# FEEDLOT®

FEEDER INFORMATION HIGHLIGHTS




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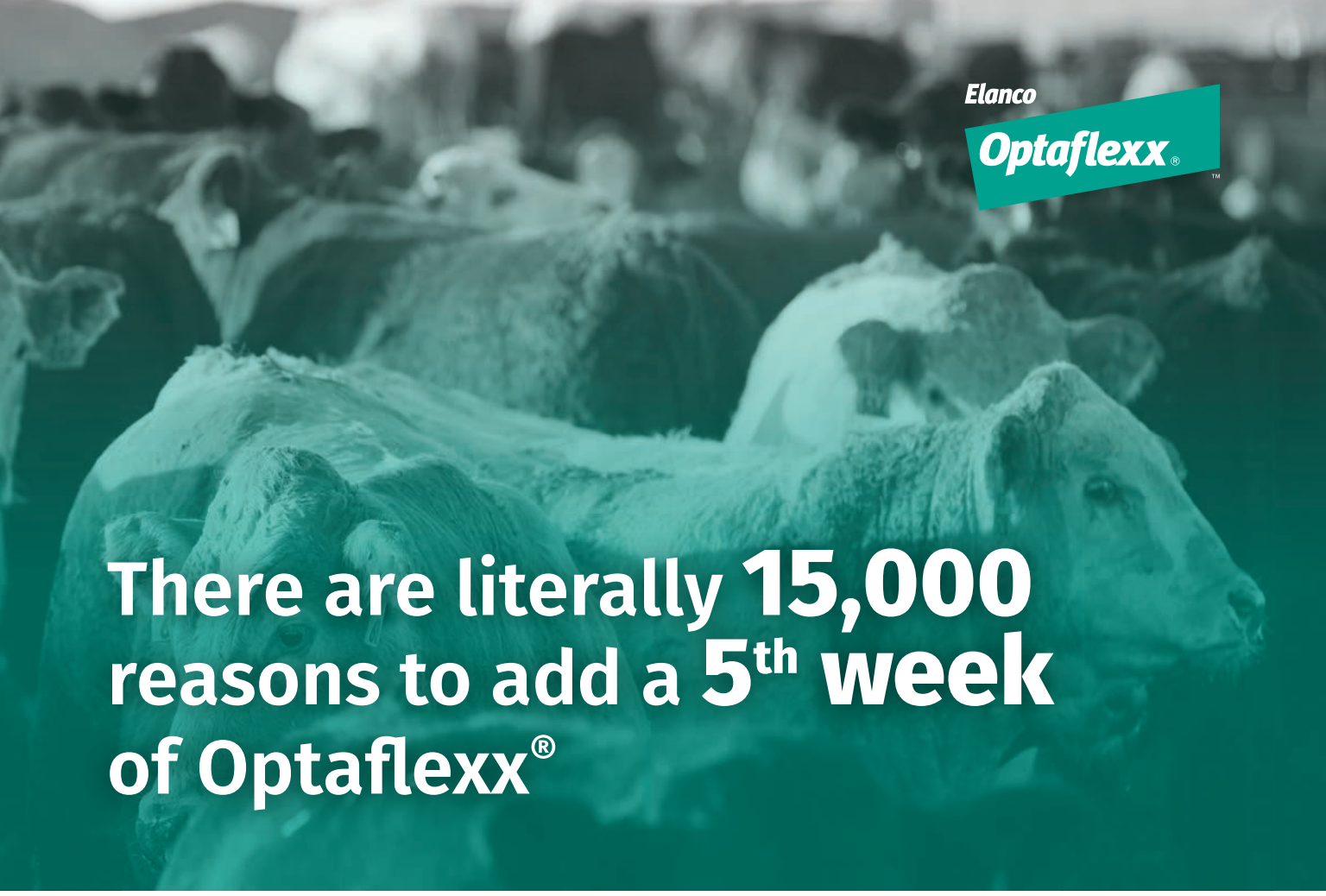
Volume XXVII Number 3 April/May 2019

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1. Elanco Animal Health. Data on file. (Analysis of Elanco's Benchmark database from January 2005 to September 2018).



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FEEDER INFORMATION HIGHLIGHTS

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# FEATURES



## FEEDLOT FOCUS



## COW CALF CORNER



## MARKETING & MANAGEMENT



Cover photo by Amy Spillman

BY JILL J. DUNKEL



# Nebraska Strong

In Texas where I live, we never wish away a rain. The droughts of 2011-2015 are not far from anyone's mind. Many operations were pushed to the brink, and many went out of business. But when we received 30+ inches of rain last fall on our place (that's our year-long average in just a few months), it was very temping to say we were tired of the rain. Pastures were soggy. Wheat fields never got planted. Cattle in pens were bogged down in the mud.

But you never say you're tired of the rain. Because one day you'll need it.

That's when good family friend Kelli Brown of RA Brown Ranch in Throckmorton, Texas, told me, "I say I'm tired of the mud – not the rain."

That's what I'm sure our friends in Nebraska and the surrounding states are saying – they are tired of the mud. Flood waters have yet to recede in parts of the state. Some areas are still inaccessible. Cattle are still not accounted for.

It's hard to imagine how this disaster came to pass. In some areas, the inches of rain were substantial, but in others it was the mix of frozen ground, snow pack and a moderate rain that spelled disaster. And then there were areas who lived a late-winter blizzard right in the middle of spring calving. Recent figures from the Nebraska Department of Agriculture estimate more than a $1 billion hit to the agriculture industry. And that's just the early estimate.

There's a lot of work ahead. For some, it's cleaning fields covered in sand and silt before any farming can take place. For others, it's caring for cows and calves that experienced extreme stress during the event. Sickness, disease, and pregnancy losses are all on the horizon. Fences must be rebuilt, structures inspected and rebuilding or replacing plans developed.


Although many states were impacted, Nebraska seemed to take the brunt of all the storm had to offer. The Nebraska Cattlemen association is working to assist cattle producers impacted by natural disasters through a disaster relief fund.

The Nebraska Cattlemen Disaster Relief Fund is organized in the State of Nebraska as a not-for-profit corporation and will be seeking to qualify as a tax-exempt 501(c)(3) charitable organization under which all donations made to the Fund would be tax deductible for the donor in accordance with applicable federal tax laws.

100% of all donations received will be distributed to Nebraska cattle producers affected by natural disasters, including recent wet weather events. **A convenience fee for online donations may apply.

If you would like to write a check, make it out to Nebraska Cattlemen Disaster Relief Fund and mail it to:

Nebraska Cattlemen Disaster
Relief Fund
4611 Cattle Drive
Lincoln, NE 68521

We have a few stories in this issue for those facing recovery of a natural disaster. Digging Out of an Ugly Winter is from our friends in South Dakota with tips on dealing with mud and reduced feed supplies. Livestock Indemnity Programs are discussed on page 14, and page 24 discusses how farmers and ranchers can still buy, sell, and protect their equipment amidst historic flooding,

Our thoughts and prayers are with so many who are fighting to regain their livelihood. We know you're tired of the mud, and all that goes with it. FL

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MERCK
Animal Health

BY TERRI QUECK-MATZIE

# Grow Yards Projected to Take Active Role for Feeders to Increase Profitability

Grow yards may be taking on an enhanced role in the cattle feeding chain, according to Don Close, senior animal protein analyst for Rabobank - North America.

