevent eye contact; and chemical-resistant gloves and appropriate clothing (such as long-sleeve shirt and pants) to prevent skin contact and/or drug absorption. Wash hands after use.

In case of accidental eye contact, flush eyes immediately with water and seek medical attention. If wearing contact lenses, flush eyes immediately with water before removing lenses. **In case of accidental skin contact and/or clothing contamination, wash skin thoroughly with soap and water and launder clothing with detergent.** **In case of ingestion do not induce vomiting and seek medical attention immediately.** Probable mucosal damage may contraindicate the use of gastric lavage. Provide product label and/or package insert to medical personnel.**RESIDUE WARNINGS:** Cattle must not be slaughtered for human consumption within 8 days of the last treatment. Not for use in female dairy cattle 20 months of age or older, including dry dairy cows; use in these cattle may cause drug residues in milk and/or in calves born to these cows or heifers. Not for use in suckling beef calves, dairy calves, and veal calves. A withdrawal period has not been established for this product in pre-ruminating calves.**PRECAUTIONS:** As a class, cyclooxygenase inhibitory NSAIDs may be associated with gastrointestinal, renal, and hepatic toxicity. Sensitivity to drug-associated adverse events varies with the individual patient. Patients at greatest risk for adverse events are those that are dehydrated, on concomitant diuretic therapy, or those with renal, cardiovascular, and/or hepatic dysfunction. Banamine transdermal should be used with caution in animals with suspected pre-existing gastric erosions or ulcerations. Concurrent administration of other NSAIDs, corticosteroids, or potentially nephrotoxic drugs should be avoided or used only with careful monitoring because of the potential increase of adverse events.

NSAIDs are known to have potential effects on both parturition (see Contraindications) and the estrous cycle. There may be a delay in the onset of estrus if flunixin is administered during the prostaglandin phase of the estrous cycle. NSAIDs are known to have the potential to delay parturition through a tocolytic effect. The use of NSAIDs in the immediate post-partum period may interfere with uterine involution and expulsion of fetal membranes. Cows should be monitored carefully for placental retention and metritis if Banamine Transdermal pour-on is used within 24 hours after parturition.

Not for use in dairy or beef bulls intended for breeding because reproductive safety has not been evaluated.

HOW SUPPLIED: Banamine Transdermal pour-on is available in 100-mL (NDC 0061-4363-01), 250-mL (NDC 0061-4363-02), and 1-L (NDC 0061-4363-03) bottles.

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Keeping Your Vaccines Viable

Vaccines are a vital part of keeping all livestock healthy. Vaccines help in the prevention of disease, which results in less utilization of antibiotics due to fewer sick animals. Vaccines provide protective immunity approximately 21 days following the initial vaccination in the majority of livestock. Some vaccines may require a booster vaccination(s) to ensure immunity for the period designated by the manufacturer. There are multiple factors influencing immunity, including but not limited to, medical history, vaccine type, method of administration, age, and species being vaccinated. A valid Vet-Client-Patient relationship will help you as you select the vaccine of choice for your livestock health program.

So how do vaccines become worthless? Proteins are the major components of the organisms that make up both killed and MLV vaccines. Proteins are denatured by the interaction of two major factors: time and temperature. In addition, most common disinfectants will render modified live organisms inactive. So the anti-bacterial soap or even city or rural water, which contains chlorine, can have an effect on vaccines, when residues are present in your syringes or transfer needles. Thus, rinse with distilled water which is near the boiling point.

Purchasing and Use Considerations of Vaccines

Check expiration dates and make sure you can use it before it expires. For MLV vaccines purchase smaller dose instead of larger dose vials, which will enable using the vaccine in a shorter time period. Also remember to purchase an adequate number of needles and plan on replacing the needle about every 5-10 head of cattle. Do not

straighten a bent needle, replace it!

