SINCE 1929

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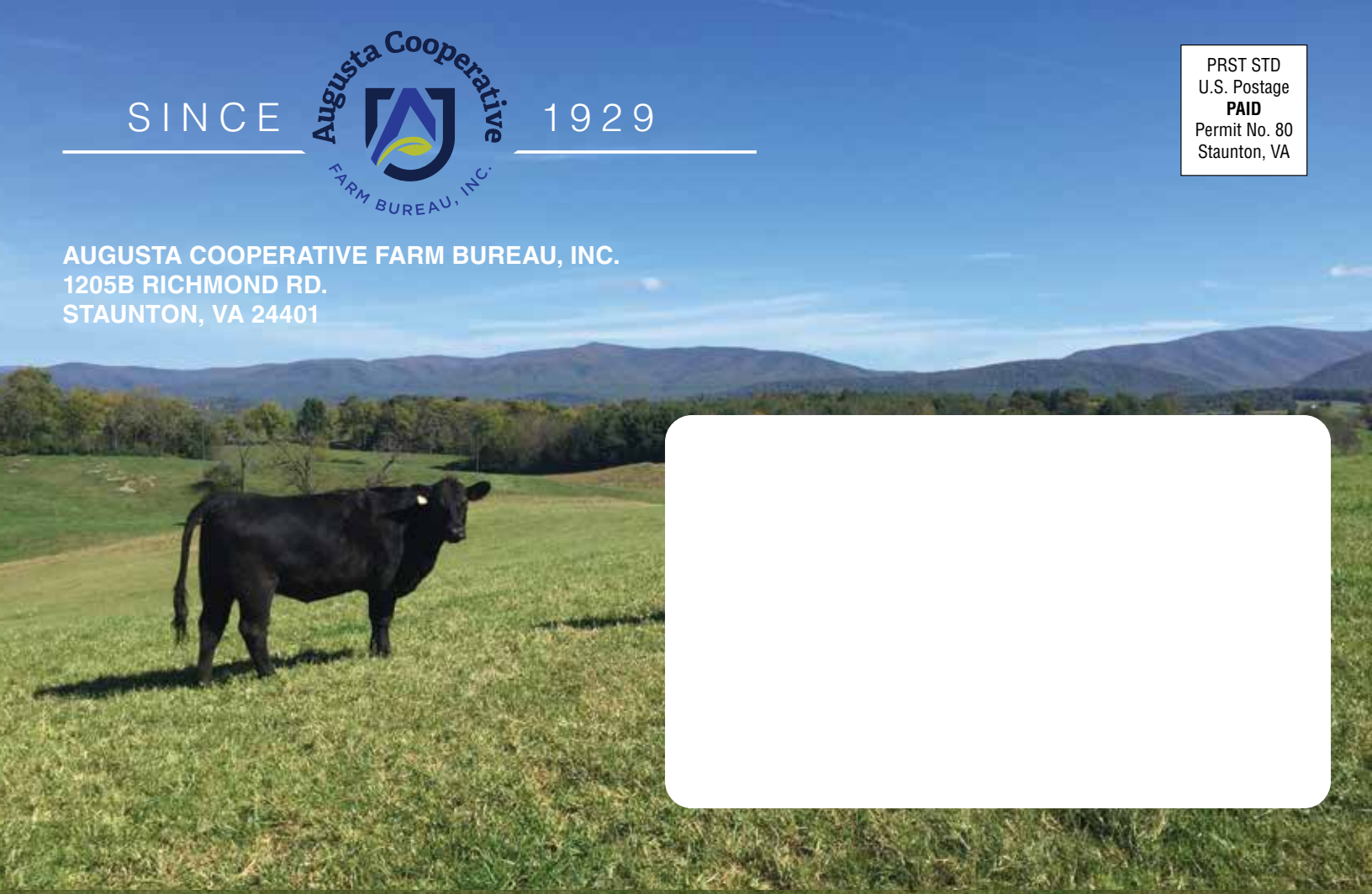

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AGRONOMY & BEEF BULLETIN

November 2024

SINCE 1929

Augusta Cooperative Farm Bureau, Inc.