In a Rabobank report issued in January, Close outlines the changes in the industry that are leading feeders to make better use of grow yards in their feeding operations.

"In our opinion, the relationships between grow yards and feed yards will tighten and become more aligned in the not-too-distant future," states Close in the report. "The strengthened relationships will provide improved economies of scale with shared resources. Close alignment will also avoid duplication of processing and create a seamless transition of cattle from the grow yard to the feed yard."

In his travels to grow yards, Close says he noticed better cattle management, with cattle in better condition to go on feed. "Feeders are able to use a grow yard and then bring a heavier calf into the feed yard," he says. This is especially important as marketing agreements that require cattle to meet specific feeding and management regimens with targeted out dates and finished weights are becoming more common for commercial feeders. "As feed yards transition to formula marketing, it puts them on a much tighter performance window."

Utilizing the grow yard helps feeders better manage cattle all the way through the feeding phase. "It provides feed yard operators with the ability to better project what cost of gain is running, what daily gains are, and the out weight and date of those cattle. And it enables them to expand their risk management program so they can get cattle into the system and locked down at better prices," says Close.

Alignment with a grow yard also reduces stress on the cattle, improving performance and health by putting them on consistent, uninterrupted feed and pharmaceutical programs. "This, in turn, improves cattle performance, lowers the cost of gain, and actually improves cattle propensity to meet, or exceed, grading expectations," says Close.

**"I see this transition taking place and it is largely driven by the shortage of skilled labor in the commercial yards..."**
**— Don Close**

The added advantage of coordinating feed and pharmaceutical programs is using the same nutritionists and veterinarians, only one of the labor-saving benefits.

"I see this transition taking place and it is largely driven by the shortage of skilled labor in the commercial yards," says Close, adding the challenge of efficiently handling either high risk or light weight cattle.

"It's a problem that increases as the size of feed yards increases."

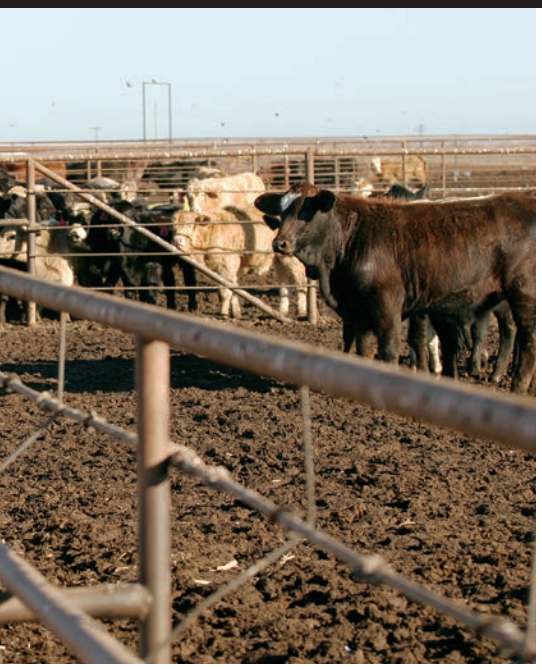
Use of grow yards also makes for more efficient use of buying staff by expanding the weight classes of cattle they are buying. "It enables them to inventory enough different weight classes of cattle that it ultimately takes pressure off of the buying staff to buy a specific number of cattle a week."

### Better Business

Traditionally, grow yards have been used to house cattle during periods of imbalance along the cattle production chain, or when calves became extremely undervalued. Some locations have specialized in handling high-risk cattle, according to Close.

That model led to poor facility capacity utilization, which in turn provided a poor return on investment due to seasonality.

More consistent use of the grow



yard leads to more efficient use of facilities, according to Close. Feeders would still be able to capitalize on price weaknesses or supply fluctuations with seasonal movement of cattle, but the facility would no longer sit at below capacity for extended periods of time.

There are various business arrangements for grow yard and feed yard alignment. Some may be owned and operated by the same proprietor. Others may be in a partnership agreement.

**Close sees potential in both.**

For the owner of the entire segment of the chain, there are obvious economies of scale. For the independent grow yard owner partnered with a feed yard there can be opportunities to utilize existing facilities, like smaller feed yards no longer in operation; and a way to provide an avenue for young people to find a career in agriculture.

"There are any number of people that have kids who would like to come back to the farm," says Close. "This is one of those areas that could create an additional income stream from an existing facility and provide an opportunity to bring family members back into the operation"

**Making the change**

There will be challenges to the industry transition, warns Close. Transfer of cattle ownership and the subsequent compensation must be negotiated and long-term relationships built. For the grow yard owner, handling transitional and high-risk cattle means death loss, a factor that must be considered in financial negotiations, as well as cattle handling and acceptance criteria.

Overall, Close sees the transition as a positive, and one that will impact the entire industry from the cow/calf producer to the packer.

"It is an opportunity for growth that enables so many places, people and industry segments," says Close. "Production of beef will be more efficient. More cattle will be delivered on spec and on time. Capacity can be built to buffer supply shocks along the cattle production chain. As a whole, the cattle industry will benefit from the change." FL

BY WARREN RUSCHE. SDSU EXTENSION
BEEF FEEDLOT MANAGEMENT ASSOCIATE

# Digging Out of an Ugly Winter

The last couple months across much of the High Plains have not been for the faint of heart, especially for livestock producers. The good news is that there are finally some signs of spring. The bad news is we still have some challenges to overcome in the next few weeks.

As the snow melts, we are going to be left to deal with mud at a minimum and extensive flooding as a possible worst-case scenario. While we can't control the pace of melting or the possibility of additional precipitation, we may be able to take a few steps to mitigate the negative impacts.

### Dealing With Muddy Yard Conditions

Mud in open yards or pens is extremely detrimental to cattle performance and efficiency. Unfortunately, mud will likely be in ample supply this spring.

If we haven't had the chance to move or at least pile up snow or ice on the pen surface, we may still have a window of opportunity to do so now while it still gets below freezing at night in some areas of the country. Scraping pens also reduces the places for surface water to collect and slow down the drying process. These steps are all easier said than done, but anything we can do now will reduce problems later.

Removing any drainage impediments also would be a useful step. Sometimes soil or manure will build up along fences or drainage ways and unnecessarily block water flow. Moving that material now, if possible, will allow surface drainage water to move off the pen surface more quickly.

In some cases, it may make sense to send cattle to market sooner, especially in backgrounding programs. Researchers in Nebraska found that allowing increased room per-head in an open yard reduced much of the negative impacts of mud on performance.

Photos by: Heather Bang / Bang Show Cattle

### Feed Supply Access

Flooding has been tragic this spring, and is a very real possibility in many watersheds. Strategic positioning of feed supplies is important in case water levels rise and make roads impassable. That could be especially important for feedstuffs that need to be trucked in from a distance if there are any questionable areas along travel routes. Feed stored on one part of the farm might also become inaccessible. Moving some feed supplies closer while there is still some frost in the ground will be easier compared to doing so in the mud.