Transporting and Storing Vaccines

Check the recommended storage temperature, and use a cooler while transporting and while vaccinating to keep the vaccine at the recommended temperature and also to minimize exposure to sunlight. Typically this temperature is between 35 degrees to 45 degrees F unless the product label advises otherwise. Check your refrigerator's temperature periodically to assure that it is working properly and is keeping the vaccines at the correct temperature.

While Working

Keep vaccines in a cooler with ice packs in summer or possibly hot packs in winter if it is too cold. (Check vaccine labels for proper storage temperature.) Don't mix more MLV vaccine than can be used in 30 minutes. If using MLV vaccines, only rehydrate the vials either one at a time or as they are needed. Make sure you are using a clean transfer needle and use only the diluent supplied by the manufacturer to rehydrate the vaccine. Always use a brand-new needle to draw up the vaccine into the syringe. When using needle-free injection systems, or syringes that draw doses from a tube attached to the vaccine bottle, care should be taken to assure the bottle and tubing stay cool and shaded from sunlight.

Discard any mixed MLV vaccines that are not used, as they are only viable for about an hour or two after reconstitution. Discard any partial bottles of inactivated vaccine that have been contaminated by dirty needles. Return unmixed MLV and unused inactivated vaccines to proper storage as soon as possible.



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Banamine® Transdermal (flunixin transdermal solution)

1. Hellwig D, Kegley E, Johnson Z, Hunsaker B. 2000. Flunixin meglumine as adjunct therapy for bovine / respiratory disease in stocker cattle. Arkansas Animal Science Report. AAES Research Series 478.



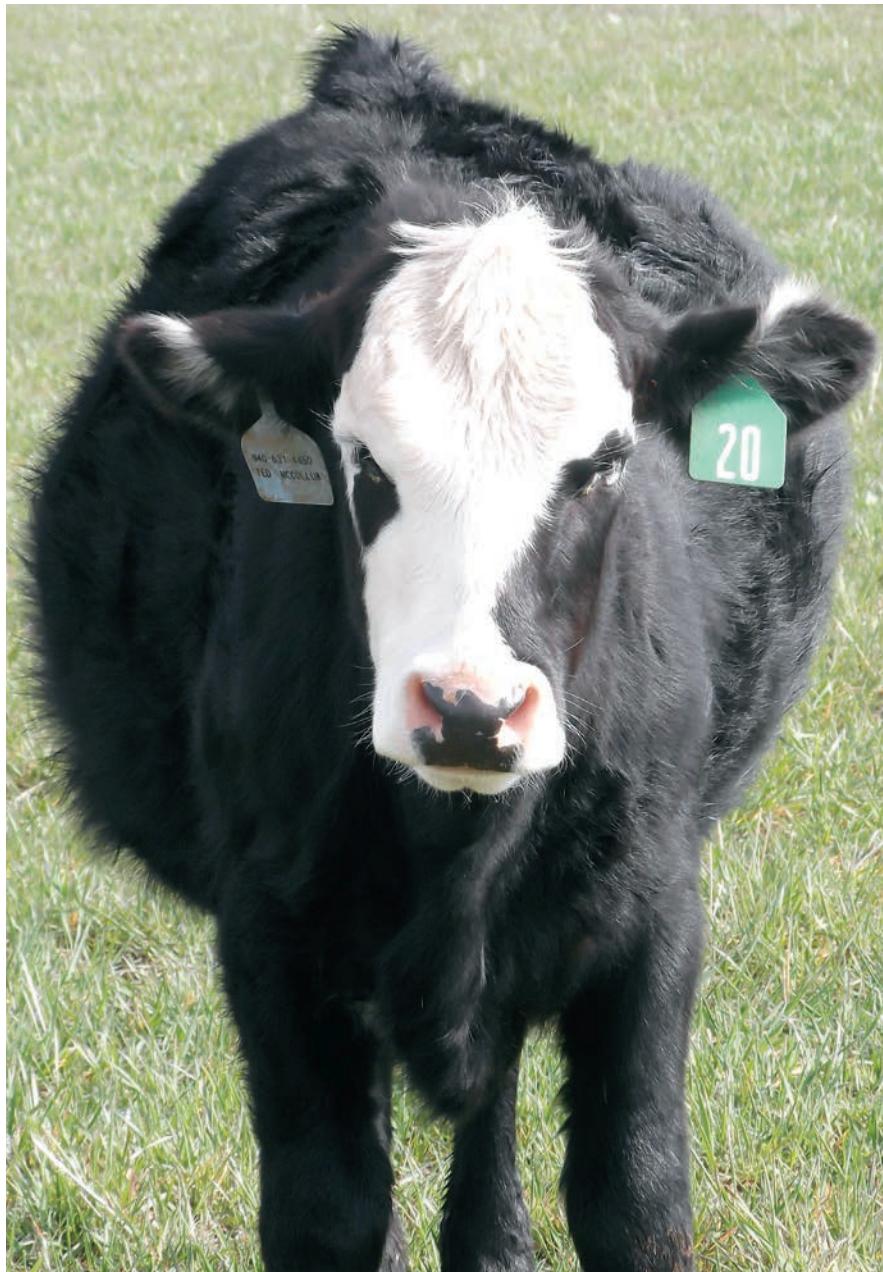
IMPORTANT SAFETY INFORMATION: NOT FOR HUMAN USE. KEEP OUT OF REACH OF CHILDREN. Only for topical use in beef and dairy cattle. Do not use Banamine Transdermal pour-on within 48 hours of expected parturition. Do not use in animals showing hypersensitivity to flunixin meglumine. Cattle must not be slaughtered for human consumption within 8 days of the last treatment. Not for use in female dairy cattle 20 months of age or older, including dry dairy cows; use in these cattle may cause drug residues in milk and/or in calves born to these cows or heifers. Not for use in suckling beef calves, dairy calves, and veal calves. A withdrawal period has not been established for this product in pre-ruminating calves. Not for use in dairy or beef bulls intended for breeding because reproductive safety has not been evaluated.