SUPPLEMENT DELIVERY METHODS FOR WEANED CALVES

SUFFICIENT NUTRIENTS DURING WEANING CRITICAL TO SUCCESS.

Successfully transitioning calves from nursing through weaning into the next phase of beef production can be stressful, for both cattle and managers alike. Calves must adapt to new diets and environments and often face pathogen threats they did not face on their home ranch. Vaccination protocols, pre-weaning management, and strategies to reduce stress are all important management considerations for successful weaning. One of the most-critical success factors in this process is ensuring that calves consume sufficient nutrients to support their immune system and for setting them up for rapid, efficient gains throughout the feeding period.

Providing sufficient trace minerals and feed additives, such as Saccharomyces cerevisiae yeast culture products, are proven approaches that can affect the health of both the animal and the rumen environment. The research question we wanted to ask was how effective different methods were to deliver these nutrients; specifically, how did providing a self-fed, cooked molasses block compare to including these additives directly to the diet.

WHAT WE DID

We used 192 crossbred steer calves in this experiment. These calves all came from a single ranch in western South Dakota, and based on prior experience with this set of cattle, we expected that they would have low concentrations of liver copper. These calves were weaned on the ranch and shipped to the research feedlot at SDSU in Brookings. The steers were vaccinated using our standard receiving protocol, and we also sampled a subset for liver trace mineral concentrations. We started the steers on a receiving diet of wheatlage, oat hay, dried distiller and soyhulls that contained 13% crude protein and 47 Mcal/cwt NEg. The steers were then divided into three groups.

Steer Groups

The three steer groups in the experiment included:

1. Receiving diet supplemented with inorganic trace minerals at concentrations to meet the nutrient requirements for growing beef steers (**CON**).
2. Receiving diet plus a low-moisture, cooked molasses tub containing organic trace minerals and a yeast culture product placed in the pen (**TUB**).
3. Receiving diet plus a supplement mixed in the diet containing organic trace minerals and a yeast culture product (**FORCE**). The supplement was designed to match the TUB treatment if the steers ate 0.5 pounds per day of the tub.

The TUB and FORCE treatments were fed for the first 28 days of the study. We weighed the tubs daily to estimate tub intake. We conducted liver biopsies on day 14, 28, and 49 to compare against the baseline samples. The entire study lasted for 49 days.

WHAT WE FOUND

Feed Intake

Based on the Tub label, the steers in this experiment should have consumed between 0.33 and 0.5 pounds per day. However, they only averaged 0.25 pounds per day for the first 28 days of the study. Tub consumption was greater than expected for the first nine days, but it decreased after that time. Calves on the FORCE treatment had greater feed intake than the CON or TUB treatments during the first 28 days and for the entire 49-day experiment.

Liver Copper Concentrations

All groups started at near-zero concentrations of copper in the liver, and all groups increased over the course of the experiment. Steers on the FORCE treatment had greater liver copper concentrations compared to every other group throughout the study. Steers on the TUB treatment had greater liver copper concentrations than the CON treatment at day 14 and day 28, and their liver copper concentrations would be considered sufficient by day 14.

Both the tubs and force-fed supplement were effective at rebuilding liver copper stores. FORCE also increased cobalt concentrations, but there were no differences for manganese or zinc. In this study, steers dramatically reduced intake after about nine days. This is similar to an earlier study we conducted at SDSU with calves from the same ranch where tub consumption decreased after five days. Including both trace minerals and a yeast product in the diet for 28 days resulted in eleven pounds more gain over the seven-week study period.

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Supplement Approach

So, which approach is the best? The answer depends on what resources you have available and the kind of cattle that you are feeding. The FORCE treatment resulted in the most-rapid rebuilding of copper stores and supported the highest gains. In order to achieve that outcome, the FORCE treatment was fed for 28 days compared to fewer days of actual tub consumption. We do not know if the supplement needs to be fed for a full 28 days or if we could shorten the feeding period to perhaps 14 days and achieve comparable results.

In our studies, calves reduced their intake of the tubs after about 7 to 10 days. That might be long enough, considering that liver copper concentrations were adequate by that point. The tubs are more convenient, but convenience comes at a greater cost per unit of feed or nutrient. In some cases, the cost may be justified if it saves labor, simplifies diet mixing and manufacturing needs, or reduces the amount of product on inventory.