Another concern that could come up this spring is a potential shortage of roughage. There's no question that this winter has increased the amount of hay consumed as well as placed additional demands on bedding. Limiting feeding grain can be a useful strategy to stretch forage supplies, but this isn't a strategy that can be implemented immediately. There needs to be an adaptation period to adjust cattle to additional starch. If substituting grain for hay is a possibility, plans should start to be made now. FL

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BY JEREMY MARTIN, PH.D
GREAT PLAINS LIVESTOCK CONSULTING

# FLY CONTROL IN FEEDLOTS

The time has arrived to plan for controlling summer fly populations. Adequate fly control programs are multi-faceted, systematic, and, in addition to directly enhancing cattle performance, can aid in the prevention of acute heat stress in feedlots. We recommend a combination of at least two fly control strategies used in combination from the time of the last hard freeze of the spring to the first killing frost in the fall in your local area. Before deciding which strategies are the best fit for your feedlot, you need to identify the problem species and the problem areas in the lot.

Stable flies and house flies are the most common fly species in feedyards. House flies peak in population in July and persist into the fall. While house fly populations can reach extremely high densities, they are mostly an annoyance. House flies do not suck blood, but rather feed on liquids or solids they can dissolve with saliva (Greene et al., 1998). While house flies may not be the principle enemy in terms of cattle performance, they can be a public relations concern. As fall approaches, house flies roost in buildings, vehicles, and other places that can be a concern to neighboring businesses or residences. Purely from a public relations standpoint, you need to control house flies.

Fly populations can reduce average daily gain 13 to 20 percent.

Adult stable flies feed on blood by attacking the legs of cattle and piercing the skin (Greene et al., 1998). Stable flies are most abundant in spring and numbers generally decline with hot, dry weather. However, during cool summers, high populations of stable flies may persist for up to 4 months. The feeding actions of stable flies cause cattle to bunch, stomp, and can reduce performance. Research conducted over several years at the University of Nebraska (Campbell et. al., 1997; Cantagui et. al., 2001) evaluated cattle performance and economic losses as a result of stable flies using screens to prevent fly entry into protected pens while measuring fly populations in adjacent pens. Fly populations of 50 per calf resulted in ADG reduction of 13.2%, while gains were reduced up to 20% when 100 flies per animal were present (Campbell, 1977). Over seventeen years of research in this model (Cantagui et. al. 1997) reported average reduction in ADG of 8.46%. The economic loss associated with stable flies depends on the cost of cattle, ration cost, and duration of the fly season. With breakevens as high as we have today, this loss is undoubtedly substantial. In addition, high stable fly densities can contribute to heat-related cattle mortality by causing cattle to bunch during times of heat stress. Densities as low as 5 stable flies per leg can reduce performance and indicate control measures need to be in place.

Stable flies and house flies both breed in manure, so the first step in fly control is manure management. Without proper manure management, other fly control measures will produce limited results. Stable flies require a moist mixture of soil and organic matter between 4 and 12 inches deep in which to lay eggs. In a 4-year study (Skoda, et. al., 1996) of immature fly populations in feedlot pens, 62.5% of immature flies were found adjacent to feeding aprons, 24.6% around mounds, and 8.4% along pen side fences. Areas where hoof action constantly disturbs manure are poor breeding grounds for stable flies, but those areas where stagnant manure and soil mixtures collect are the problem. Another survey of 93 feedlots (Gilbertson and Campbell, 1986) found substantial immature fly populations also existed in and around feed storage areas, along bunk lines, and in drainage areas.

Since stable flies take about 3 weeks to develop, and house flies about 2 weeks, one may conclude that scraping aprons and around mounds every 2 weeks or less should greatly reduce fly populations, if manure is removed from pens. Early spring pen maintenance should include removing manure deposits under fences and around any other obstacles to provide less breeding habitat for flies. Spring is also a good time to clean out drains, settlement ponds, lagoon edges, and any other areas where wet, stagnant combinations of manure and soil exist. Take the time to clean up your feed grounds, as well, by removing spoiled feedstuffs, reshaping areas that hold moisture,

and generally removing fly habitat.

Predatory wasps whose larva feed only on fly pupae are commonly used in feedlots as a stable fly control measure, and can be very effective. *Muscidifurax zaraptor* are commonly localized in house fly pupae, but are commonly sold because they have high survivability. While they should be included in your program for house fly control, they should not be the sole species released. *Spalangia nigroaenea* larva can be found in both house and stable fly pupae and appear to be adapted well to feedlot environments in the Midwest (Greene et. al., 1998), so they should be a part of your parasitic wasp program. Parasitic wasps should be placed early in the summer, usually early June, and it is important to place 20 to 50 parasites per head on feed on a weekly basis.

Stable flies feed most actively between 10 a.m. and 4 p.m. and after feeding they seek a shaded area to roost. Windbreaks, weed patches, shaded sides of buildings or bunks, and adjacent fields often provide a roosting area for stable flies. Some of these areas are necessary, but controlling weeds, in particular, will help reduce fly pressure on cattle. Chemical treatment of cattle produces transient results, and it is difficult to effectively treat the legs of cattle where stable flies congregate. So, chemical treatment should be used mainly when other measures have failed, or to achieve an initial knock down of fly populations prior to implementing other controls. Focus on spraying early morning or late evening in areas where stable flies roost. Treating roost areas with residual sprays can be very effective in reducing fly populations. Always apply insecticides in accordance with label regulations (make sure you or your applicator are licensed) and document use.

Feed additives that control fly populations via activity in the manure are another option. There are a couple options on the market today, with both targeting manure-breeding flies, each through a different pathway. One directly kills the larvae of all 4 fly species, while the other prevents development of flies by interrupting the life cycle. Both are effective if dosed correctly on a daily basis. In order for either to work well, feedlot operators should start feeding early in the spring, 30 days before flies appear and should be fed continuously until 30 days after a killing frost. These products should be used as part of a fly control program and are not a substitute for manure management.

We encourage feedlot operators to develop fly control programs that focus on at least two methods of control and manure management to reduce fly habitat should always be one of those methods. We generally recommend parasitic wasps or feed-through control measures with chemical application reserved for acute fly problems. FL

BY JAY PARSONS, FARM AND RANCH MANAGEMENT SPECIALIST,
AND AARON BERGER, NEBRASKA EXTENSION BEEF EDUCATOR

# Record Keeping Key to Livestock Indemnity Program

The Livestock Indemnity Program (LIP), administered by the USDA Farm Service Agency (FSA), provides compensation to eligible livestock producers who have suffered livestock death losses in excess of normal mortality due to adverse weather, including extreme cold, storms and flooding.

With the extreme weather conditions much of the High Plains has experienced this winter, it is important livestock producers diligently document and report their death losses for possible LIP payments.

To be eligible for LIP payments, a producer must file a notice of loss on form CCC-852 with his/her local FSA office within 30 calendar days of when the death losses become apparent. The producer can then file an application for payment to request compensation for losses in excess of the normal annual mortality rate. This must be completed no later than March 1, 2020.

Multiple notices of losses and multiple applications for payment may be filed by producers that suffer multiple livestock losses during the same calendar year. Once a qualifying weather event has been identified, adult livestock dying within 60 days of that qualifying event can be considered eligible for loss benefits.

Good record-keeping habits should be part of the livestock manager's DNA anyway, but it is at times like these that those habits can really pay dividends. The logical question to ask any producer submitting an LIP notice of loss and application for payment to an FSA office is, "How can you verify what you are trying to tell us?" Producers should provide records of the pertinent information regarding the livestock losses suffered due to an eligible adverse weather event, including things such as the number, kind, type and weight range of livestock that died, supplemented with dated photographs, video records, rendering receipts, or veterinarian records.