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Animal Health

AVOID PASTURE BLOAT



BLOAT is a common problem in ruminants, if they can't get rid of extra gas produced by rumen microbes during digestion. Putting hungry cattle on lush legume pastures, such as

alfalfa—especially in pre-bloom stage—is most dangerous. It's less dangerous once plants are mature, with lower protein level. Wheat pastures can also be a problem. Nearly any pasture that is high in protein content and low in structural fiber can be a risk under certain conditions.

Dr. Bill Pinchak, beef cattle nutritionist and Professor, Texas AgriLife Research and Extension Center, says winter cereal small grain pastures can present challenges. Pasture bloat occurs in every state and throughout Canada.

Dr. Ron Gill, Texas A&M says that in areas where wheat is grown, bloat is common on highly fertilized pastures and immature stands. "We get bloat with a flush of growth, along with high nitrogen content, or a change in pH in the rumen that shuts things down a little. There are also issues with calcium imbalance. Producers don't always pay attention to minerals; lack of calcium affects smooth muscle contractions and may hinder ability to push some of that gas out of the rumen," he says.

"Some folks use a mineral mix containing high levels of magnesium—although yearlings on wheat pastures don't have a problem with grass tetany. Cows grazing small grains are susceptible to tetany, and lack of consumption of mineral may be part of the bloat issue."

Some legumes, like alfalfa, are notorious for bloat, but there are options today for types of legumes that are not as likely to cause bloat. "With wheat pastures, by contrast,

I haven't seen any varieties that are less bloat-prone," says Gill.

Bloat is also related to weather patterns. Sometimes cattle don't graze at regular times (waiting out a storm, perhaps) and then overload. "Another factor is related to days of rapid growth followed by cloudy days when nitrogen accumulates in the leaves but doesn't have enough sunlight the next day to complete the photosynthesis process—to convert nitrogen into plant protein," says Gill.