Health Response

What about health responses? It may be tempting to look at the "bare bones" treatment and compare that to the same performance with zero health issues and conclude that additional supplementation is not necessary. However, before one reaches that conclusion, keep in mind that this scenario does not represent normal calf receiving conditions. First, these steers were not co-mingled, which reduces the risk of disease. Secondly, because we need replicated pens to determine what effects these diets may cause, this experiment was conducted with eight steers per pen. It is much easier to locate sick animals in those conditions, and calves have less competition at the bunk. The bare bones approach in a group of calves from multiple sources fed in one group could easily result in a very different outcome in terms of sickness and death loss.

Beef Magazine

FEEDING FOR THE FUTURE: MATERNAL PROTEIN INTAKE

IMPORTANT TO NOT LIMIT FEED RESOURCES TO GESTATING FEMALES.

For 75% of the year, beef producers are generally feeding two animals— the cow and her unborn calf. Additionally, a cow may be growing a fetus while nursing a calf at her side. Maternal nutrition is extremely important not only to the cow, but also to her unborn calf, which relies solely on its mother for nutrition. Maternal nutrition can affect offspring performance by altering fetal development. Muscle fibers and fat cells that are formed during gestation set the stage for a calf's future performance. If developing calves experience a nutrient deficiency during this period, it may reduce muscle fiber number and subsequent muscle mass in offspring. This can lead to lower cutability of a carcass once the calf reaches market weight.

STEER CALF PERFORMANCE

An animal's phenotype is determined by the genes inherited from its parents, but also environmental factors. These factors include nutrition, weather, and various other variables that can impact that animal's performance potential. A study conducted at the University of Wyoming studied the impact of maternal nutrition on future calf performance. They examined maternal protein nutrition during mid-gestation. One group grazed 6% crude protein native pastures, while the other grazed 11% crude protein irrigated and fertilized pastures. At the conclusion of the study, they reported that calves born to dams who grazed lower-quality pastures produced offspring that had lighter carcass weights and produced less-tender steaks.

HEIFER CALF PERFORMANCE

Performance of female offspring in the breeding herd can also be impacted by maternal nutrition. Researchers at the University of Nebraska reported that dams grazing dormant range or corn residue during late gestation that were offered a supplemental protein source produced heifers that attained puberty earlier and had higher pregnancy rates compared to offspring from non-supplemented dams. In a similar study, researchers reported that heifer offspring from protein-supplemented dams were more likely to calve in the first 21 days of the calving season.

THE BOTTOM LINE

Feed costs for a pregnant female during the winter months can be extremely high, and feed can be difficult to source. Even though it may be tempting to cut corners where possible, it is important to not limit feed resources to gestating females. Limiting the dam on her nutritional needs has the potential to influence offspring performance far into the future. As always, discuss nutritional plans and concerns with an extension specialist or beef nutritionist to determine the best course of action for your herd.

Beef Magazine

REDUCING MATURE WEIGHT AND INCREASING COW PRODUCTIVITY

The increasing mature weight of beef cows in the United States is concerning. Larger cows have higher nutrient requirements. Improving the efficiency, sustainability and profit potential of commercial cow calf production involves reducing feed costs while improving pounds of calf weaned. Reducing the mature weight of beef cows has a favorable impact on feed costs. Cumulative weight weaned throughout a cow's life in production is the result of total pounds of calves weaned and will be higher for cows that annually calve earlier, wean a healthy calf, and avoid being culled as a result of reproductive failure, unsoundness, and bad disposition.

ROLE OF SELECTION AND MATING

Mature cow size can be effectively controlled through sire selection. Mature cow weight is a high heritability trait with literature estimates ranging from 35% to 70%. Selection pressure applied to mature weight Expected Progeny Differences (EPDs) in sire selection should be an effective means of changing mature weight.