A photograph with a camera or smart phone showing the date the loss occurred can be a quick and simple record of the losses incurred. For calving losses, document death losses in your calving book with clear notes as to what exactly caused the death.

LIP payments are calculated based on eligible death losses in excess of normal annual mortality. Normal mortality rates are established by FSA on a state-by-state basis using recommendations from state livestock and Extension Service organizations.

Producers need accurate inventory counts showing the number and type of livestock that were affected by the eligible event. Beginning and ending year inventory numbers supplemented with production records, purchase records, sale records, veterinarian records, inventory related bank loan documentation, and other reliable documents can help verify livestock inventories at different points throughout the year.

It is important for producers to realize that normal death losses that occur throughout the year are equally important to document and verify. For example, suppose a Nebraska beef cattle producer owns 400 pregnant cows at the beginning of the calendar year. Veterinary records of the fall pregnancy check and the producer's own inventory records would help verify this information. This producer's normal annual mortality would be five cows and 20 calves based on the rates for the state of Nebraska. Following an eligible adverse weather event, the producer is able to verify the loss of four cows and twenty-two calves due to the event by filing a notice of loss on form CCC-852 with the local FSA office along with the supporting evidence.

Based on this information, the producer could file a request for compensation on two calves in excess of the normal mortality rate. However, the producer also documents normal death losses throughout the year that account for the loss of ten more calves and three cows.

In summary, the producer's LIP application(s) for payment could then request compensation for 12 calves and two cows. This would be the amount the producer's annual death losses would exceed normal mortality rates and be within the confines of the documented death losses attributed to the eligible weather event.

The LIP payment rates are based on 75 percent of the national market value of the livestock. For example, the 2018 payment rate for a cow would have been $983.90 per head and a calf under 400 pounds would have been $468.92 per head.

Payment rates have not yet been set for 2019 losses, but still are a potentially important cost recovery from the financial impacts of losing a larger than normal number of animals.

A Livestock Indemnity Program Factsheet is available on the USDA Farm Service Agency website. The URL is https://www.fsa.usda.gov/Assets/USDA-FSA-Public/usdafiles/FactSheets/2018/livestock_indemnity_program_fact_sheet_dec_2018.pdf

Also, contact your local FSA Office for more information on the LIP program. FL


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[1] Wiebusch, 2015. JAM.
[2] Caramalac et al., 2017. J. Anim. Sci. 95:1739-1750.
[3] Micronutrients trial #2017BC106USCZM.

# Sharing Success in Managing Bovine Respiratory Disease

BRD in beef cattle is a fact of life — but it can be managed. A veterinarian, a stocker and a feedlot manager share their unique perspectives about what works.

Involved with cattle since he was a boy, Tanner Stucky says he keeps an open mind in this business because there's always more to learn. "Everyone you meet can usually teach you something different," said Stucky, yard manager at Tiffany Cattle Company near Herington, Kansas.

To help expand successful management practices, three longtime industry professionals sat and visited with the Zoetis beef team and shared how they manage bovine respiratory disease (BRD) — what works, what helps it work better, what makes the difference in their corner of the beef cattle business and how they pull it all together.

Though each man has a different specialty in the industry, there is one thing they all have experience with — keeping cattle healthy.

## For this veterinarian, the key is communication

David Bechtol, DVM, owner of Palo Duro Consulting, Research & Feedlot, Canyon, Texas, cites talking through all the issues with a producer as the biggest key to managing BRD. "We may switch to a different product at different times of the year or for different types of cattle. That's where communication comes in."

Bechtol says the goal is good efficacy in that initial treatment. But if that animal doesn't respond the first time, you still want good efficacy with the second antibiotic, too, he explains.

A dialog is important, and relaying feedback on a treatment helps make decisions for the future. "You have to be able to talk through all the issues," Bechtol says. "When I work with a producer, he needs to understand that we're not going to achieve a 100% response on that initial treatment — but if we can get at least 75% to 80% efficiency, we have the right treatment program."

**When I work with a producer, he needs to understand that we're not going to achieve a 100% response on that initial treatment — but if we can get at least 75% to 80% efficiency, we have the right treatment program.**

Record keeping is also key for this veterinarian. "You need to have good records to evaluate your program and determine if you're getting the response you should be."

Bechtol also says a successfully managing BRD doesn't always mean metaphylaxis treatment is necessary. "If you have a good prevention program on incoming cattle, and a good cowboy crew,

a lot of times you don't need a metaphylactic treatment on all cattle. When the producer and veterinarian work as true partners, it's easier to identify what's necessary and what isn't and make changes as needed."

### The power of protocols at the feedlot

Diligent adherence to protocols has helped avoid some big wrecks and recurring problems at the feedlot, said Tanner Stucky, yard manager at Tiffany Cattle Company near Herington, Kansas. Sure, problems arise here and there with such a large number of animals, but the biggest difference for making improvements comes from discipline in setting protocols.

"It has helped us avoid some big wrecks and problems we kept seeing again and again, Stucky explains. "It's a successful day when you go home and you haven't had any big wrecks and everyone is still happy with each other."

He is quick to say that, like any operation, they have problems here or there. When you're dealing with that many animals at once, you're going to have a problem at some point in time, Stucky says. "But the biggest difference I have to say that has helped us improve has been sticking to our protocols."

In his experience, an operation should stick to protocols that have been set for at least six months, and then review them.

Posting animals is also key to Stucky's management process when it comes to death loss.

"One of our biggest tools is to post animals you lose and figure out why you are losing them. If you don't figure out why you're losing them, then you won't know how to attack the problem and fix it," he says. Sometimes it's something you could have never fixed, but it could at least provide insights to help avoid a pen problem or losing more cattle in the future.

Knowing about the history of incoming cattle and helping owners with prevention health protocols is also key.

"Working with our customers at home before they bring their cattle to us has helped. So, they will get all their shots a couple of weeks before animals even come to us. Again, it all comes back to relationships. If everyone is communicating what they are doing on both sides, this can be huge."

He hopes the industry can all inform those who raise cattle how important vaccinations are from the start. It all starts at home when that calf hits the ground and how good you've been taking care of that cow, he says. He also hopes more people start BVD-PI-testing calves and eliminating some of those factors and problems. ►

*Story Title Here... from previous page*

"These are the things that help make our jobs a little easier on the feedlot."

## Crunching the numbers in stocker country

"We are aggressive to find data and evaluate data. BRD health challenges are unfortunately getting worse. It's important to be in tune to what's going on," said Bill Gallery, co-owner at Gallery Ranch near Dewey, Oklahoma.

Gallery manages the operation with his brother Tom, and dad, Dan. Their location and operation, which receives cattle from across the country, requires managing and minimizing disease challenges daily, specifically BRD. Like many stocker operations, the ranch buys commingled sale barn cattle. When cattle get off the truck, Gallery Ranch often doesn't know the distance they've traveled or their health histories.

"This is like putting a bunch of preschoolers together in daycare," Gallery said. "There is a good chance some are going to get sick. There is no way around it."

Data and research informs the way Gallery Ranch operates. Gallery said they keep records going back to the 1980s that help them make strategic management decisions. "You can't evaluate anything on just a gut feeling," he said. "With records, we can see the success rates on certain products."