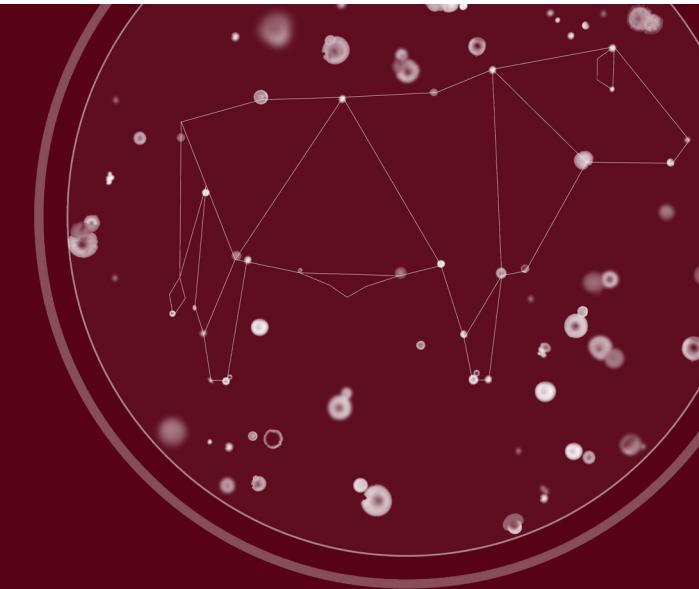
Tips to Minimize Bloat

"When grazing wheat pastures, producers are hesitant to put out something for bloat that does not also add performance," says Pinchak. Products like Bloat Guard (poloxalene) are very effective if consistently consumed, but all they do is help prevent bloat," he says.

With any bloat interventions, cattle must be trained to consume them before they overeat. "Stocker cattle generally come from different places, and their experiences with what they eat are different. To use a bloat product it takes time and investment to try to teach them what is safe to eat. This also applies to a mineral program, a different type of hay, or different pasture. If you plan to use an ionophore in a mineral, or a poloxalene block, the animals must be exposed to that and trained to eat it before they go on a bloat-prone pasture," says Pinchak. The cattle must already be consuming it, because once they start to bloat they are not going to eat it.

"One thing to help reduce risk is to fill them up on a good high-fiber hay before they go out, so they won't overeat. With wheat pasture, how much bloat we see is also related to the amount of pre-planting nitrogen fertilizer," says Pinchak.

"We did studies looking at pre-planting fertilization rates, comparing 30, 60 and 90 pounds of nitrogen. We saw bloat at all levels, at least for a day or two, but with 90 pounds of fertilizer the risk for mortalities was high. I suggest ►



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Avoid Pasture Bloat... from previous page
 using 40 to 50 pounds max if they plan to graze those pastures. If they pull the cattle off and later harvest that field for grain, they can top dress it with more nitrogen after the cattle are gone," says Pinchak.

Some people provide long-stem hay free choice, such as big bales in the corner of a pasture. Cattle address their fiber needs by eating a little hay. Another tactic is to let the forage become more mature so it is not so lush, and graze it during the frost-free period. "Anything that upsets photosynthesis in the actively growing plant (such as frost) can cause bloat. In the coldest part of winter here, we don't see bloat;

it's only when the plant is trying to actively grow and something upsets that growth pattern. In wheat, this is much more pronounced and predictable than with alfalfa or clover; you can have bloat any time during the growing season with those legumes, under certain conditions." If it's a pure stand of alfalfa, let it get taller and more mature. If possible, have alfalfa in a mix with grasses.

It helps to add roughage but also slows rate of gain. "Some producers in Texas plant Haygrazer (a sudan hybrid) or sorghum/sudan at the edge of the field or leave waterways grassed in so cattle have some dry matter in their diet," says Gill. Cattle often eat a little

roughage if it's available to pick at every day. Haygrazer doesn't slow gain because it has more energy than some forages and there's not enough of it to change their intake much, and it does seem to help reduce bloat.