Fertility is low in heritability with estimates ranging from 0% to 15%. Selection pressure, based on additive genetic merit alone, results in very slow progress in improving fertility. Fertility is more largely influenced by nutritional environment and non-additive genetic merit. Non-additive genetic merit (or gene combination value) is the result of mating decisions. The mating decision to crossbreed generates hybrid vigor (or heterosis) because of the gene combination value created by combining alleles from two (or more) different breeds at loci across the genome.

Considerable research by various state agriculture experiment stations and the USDA has clearly demonstrated the potential for increasing beef cow productivity through crossbreeding. Accumulated experimental data indicates pounds of calf weaned per cow can be increased by as much as 25% in well designed, systematic crossbreeding programs involving Hereford, Angus and Shorthorn. Approximately half of this increase in total production is dependent upon use of the crossbred cow to take advantage of heterosis for fertility, reproductive fitness, longevity and maternal performance.

Crossbreeding is a mating system that provides the commercial producer the opportunity to increase the cumulative weight weaned throughout a cow's lifetime in production. A well-planned crossbreeding system requires a high level of management to reap maximum benefits. The same breeding principles should be applied to the selection of breeding stock for a crossbreeding program that would be used for a purebred program. In both cases, the use of genetically superior breeding stock will result in offspring with better performance levels. Once the decision has been made as to which breeds to include in a crossbreeding program, selection pressure should be applied based on the additive genetic merit (EPDs) of traits of primary economic importance.

BOTTOM LINE

Improving mature cow size and productivity can be accomplished in tandem through selection and mating decisions. Sire selection can be an effective means to reduce the mature size of a cowherd. Total pounds of calf weaned during the productive lifetime of a cow can be improved by a well-planned crossbreeding system.

Beef Magazine

EFFECTS OF STEAM-FLAKED CORN, WDGS ON FINISHING BEEF STEERS

STUDY DEMONSTRATES THAT NET ENERGY VALUES OF COMMON BEEF RATION INGREDIENT MAY HAVE BEEN PREVIOUSLY OVERESTIMATED.

Accurate energy estimates of cattle feeds are critical to allowing beef industry professionals to formulate the best, most cost-effective diets that result in healthy, high-performing herds. A research team from Texas A&M University and USDA are adding new insights to our shared understanding of feed energy through a recent study published in Applied Animal Science on wet distillers grains with solubles.

"Wet distillers grains with solubles (WDGS) is a common byproduct feed ingredient in beef cattle finishing diets. However, its net energy value has not been clearly determined. This research estimates the net energy value of WDGS in combination with steam-flaked corn in the ration of finishing steers," said David Beede, PhD, editor in chief of the journal.

The study's lead investigator, N. Andy Cole, PhD, formerly of the U.S. Department of Agriculture's Agriculture Research Service Laboratory in Bushland, Texas, explains that "determining the energy values of feeds such as WDGS is difficult because when it replaces some corn in the diet, there are simultaneous changes in the moisture, fiber, protein, and starch contents of the diet. The WDGS also creates different feeding values based on how the corn it is combined with was processed--whether steam flaked or dry rolled."

Because beef cattle performance is so closely tied to the finishing diet, the study team set out to clarify exactly how WDGS—in combination with steam-flaked corn—affects the energy metabolism of beef finishing steers.

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To do so, they enrolled four Angus crossbred steers from the same sire into a study that involved comparing different diet options: a basal 86% concentrate diet, and the same basal diet supplemented with WDGS, steam-flaked corn, or a blend of both. The steers were rotated between diets every 28 days and underwent energy metabolism measurements in respiratory chambers the last 5 days of each diet rotation to determine nutrient digestibility, urinary nutrient excretion, methane and carbon dioxide production, and heat production.

"Our results," explains Cole, "suggest the actual net energy values of WDGS are somewhat less than values in the most recent NASEM (2016) publication when fed in steam-flaked-corn diets and are only 81% to 85% of the net energy of steam-flaked corn. The energy values of WDGS, therefore, may need to be adjusted down from NASEM (2016) tabular values, at least in diets based on steam-flaked corn."

Although the study team was careful to mention that there are limitations to their results that deserve further research—for example, if genetic diversity could potentially affect their findings—the study helps to provide actionable data on the energy values of a common finishing ration for beef feedlot steers.