Gallery Ranch works closely with its consulting veterinarian out of Oklahoma City.

"He has a lot of feedyard exposure, so he sees a lot of numbers," Gallery said. "He's also well-connected in the industry, so he brings a lot to the table for us."

Conducting contract research also has helped keep the ranch in the loop for what's going on and what products might be working better year to year.

"We like to do one or two research trials per year," Gallery said. "We'll set protocols with our veterinarian and work with animal health company technical services veterinarians, so we can keep everything as fair as possible."

Like Stucky, Gallery has consistent protocols. "We have made sure we have the facilities and management to take care of and handle these high-risk commingled cattle," Gallery said.

The operation has several grass traps, and each load of cattle they receive has its own trap and water. Cattle stay in their grass trap for about 30 to 40 days. Any sick cattle are pulled and treated and then go back to their original group after treatment.

"We also BVD-PI [bovine viral diarrhea virus persistent infection] test all cattle on arrival," Gallery said. "And we get the PIs out of the pen as soon as we get the phone call from the lab, which is at least within 48 hours, but usually within 24 hours. This has made a huge difference."

He said they've seen how PIs can contribute to more wrecks — if PIs have been in a pen an extra day or if they compare a load of cattle that had PIs present to another load of cattle with no PIs. So, it's crucial to get PIs out of the pens quickly.

Longer-acting antibiotics have been one way for the ranch to cut down on handling and its impact because, as Gallery says, every time a steer needs to come up to the pens, that's a day he's probably not going to gain any weight.

"There is lost performance having to gather cattle and run them through the chute more often," Gallery said. "There also is risk of injury to cattle or the labor involved with more frequent handling."

It also saves the operation valuable time.

"The more expensive antibiotics are worth it," Gallery said. "Not only is it going to be easier on the animal because you're more likely to only have to give the antibiotic once, but it is easier on us because we don't have to go get the animal again and give him another shot in three days. We squeak by on a skeletal crew, so anything we can do to save time, the better."

Health challenges are ongoing and will always continue to be a moving target in this industry.

"There is a lot of uncertainty in what we do, and BRD is becoming costlier and more challenging all the time," Gallery said. "Yes, it's a challenge every day, but the intensity of the stocker business is what I enjoy most." FL


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BY DON TYLER

# Clarifying Everyone's Role

Today's employees seem to struggle with understanding where they fit in the operation, who they are responsible to and why their role is different than others. Surprisingly, many are even confused about how their position and duties differ from the owners.

There are different reasons for this that include a lack of general understanding of what makes a business successful, why an organizational structure of authority is essential, and the fact that the person with their personal finances at stake must have ultimate authority to run the business in the manner they feel is most appropriate.

## The Basics

Establishing a culture where different roles, responsibilities and authority is respected starts with some basic documentation. Job descriptions, an organizational chart, an employee handbook and a hiring process that includes a clear definition of positions and duties provides a foundation for clear understanding. Each of these documents and processes provide unique information for the employee to realize where they fit in the organization, the parameters for acceptable behavior and to whom they are responsible.

To establish credibility we need to have consistent follow through from leadership, managers, supervisors and foremen that reinforces each of these areas in all employee interactions.

## Reinforcing Roles

Many owners and managers get frustrated that their younger employees don't seem to automatically acknowledge and respect their position of authority. For brevity, let's simply realize that regardless of the cause of these attitudes and behaviors, as leaders we have to address the issue and provide the coaching and mentoring necessary to develop the skills and traits we need. Here are some specific actions to consider:

- When discussing regular duties, review each person's role in the procedures and processes.
- If a person acts in a manner that exposes their lack of understanding of their role or someone else's, provide some brief, on-the-spot coaching to clarify what they need to know. Do it with a tone of mentoring, not as an act of discipline.
- Be transparent about how your role as an owner or manager is important to the operation's daily operations and long-term success.
- Explain what would happen if the owner or manager didn't do some of their specific duties such as filing HR documentation, completing state environmental reports, confirming cattle inventories for feeder customers, going to conferences and trade shows to network with other producers and potential clients, or providing financial reports for lenders and stakeholders.
- During periods of very tight or negative margins, explain the importance of market analysis, cost-containment, production monitoring, financial analysis and the other duties that managers and owners must do, and how in these market conditions it is often the difference between profit and loss.
- In some instances, explain what happens if these tasks and obligations do not occur and how that affects the entire staff.

I've found that employees who work at a job where they get their hands dirty on a daily basis such as agriculture, construction, processing, manufacturing, etc., these workers often expect their boss to get their hands dirty too. Sometimes it's possible for a manager to work beside their employees on an occasional basis, but other times that manager or owner has to stay focused on oversight, strategy, documentation, regulations and a host of other obligations. They need to explain how their role is important and how each of their specific responsibilities benefit the employees.

A great leader once told me that while everyone else is chopping wood in the forest, somebody needs to be in a tall tree looking ahead to be sure we are chopping the best wood, in the best location, headed in the right direction, and that someone is making certain that the saws get sharpened and the logs get hauled away for maximum efficiency and productivity. For the "boots on the ground" to be satisfied and productive, someone has to be looking down at the big picture.

*Don Tyler is founder of Tyler & Associates Management Coaching. For additional assistance in your employee management and family business challenges, Don can be reached at don@dontyler.com, www.dontyler.com or by calling 765-490-0353.*

FL

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**ACTIVE SUBSTANCES PER ML:**

| | |
|---|---|
| Zinc | 60 mg/mL |
| Manganese | 10 mg/mL |
| Selenium | 5 mg/mL |
| Copper | 15 mg/mL |

**OTHER SUBSTANCES:**
Chlorocresol 0.1% w/v (as preservative).

**DOSAGE RECOMMENDATIONS:**

| | |
|---|---|
| CALVES: Up to 1 year | 1 mL/per 100 lbs. bodyweight |
| CATTLE: From 1-2 years | 1 mL/per 150 lbs. bodyweight |
| CATTLE: Over 2 years | 1 mL/per 200 lbs. bodyweight |

**PRECAUTION:**
Selenium and copper are toxic if administered in excess.

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.

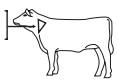
**DIRECTIONS:**
This product is only for use in cattle.

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.

Subcutaneous injection in middle of side of neck.



*Store Between 15°C and 30°C (59°F and 86°F).*

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

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BY DERRELL S. PEEL, OKLAHOMA STATE UNIVERSITY EXTENSION
LIVESTOCK MARKETING SPECIALIST

# Cattle on Feed Report Has a Few Surprises

The March Cattle on Feed report brings the feedlot data up to date and back on schedule following the federal government shutdown. February feedlot placements were 102.2 percent of last year. This was significantly larger than expected with year over year increases in placements of cattle weighing 800-900 pounds and cattle weighing less than 700 pounds. The February placement total is the largest for the month since 2000. Feedlot marketings in February were 100.5 percent of one year ago, close to pre-report expectations.

The March 1 feedlot inventory was 11.796 million head, 100.7 percent of one year ago and the largest March on-feed inventory since 2008. Over the last twelve months, the average feedlot inventory was 11.529 million head, the largest twelve month moving average since January 2000. The twelve month moving average reached a recent low of 10.375 million head in October 2014 and has increased most months since then. For the last twelve months, feedlot inventories have averaged 11.1 percent higher than the annual average of the October 2014 low.