Another strategy is feeding a high-energy supplement. "You can increase gains and cut down bloat but it means feeding cattle while they are on pasture which isn't practical in many situations. There are many self-fed mixtures. Some people add Rumensin and even though it's not labeled for bloat it seems to help. Anything you can do to cut down massive death loss is worth looking at. Even if you reduce gain for a little while, that's still better than losing a lot of animals," says Gill.

Pinchak says the nice thing about using an ionophore is that

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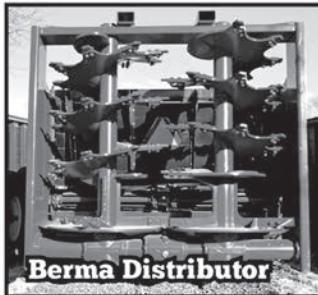
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you also get a positive response in performance. "It will improve average daily gain. If you simply use something like poloxalene and don't have bloat, it's just an extra cost," he says.

Other Products

"We've worked with several products, including an enzyme-forified product (BovaZyme) that has a lot of enzymes. It didn't eliminate bloat but it was less severe. There are several options for bloat prevention, but the important thing is getting the product into the animal. If they aren't used to eating mineral and won't eat a mineral pack, some people use a molasses block mineral or low-moisture tub that contains the bloat product," he says.

"Another product that has worked pretty well is a liquid mix that is very high in fat. If we add more fat to the diet, there will be less bloat. Most bloat is caused by formation of a stable foam, and fat/oil tends to break up that foam.

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This is why things like corn oil, mineral oil, etc. can be used for treating acute bloat. If you feed a supplement that's high in fat, and cattle consume it, this can decrease risk," says Pinchak.

"One thing that works really well to prevent bloat is condensed tannins, but we don't have any products commercially available that contain these. Tannins occur in some forages, and we've done some work with condensed tannin extracts like those used in the leather tanning industry, and

these were very effective."

Genetic Component

Some animals seem more bloat-prone. "It would be interesting to see whether it's the genetics in the rumen bacteria (of that animal) or the genetics of the cattle. Does genetics of the animal lead to a different gut population, or is the rumen population influenced by environmental or other factors? We don't have answers to that, but there are certain lines of cattle that have more bloat," says Gill. **FL**



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TCFA Feedyard Programs Suite Recognized by Leading Beef Sustainability Group

The U.S. Roundtable for Sustainable Beef (USRSB), a full beef stakeholder initiative focused on

continuous improvement, officially recognized the Texas Cattle Feeders Association (TCFA) suite of

feedyard services and programs as aligning with the U.S. Beef Industry Sustainability Framework.

"TCFA feedyards are the envy of the world in terms of efficiently converting grains and by-products into protein," said Levi Berry, feedyard general manager and TCFA Chairman. "Over the last several decades, as an industry, we have consistently produced more beef with less cattle, used fewer overall inputs, implemented environmental management practices and strived to provide a safe workplace for our employees. This is the very definition of sustainability in action. TCFA feedyards have a great story to tell."

TCFA's suite of feedyard programs consist of three main areas; employee safety, environmental services; and Beef Quality Assurance. The programs and services are implemented in partnership with TCFA feedyard members.

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aligning with the USRSB Framework, TCFA's programs were required to demonstrate alignment with six key areas:

1. Animal health and well-being
2. Efficiency and yield
3. Water resources
4. Land resources
5. Air and greenhouse gas emissions
6. Employee safety and well-being

Berry points out that this recognition gives TCFA feedyard members proof points they can use to highlight specific ways they are working to continuously improve upon their sustainability efforts.

For example, TCFA feedyard members who utilize TCFA's environmental services program align with the Framework's water resources, land resources and air and greenhouse gas emission indicators. TCFA's program includes environmental training, site audits, and soil, water and manure sampling.

Additionally, the environmental

services program helps feedyards develop sound Pollution Prevention Plans and Nutrient Management Plans. The programs underwent an evaluation by an independent third-party in order to

demonstrate incorporation of U.S. Beef Industry Sustainability Framework criteria. The alignment claim is applicable for three years, and TCFA would reapply to keep recognition status. **FL**

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