Beef Magazine

TRANSITIONING FROM A TIE STALL TO A FREESTALL

WHEN TRANSITIONING FROM A TIE STALL TO FREESTALL BARN, MANAGEMENT MUST CHANGE.

When considering building a new barn, dairy farmers must consider how they will manage their cows: as a group or individually. While some may see tie stalls as a way of the past, 39% of dairies in the United States still house their cows in a tie stall; most of these farms are in the Northeast (USDA, 2016). When these barns wear out, and it is time to build a new one, farmers have a variety of barns they can choose from, whether it be a tie stall, freestall, bedded back, or another system. If transitioning to a freestall barn after a tie stall wears out, farmers must switch their mindset and start managing cows as a group.

PROS AND CONS OF MANAGING COWS AS A GROUP

As animal welfare standards have changed, more farmers have switched from housing cows in tie stalls to a loose housing system. Many European countries have outlawed the building of new tie stalls, tying cows altogether, or some have implemented mandatory pasture time (Beaver et al., 2021). Cows housed in tie stalls are more likely to have diseases and injuries associated with lameness, and they are less able to express some natural behaviors (Beaver et al., 2021).

Managing cows as a group when they have been managed individually in the past can be a significant change for the cows and the people. Cows who have never had to compete for food, water, or a resting spot may experience stress while figuring out their new pecking order. Farmers who are used to monitoring dry matter intake for individual cows will no longer be able to. Paying attention to cow behavior is essential for farmers who do not use technology such as activity monitors or milk weights to help them detect disease. After a farmer drops feed at the bunk, they should look around and ask themselves, who didn't get up to eat? They should also pay attention when cows return from the parlor; who went to lie down immediately instead of eating? Paying particular attention to fresh cows is always a good idea; this is the period of lactation during which cows are most likely to get sick. Farmers should also strip cows in the parlor to check for clinical mastitis.

WHAT ARE DIFFERENT GROUPING STRATEGIES?

One of the most common grouping strategies is to group cows **by diet.** This allows producers to cut down on feed costs and increase milk production by allowing cows to get closer to the nutrients they need instead of one common diet (Cabrera and Kalantari, 2015). When grouping by diet, diets are often formulated for the level of milk production, usually high production and low production (Barrientos-Blanco et al., 2021). Grouping cows by diets allows for feed cost savings. When there are two diets, Cabrera et al. (2012) showed a savings of $39 per cow per year and a savings of $46 per cow per year with three diets. A more recent study showed a savings of $40 per cow per year with two diets and $59 per cow per year with three diets (Wu et al., 2019).

Another way to group cows is **by age**; first lactation heifers are often managed as their own group. This is an excellent idea for freshening, as this is stressful for any animal, especially for heifers. This is the first time they are giving birth and milking. Adding additional stress to social situations with older, dominant cows should be avoided if possible. When heifers are managed as a separate group from older cows, their DMI increases by about 5 pounds per day, leading to an increase in milk production of about 450 pounds in the first 130 days in milk (Grant and Albright, 2001).

It is also common to group cows **by stage of lactation.** For example, some farms have a far-off dry cow group, close-up dry cow group, fresh group, peak lactation group, and tail-ender group. This strategy often pairs with the other two, grouping by diet and age.

HOW BIG SHOULD GROUPS BE?

In true extension fashion, the answer to this question is that it depends. Grant and Albright (2001) stated that group size should depend on the competition for resources like feed, water, number of freestalls, social interactions, size of the

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milking parlor holding area, animal size and age, body condition score, days in milk and the adequacy of the ventilation system. A lot of these factors boil down to stocking density. In a freestall barn, stocking density can be measured based on the number of cows compared to the number of stalls or the number of cows compared to the number of headlocks. If a farm has a post-and-rail at the feed bunk instead of headlocks, stocking density can be measured as the amount of feed space per cow. When stocking density is over 100%, competition increases, negatively impacting animal health and production. When stocked appropriately, headlocks reduce competition compared to a post-and-rail (Huzzey et al., 2006). Decreasing stocking density during regrouping can help minimize competition (Talebi et al., 2014).