Although the data are mostly caught up, March weather combined with previous winter conditions continues to create uncertainty about cattle market conditions. The long cold winter has been characterized by persistent and deep snow in some places and wet, sloppy conditions in others. Now floods are devastating large regions along the Mississippi and Missouri river basins with additional flooding expected. The impacts on crop and livestock markets are likely to be felt for many weeks and months to come.

On the crop side, losses of stored grain, hay and other products will have immediate impacts on the producers affected and perhaps on broader markets. Disruptions to transportation may be the biggest impact with truck, rail and river transportation all impacted by the floods and associated damage and likely to be affected for weeks ahead.

Cattle and beef markets are currently impacted with lower fed cattle weights, lost performance and, no doubt, increased animal morbidity and mortality. The timing of the floods are particularly insidious given that it is calving season for many cow-calf operations. This is likely to result in cattle losses even greater than would be expected during floods. It will take many weeks to fully assess the cattle losses due to winter weather and the floods.

Boxed beef cutout values have increased seasonally through the first quarter; boosted no doubt by smaller than expected beef production. Fed (steer and heifer) slaughter is down 0.2 percent year over year thus far in 2019 combining with smaller carcass weights to reduce beef production by 1.4 percent thus far in 2019. In the latest weekly data, steer carcass weights are down 10 pounds year over year and heifers are down 9 pounds compared to the same week one year ago. Thus far in 2019, steer carcasses have averaged 6.4 pounds lower year over year with heifers down 11.2 pounds for the year to date. Fed cattle prices have ground higher seasonally but may see an extended opportunity for a spring peak given the on-going weather impacts.

Feeder cattle markets have generally followed seasonal patterns with calves moving higher since January. Though calf prices typically peak in early April, delayed grass demand may extend the seasonal strength deeper into April. Heavy feeder cattle (over 700 pounds) have been steady to weaker seasonally through March and should begin moving higher towards a late summer price peak. Recent weather impacts are difficult to isolate in feeder cattle markets but are surely reflected in current markets and will be for some time. Calf losses this spring will not really become apparent until fall and may possibly be big enough to affect the overall 2019 calf crop. FL

**Cattle on Feed Inventory, Placements, Marketings, and Other Disappearance on 1,000+ Capacity Feedlots – United States: March 1, 2018 and 2019**

| Item | Number | | Percent of previous year |
|---|---|---|---|
| | 2018 | 2019 | |
| | (1,000 head) | (1,000 head) | (percent) |
| On feed February 1 | 11,630 | 11,688 | 100 |
| Placed on feed during February | 1,817 | 1,857 | 102 |
| Fed cattle marketed during February | 1,675 | 1,683 | 100 |
| Other disappearance during February | 57 | 66 | 116 |
| On feed March 1 | 11,715 | 11,796 | 101 |

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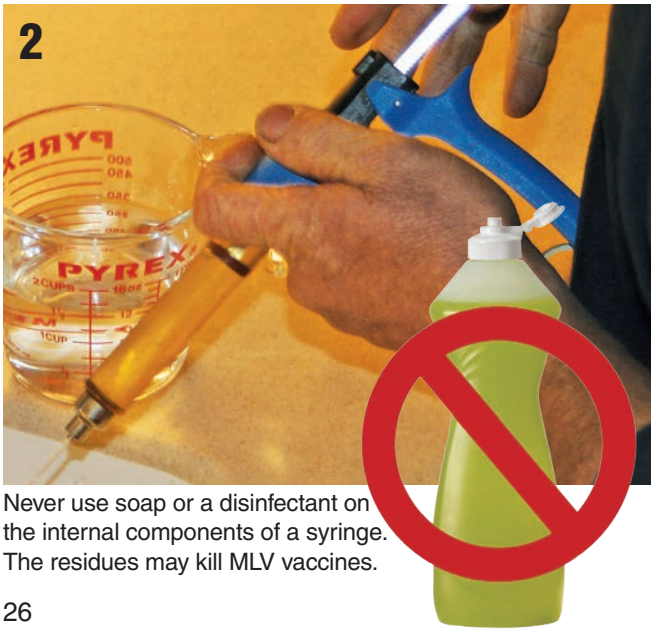
**SAFETY AND RESIDUE INFORMATION**:
Cydectin Injectable: Do not use in lactating dairy cattle, veal calves or calves less than 8 weeks of age. Do not administer within 21 days of slaughter.

# Proper Cleaning and Storage of Multi-Dose Syringes

Beef Quality Assurance (BQA) guidelines include the use of clean syringes and needles for any type of injection to reduce the risk of contamination or infection at the injection site. When processing several animals, multi-dose syringes are often used. If care is taken when filling the syringes, and the needles on the syringes are changed each time you refill, contamination is kept to a minimum.

Cleaning syringes after each use is critical. The sooner syringes can be rinsed with hot water, the better. It's important not to use any disinfectants or soap due to the risk of residue left inside the syringe.


Rinse the inside of a multi-dose syringe by drawing hot water (greater than 180 degrees) into the syringe and squirt it out. Three to five rinses should be adequate, provided the syringe is cleaned after each use and does not have product build up. Remove as much water from the inside as possible and let the syringe cool before using




Never use soap or a disinfectant on the internal components of a syringe. The residues may kill MLV vaccines.


The rubber ring inside the syringe often needs lubrication. A quick squirt of cooking oil spray will keep the rubber ring sliding smoothly inside the syringe. If the rubber ring shows signs of wear, replace it.


Labeling syringes helps a processing crew to know what product to refill each syringe with so that products are not accidentally mixed.


To prevent syringe contamination, store it in a dust-free environment. Placing the syringe in a zip-style bag and storing it in the freezer will avoid the possibility of mold or mildew that could occur in the syringe. Warm to room temperature before using.

Looking for more BQA tips regarding cleaning continuous feed syringes? Check out the video on www.feedlotmagazine.com for a step-by-step explanation. FL

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* Data on File.

BY RON MCCLAIN, DIRECTOR OF PRICING AND SALES SUPPORT, BIGIRON AUCTIONS

# Amidst Historic Flooding, How Can Ranchers Protect Their Equipment's Value?

As the great thaw begins, The National Weather Service predicts that 200 million Americans could see the impact of historic flooding on their communities. For ranchers and farmers, this flooding coincides with the Spring planting season. With equipment transactions ramping up this Spring, how can sellers protect the value of their equipment? Also, how can buyers ensure that they are getting what they purchased?

Immediately after a flood, sellers can take precautions to best preserve their equipment by changing fluids and filters, if applicable, as well as maintaining internal mechanisms and drying electronics. Operator cabs in heavy equipment will need some of the most care and should be dried out as soon as possible to prevent mold and mildew. Given the cold, harsh winter, recent rains, and melting snow, cattle producers should also keep a close watch on manure storage and pumping equipment. Monitoring the condition of this equipment is crucial to ensure that they are performing normally after abnormal weather conditions.