Some studies have shown that multiparous cows later in lactation may not have a decrease in milk production or DMI when overcrowded (Krawczel et al. 2012). This is most likely because these cows are making up for a limited time at the feed bunk by slug feeding. This means they are eating considerable meals in short amounts of time. Slug feeding can lead to sub-acute ruminal acidosis, also known as SARA, and other adverse health effects.

Ideally, all cows would be able to eat and lie down at one time, meaning one cow per stall, one cow per headlock, or 24 inches (61 cm) of post-rail space per cow (DeVries, 2017).

HOW OFTEN SHOULD COWS ENTER AND LEAVE A GROUP?

After moving to a new group, it takes cows 3 to 7 days to establish a new social hierarchy (Grant and Albright, 2001). DMI decreases after cows are moved to a new pen, as many are displacing each other at the feed bunk to establish dominance (Schirmann et al., 2011). Moving familiar cows together can help prevent competition (von Keyserlingk et al., 2008). It is common practice on larger farms to move cows from pen to pen weekly, but minimizing pen moves as much as possible can help maintain DMI and production.

A farmer's perspective must change when switching from a tie stall to loose housing. They must consider the above best management practices when managing cows as a group instead of individually.

Penn State Extension

LIVESTOCK BIOSECURITY CAN PREVENT DISEASE ON FARMS AND RANCHES

BY HAVING VITAL BIOSECURITY PRACTICES IN PLACE, THE SPREAD OF VARIOUS WILDLIFE INFECTIOUS DISEASES CAN BE LIMITED.

Biosecurity is a key component to animal health and disease prevention on any livestock farm. It's also the most important measure to reduce and prevent diseases from spreading to any farm or ranch.

Dr. Rosslyn Biggs, Oklahoma State University College of Veterinary Medicine clinical assistant professor and beef cattle extension specialist, emphasized the importance of biosecurity.

"Biosecurity measures are critical in safeguarding livestock health and productivity by minimizing the risk of infectious diseases," Biggs said.

Wildlife can serve as reservoirs for infectious agents that present threats to livestock health. Diseases transmitted from wildlife can lead to illness, economic losses and even public health concerns. Implementing effective biosecurity strategies is essential to mitigate the transmission of diseases from wildlife to cattle.

Biggs stated that when considering which practices to implement, disease risk assessments in coordination with a veterinarian should take place and recognition of the need for biodiversity on the operation must be considered. Basic biosecurity measures can assist producers in limiting disease risks including those posed by wildlife interactions.

Livestock should be monitored daily, and any signs of illness should be documented. Not allowing unauthorized cattle on your farm or ranch is important when trying to limit exposure.

Any abnormal or unusual signs of illness or death, including those seen in wildlife, should be reported to the operation's veterinarian and animal health officials. Abnormal and unusual signs to look for include, but are not limited to loss of appetite, low-grade fever, nasal discharge, neurologic deficits, or death.

Protecting livestock health against wildlife-borne diseases requires an ever-changing, multifaceted approach that combines practical and economically feasible management strategies.

By implementing operation-specific biosecurity measures tailored to the risks posed by wildlife, producers can mitigate disease transmission, promote animal welfare and create environmentally sustainable production systems.
Biggs said managing wildlife populations at appropriate levels can promote both good biosecurity and environmental health if disease risk is considered. Consulting with local, state and federal wildlife entities, such as U.S. Fish & Wildlife, USDA APHIS Wildlife Services, and state agriculture and wildlife departments, is advised to fully understand current populations and acceptable legal measures to address wildlife.

By having vital biosecurity practices in place, the spread of various wildlife infectious diseases can be limited.
If someone notices any abnormal symptoms in their herd, please contact a local veterinarian.

Beef Magazine

MANAGING FROST-INDUCED PRUSSIC ACID RISKS

ACUTE TOXICITY CAN LEAD TO SYMPTOMS SUCH AS MUSCLE TWITCHING, STAGGERING AND EVEN DEATH WITHIN MINUTES.

Frost is one of the primary environmental factors that can lead to increased prussic acid content in sorghum species, forage sorghum, sorghum x sudangrass, and sudangrass. When a frost occurs, the stress it places on the plant can cause an accumulation of dhurrin, a compound that breaks down into prussic acid. If livestock consume forage with elevated levels of prussic acid, it can result in acute toxicity, leading to symptoms such as muscle twitching, staggering, and even death within minutes.

Iowa State University extension forage specialist Shelby Gruss offered these guidelines for managing risk from frost events.

To mitigate the risk of prussic acid toxicity following a frost, it's important to take immediate action:

1. Remove cattle before the frost. When a frost is forecasted, cattle should be removed from sorghum fields to prevent consumption of potentially toxic forage.
2. Wait one week after frost. Cattle should not graze the field for at least one week following a frost. If another frost occurs within the week, the waiting period should extend an additional seven days, effectively restarting the clock.
3. Look for regrowth. Following a non-killing frost, scanning the field for regrowth is invaluable because new tillers can have high levels of dhurrin. If the field has a considerable amount of regrowth waiting until the new growth is over 18 in. tall or is killed by a killing frost is important to avoid high levels of prussic acid.
4. Safe grazing after a killing frost. After a killing frost, prussic acid levels diminish to safer levels. One week after the killing frost, the forage is generally safe for livestock to graze. Additionally, densely planted sorghum species can help protect the interior from a killing frost. Walking into the field can help determine if the plants were killed.

FEEDING ALTERNATIVES

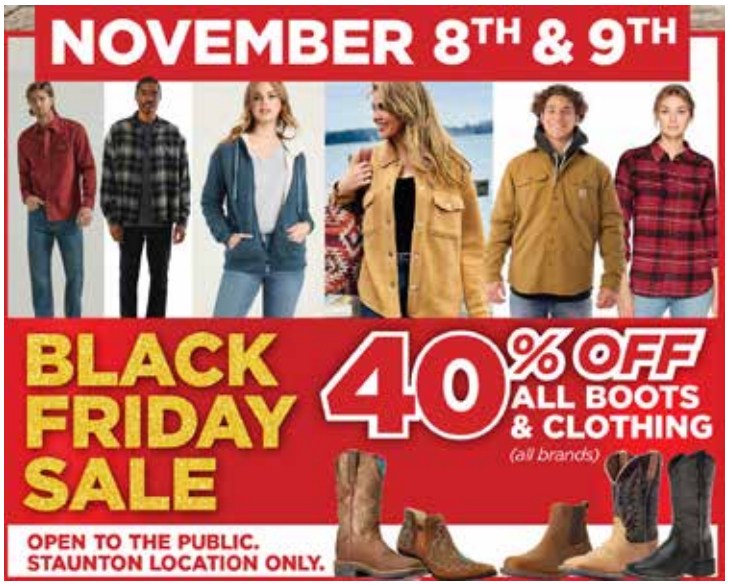
For producers concerned about managing sorghum forage after a frost, other methods such as silage and baleage offer safer options. The chopping and fermentation process involved in creating silage can reduce prussic acid content by over 50%, making it a safer choice than grazing or hay. Grazing is particularly risky as animals will selectively graze the leaf material which will accumulate higher levels of dhurrin. Haying at this point in time would be VERY difficult to dry down. Additionally, haying, contradictory to previously thought, does not reduce your risk of prussic acid potential.