One of the biggest mistakes that sellers make is misrepresenting equipment to buyers. It is a costly mistake that can be avoided with due diligence and honesty. Sellers should not rush to judgment if they find their equipment compromised. Instead, sellers should get their equipment professionally assessed to determine how the equipment is impacted, to what degree it was impacted, and how that impact affects warranties. Sellers should keep in mind that flood waters often contain contaminants other than water, soil, and silt. Corrosive material may have visible effects months or years after the flood. Additionally, understanding if your state requires tags or stickers informing buyers that the machine has been in a flood is often a responsibility of the seller. Ultimately, the value of initiating repairs will be up to the seller. In all, selling equipment after a flood is more than just drying and cleaning–it's about transparency.

For buyers of equipment, it's important to be able to speak up when something seems suspicious. Understand the equipment the seller is selling and be sure to do a thorough inspection. If you're able to view the equipment in person before purchasing, you put yourself in a much better position. A rule of thumb is that if you smell mold, walk away. Look for discolored cloth or paint, as both may indicate water damage. Additionally, damage to the electrical systems could prove dangerous. Buyers should feel comfortable testing the equipment for a period of time while listening for unusual sounds or alarms. If something seems off, another indication of water damage is brittle wires underneath the dash. Be sure to have a mechanic on-hand should further inspection be needed.

Buyers need to be aware of the risks and responsibilities associated with buying used equipment. Often, buyers work through an auction house, which in turn provides transparency on the part of both buyers and sellers. A reputable auction house can put buyers directly in touch with sellers to ask questions and initiate in-person visits. Additionally, a best-of-breed auction house can provide unmatched expertise during the buying and selling process.

Buying and selling agricultural equipment is built on trust. Between the buyer, and seller, natural disasters provide us an opportunity to showcase the strength of the farming community. Remaining committed to these principles helps ensure that we continue to fuel America and that used agricultural equipment continues to run at the highest levels possible FL

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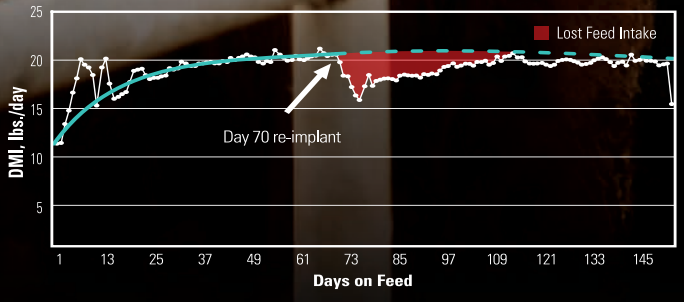
**Feed Intake Loss Due to Re-Implanting[1]***




*Feed intake data from cattle re-implanted with Revalor®-S on day 70.

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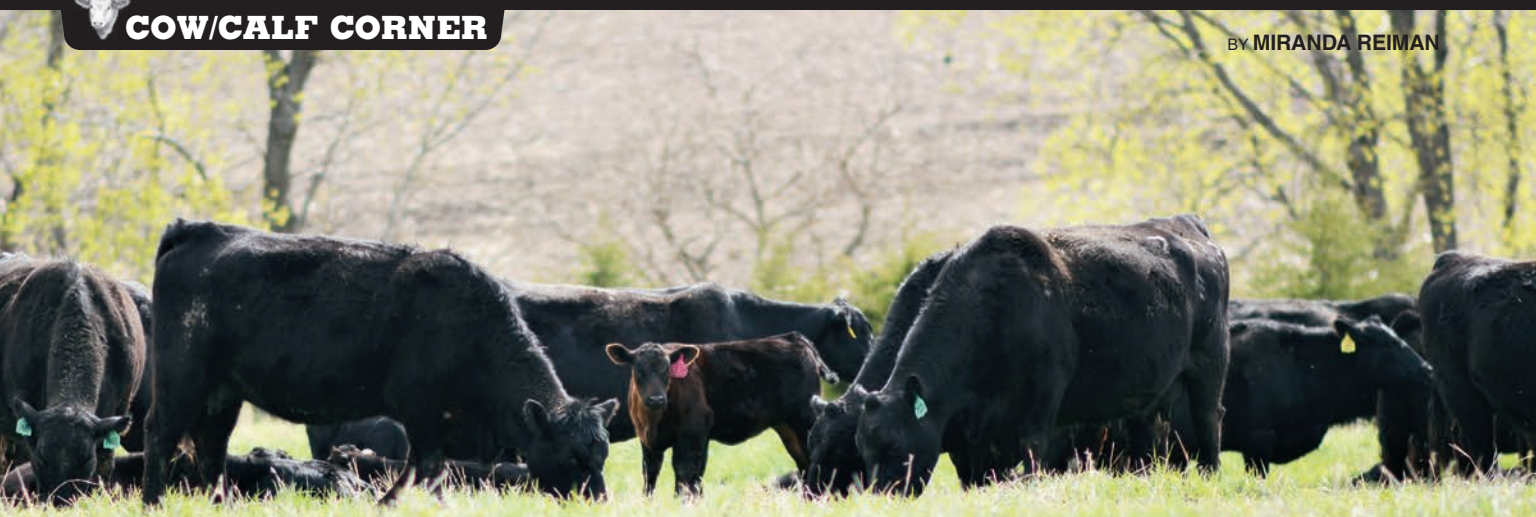
1. Study Number HR-2S: Evaluation of Implants Containing Reduced-Dose Combinations of Trenbolone Acetate and Estradiol on Performance and Carcass Merit of Finishing Steers.



MERCK Animal Health

BY MIRANDA REIMAN



# ALWAYS EATING FOR TWO

## Nutrition Matters For Each Stage of Calf Development

***How many months out of a year is a mother cow just eating for herself?***

Hopefully none, says Janna Kincheloe, North Dakota State University animal scientist.

"The cow should either be lactating or developing a fetus at all times," she says. "If she's not doing that, she's probably open and should be on the trailer headed to town."

That emphasizes the importance of cow herd nutrition year-round.

"Think about what your cows might encounter during gestation," says Amanda Blair, South Dakota State University meat scientist, who ranches with her family near Sturgis. "We encounter swings in forage quality and quantity, changes in the diet throughout the year and definitely weather extremes."

The challenges are unique in each region but they all culminate in an area of study that's gaining the attention of bovine researchers across the country: fetal programming.

It was generally known that cow nutrition affects near-term outcomes like calf size and vigor.

"We've begun to understand the importance of the gestational environment," Blair says, "maximizing offspring potential for a host of production outcomes such as health, reproductive performance and even beef quality."

### DNA is a script

"During development there's actually some flexibility as to which cells can be produced. The environment can modify expression of the DNA script," she says, offering this movie analogy.

True Grit featuring John Wayne looks different than True Grit with Jeff Bridges. Same script, different expression, she says.

"Alterations to the uterine environment can lead to changes in the gene expression," she says. "We think about genes like we can turn them up or down, change the expression or some products of the expression."

But what can be done and when?

"We know that in a forage-based system we're going to have nutrient deficiencies," Blair says. "Nevertheless, there are still a lot of things we don't know and a lot of conflicting results."

One certainty: it's not as easy as picking one stage to focus on, the scientists say.

A heartbeat is apparent at 21 days gestation. Sex organs develop around 45 to 60 days after conception.

"Survival organs, such as the heart and brain, are going to have an increased priority for nutrients

at this stage," Kincheloe says. "If you have a nutrient deficiency during this period, tissues will be affected differently, depending on how necessary they are."

Ovarian follicles develop, the placenta grows, initial muscle cells form—all before the second trimester.