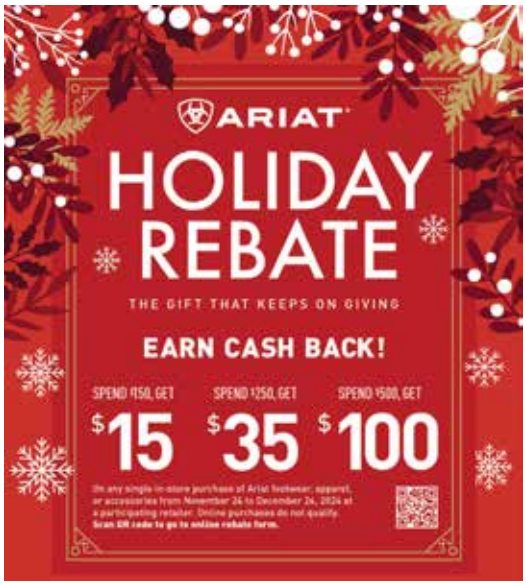
TESTING FOR PRUSSIC ACID

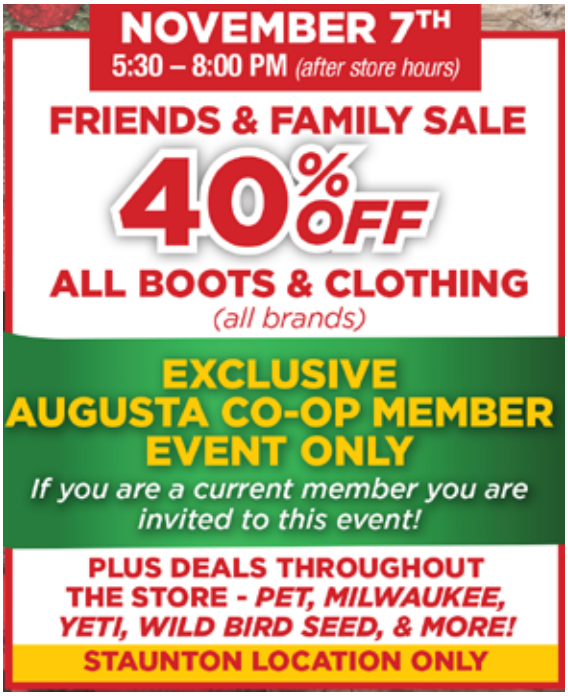
If there is any doubt about the safety of sorghum forage following a frost, it is recommended to send samples for lab analysis.

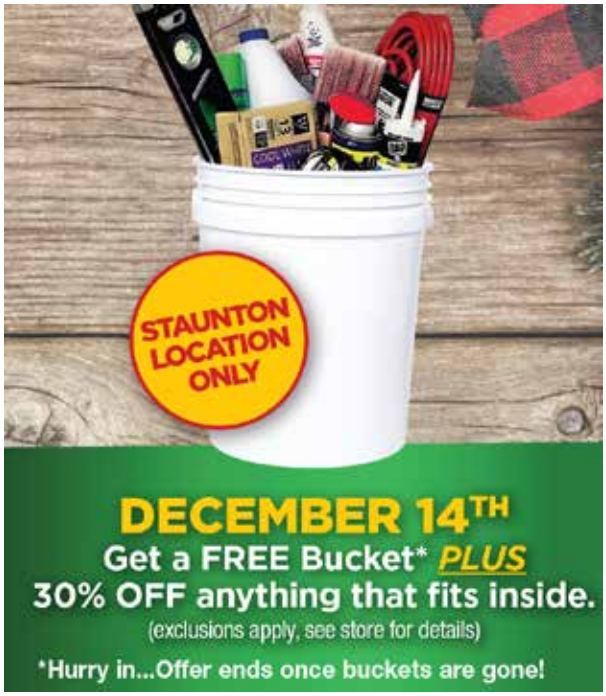
By following these guidelines, sorghum species can continue to be a safe and valuable forage resource for livestock. Proper management after frost events is critical to avoiding prussic acid toxicity and ensuring livestock safety.

Beef Magazine









EVENTS / CALENDAR

FRIENDS & FAMILY SALE (AFTER HOURS)

Thursday, November 7 • 5:30PM-8PM

40% off all boots & clothing. Plus deals throughout the store - pet, Milwaukee, YETI, Wild Bird Seed & more! Staunton location only.

Members only event.

Scan to view event details

BLACK FRIDAY SALE

November 8-9, 2024

40% off all boots & clothing. Open to the public. Staunton location only.

DEALS LEADING UP TO CHRISTMAS

November 11-16

35% Off Ariat & Carhartt

November 12-16

BOGO 50% Off Exclusive Dog & Cat Food

November 18-23

35% off Wrangler & Cinch / $40 off $250 Small Engine purchase or service.

November 25-30

30% off Boots & Accessories

December 2-7

30% off Toys & Giftware

30% off Simply Southern & Sterling Kreek Clothing

December 14

Free bucket plus 30% off whatever fits inside!

LTO – first 150 buckets. Deals complete after buckets distributed.

Exclusions apply.