If those processes are negatively affected, anything from reproduction to vigor and lifelong performance could suffer. Many pregnancy losses are blamed on intrauterine growth retardation (IUGR), and Kincheloe says inadequate maternal nutrition contributes to that.

A Wyoming study showed cows restricted to 68% nutrient requirements had 40% IUGR incidence and a 20% reduction in fetal weight.

An artificial insemination (AI) study showed mothers restricted to 60% of requirements during the first trimester, then fed 140% for the rest of gestation, had a 40% reduction in the antral follicle count of daughters, which could reduce fertility in that next generation.

"This occurred with no differences in birth weight, no difference in placental characteristics; weight at puberty was similar," she says.

There isn't always a good way to detect the insults.

It's often much easier to track performance and quality grade ►

*Eating For Two... from previous page*

than it is reproductive changes, and fetal programming matters as much to the latter as it does the former.

Blair says a fed steer spends about 40% of its life en utero. "Gestation is actually a pretty significant segment of their lives.

"Mid-gestation is a key developmental time point for both muscle and fat," she says, noting the fibers present in the first few months serve as a "scaffolding" for secondary fiber development.

"Livestock species are born with all the muscle fibers they're ever going to have," she notes. "We can certainly make them bigger, and we do this through the process of muscle fiber hypertrophy or growth, but we can never make more."

Yet the evidence is conflicting: supplement nutrition or don't? Add more protein or not? There is a biological effect, but what's the economic implication?

"This is a growing body of research, with more and more being conducted every day that's adding to our knowledge," Blair says. "We don't fully understand the mechanism going on, so there's more work to be done."

Producers should watch for further updates and keep a good read on their cows, because one thing is obvious. When it comes to calf success, she says, "What mom needs matters." FL

Greg Strong, *publisher*; Jill Dunkel, *editor*; Annita Lorimor, *general manager*; Amy Spillman, *digital/circulation manager*; Robert A. Strong, *editor emeritus*.

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Benchmark® data compiled from January 2005 to September 2018 represents the Optaflexx feeding history of over 9.5 million steers in more than 75,000 pens and 7.5 million heifers in more than 50,000 pens. Based on current pricing and marketing conditions, the analysis of that data reflects that increasing the feeding of Optaflexx from four weeks to five adds incremental net value above the cost of the product.[1]

**$15,000**

**AVERAGE ADDITIONAL INCREMENTAL PROFIT OPPORTUNITY BY ADDING A FIFTH WEEK OF OPTAFLEXX**

**STEERS**

(based on 15,000 steers fed 300 mg/hd/d)

**$9,450**

**AVERAGE ADDITIONAL INCREMENTAL PROFIT OPPORTUNITY BY ADDING A FIFTH WEEK OF OPTAFLEXX**

**HEIFERS**

(based on 15,000 heifers fed 250 mg/hd/d)

## SET YOURSELF UP FOR SUCCESS

So, what needs to be considered when adding an additional week of Optaflexx to your feeding protocol?

"Feedyard managers should be thinking about managing composition of gain," says Ty Lawrence, Professor of Animal Science, West Texas A&M University. "In general, muscle growth increases at a decreasing rate — fat growth increases at an increasing rate and bone growth is near linear and proportional to live body weight."

Factors that influence composition of gain include sex, fleshiness, health background, weight, age, frame, muscle, previous diet, etc. and all need to be taken into consideration. While these factors, as well as marketing strategy, should be considered when targeting an optimal end point, Dr. Lawrence advises that feeding Optaflexx for 35 days — or five weeks — fits the bulk of the population.

One of the top considerations that is consistent among the multitude of permutations of incoming cattle is an implant strategy that maximizes performance and achieves target endpoint.

According to Lee-Anne Walter, Ph.D., Elanco technical consultant and an expert in cattle growth physiology, a good time to assess how the cattle are doing against their initial projections is around nine to 10 weeks from the target out-date.

"For feedyards that use a re-implant program, this is a good time to determine how they're progressing against expectations in order to make adjustments as needed.

"To get the most accurate reading when processing cattle during re-implanting, weights should be taken first thing in the morning before first feed," she advises. "Compare re-implant weights and average daily gain to projected weights and projected ADG estimates. Look at body composition, and then re-evaluate if a new projected out-date is required."

As the target endpoint draws closer, six to seven weeks out, visually appraise the cattle to confirm they appear to be tracking against updated projections.

Lawrence recommends looking for filling of the brisket, pones, flank and shoulder pocket with fat, which is associated with the disappearance of individual muscle separation when animals walk.

"By confirming optimal dose and duration at this point, rather than when you're creating your show list around three to four weeks out, it enables action to be taken at a time when it's possible to add incremental value with the fifth week of Optaflexx," noted Walter.

| ARRIVAL | ENDPOINT MANAGEMENT | | | | |
|---|---|---|---|---|---|
| Project target endpoint based on marketing strategy and factors that influence composition of gain | **Re-implant** Assess how cattle are doing against initial projections, make necessary endpoint adjustments | **6-7 weeks from out-date** Visually appraise cattle, consider DMI changes and market shifts and confirm optimal duration for Optaflexx based on market/pricing conditions, composition and out-date | **4-5 weeks from out-date** Start cattle on Optaflexx | **3-4 weeks from out-date** Create show list or schedule kill date for contracted cattle | **End point** Ship cattle |

## FINISH STRONG WITH THE OPTIMAL ROI

"Cattle feeders should begin with the end in mind," says Lawrence. "They should be mindful of the marketing window and how market conditions — Choice/Select spread, basis, etc. — will prevail when cattle are ready for market."

Elanco is dedicated to working with our customers and their nutritionists to customize a program that will help maximize their net returns and make sure they finish ahead of the competition.

"We have endpoint management resources such as Optaflexx Optimizer, Optaflexx Market Alert and Benchmark available to help our customers see how feeding Optaflexx for five weeks can deliver a better ROI," says Walter.

### LEARN MORE. EARN MORE.

**Talk to your Elanco sales representative about how starting sooner and finishing stronger with Optaflexx can boost your bottom line.**

**The label contains complete use information, including cautions and warnings. Always read, understand and follow the label and use directions.**

**Caution:** Not for animals intended for breeding.

**Optaflexx: Complete feed For increased rate of weight gain and improved feed efficiency in cattle fed in confinement for slaughter:** Feed 8.2 to 24.6 g/ton of ractopamine hydrochloride (90% DM basis) continuously in a complete feed to provide 70 to 430 mg/hd/d for the last 28 to 42 days on feed.
**For increased rate of weight gain, improved feed efficiency and increased carcass leanness in cattle fed in confinement for slaughter:** Feed 9.8 to 24.6 g/ton of ractopamine hydrochloride (90% DM basis) continuously in a complete feed to provide 90 to 430 mg/hd/d for the last 28 to 42 days on feed.

**Optaflexx: Top dress For increased rate of weight gain and improved feed efficiency in cattle fed in confinement for slaughter:** Feed 70 to 400 mg/hd/d of ractopamine hydrochloride (90% DM basis) continuously in a minimum of 1.0 lb/hd/d top dress Type C medicated feed (maximum 800 g/ton ractopamine hydrochloride) during the last 28 to 42 days on feed.

1. Elanco Animal Health. Data on file. (Analysis of Elanco's Benchmark database from January 2005 to September 2018).



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