

JOPLIN REGIONAL STOCKYARDS

CATTLEMEN'S NEWS



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Three Tips to Get More Hay
Biosecurity: What You Need to Know

APRIL 2019 | VOLUME 22 | ISSUE 9

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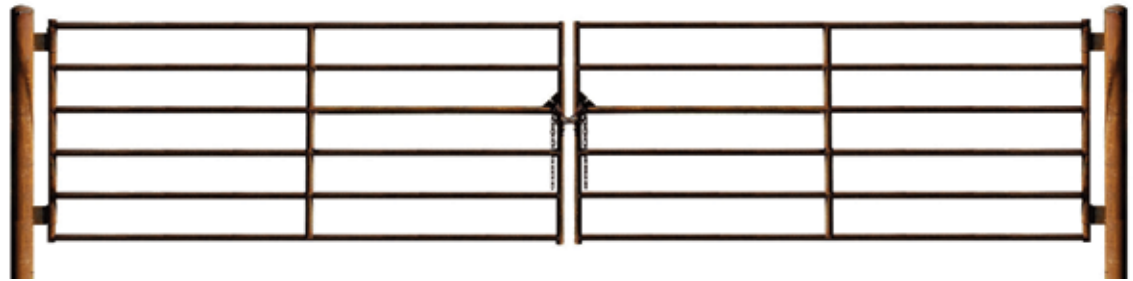
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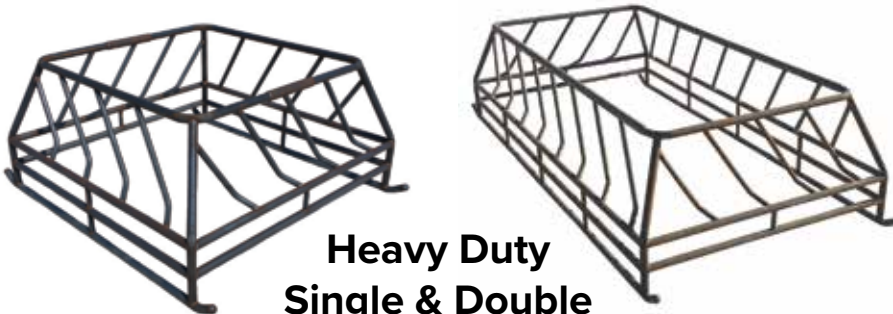
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ON THE BLOCK

Feeder cattle have struggled most of this winter simply because we've had such terrible weather all over the U.S., which has especially pressured the bigger end of the cattle. The flooding and blizzard in Nebraska last month also affected the market with many roads shut down. As we get into spring, the grazing cattle are seeing some market action. We need some room in the feedyards and some of the mud cleaned up so we can move additional cattle into that segment of the market. I do think the future is bright for the market with a good year ahead once we get winter behind us. It's simply been a weather market all the way through the last few months.

On the cow and bull front, slaughter prices have perked up a bit after the recent weather situation in Nebraska. As we get into spring, I expect the slaughter cow market to be steady at best. It could be a struggle be-



cause a lot of those cattle will be available. Replacement cow prices have been good. Quality, young cows that are in demand sure sell well. Bull sales have been a little tough simply because of the supply we have available in the country.

Our Prime Time Livestock Video sales are going well, especially when we take a look at cattle for June delivery and beyond. If you think you might have a little extra grass, the cattle will sure pencil out looking ahead. Opportunity definitely exists there.

The big value-added feeder cattle sale is set for June 27, with a May 13 wean date. Cattle always sell well in that special.

We have the prospects for a good year. And, right now we're sure not short on water.

Good luck and God bless.

Jackie



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Cattlemen's News, published by Joplin Regional Stockyards, is a nuts-and-bolts news magazine dedicated to helping cattle producers add value to their operations. From "how-to" articles to economics and industry trends, our mission is to put today's producers in touch with the information and products that will make them profitable for tomorrow. Published monthly. Circulation 10,000.



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Midland Flyers, based out of Miami, Oklahoma, offers aerial application services in the four-state area. See story on page 42.

—Cover photo by Rebecca Mettler.

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CATTLE RECEIVING STATIONS



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Our heifer bulls are sons of KCF Bennett Absolute, Hooks Beacon and G A R Sure Fire. They rank at the top of the breed in calving ease as well as the All Purpose Index.

Our 2017 yearling steers were evaluated by the IGS, a division of the American Simmental Association, using their Feedlot Profit Calculator and had the highest relative value of any yearlings they had EVER evaluated.

The heifers have an extensive health and vaccine program including 2 doses of modified live Virus vaccine prior to breeding, making them and their calves eligible for these vaccines in the future when done in compliance with the vaccine label.

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DATA-DRIVEN DECISIONS

Predicting Respiratory Disease from Behavior

A look at technology's impact on disease onset

Story by Justin Sexten for Cattlemen's News

Many would suggest the answer to the question in this article title is, "Yes, I've been doing it my whole life." Perhaps a better question is, "Can we predict respiratory disease (bovine respiratory disease or BRD) onset using behavior monitoring technology?" A research group headed up by Will Kayser at

Texas A&M University looked to answer this very question in a recent article in the Journal of Animal Science.

To some, the question might not seem new. Several groups have validated technology systems to predict BRD using a retrospective approach. Monday morning quarterbacking is not that useful

when what we need is help deciding what cattle to treat before they are three days into a BRD outbreak.

The group's approach to answering the question was unique in a couple of ways. First, rather than using high-risk, weaned calves, they used vaccinated and weaned Angus bulls sourced from multiple operations. These moderate-risk cattle allowed

the group to test the other novel idea of using statistical process control charts to evaluate predictions.

This charting method is common in manufacturing, where a machine is continuously watched for abnormal behavior. Another way to think about these charts is the movie scenes using a lie detector where deviations from a straight line indicate something is not right.

The bulls were monitored for behavior changes in real time, and the researchers used these changes to predict BRD. You could already use a similar process to identify when something is amiss in the pasture or feedlot. The difference between what you do today and where technology is headed is your system considers changes from the group's behavior.

Consider an example. You feed a group of yearlings, and they all come to the bunk to eat except one. You know something is wrong. In this case the action of not eating is different from the average of the group. What you don't know is if that behavior is different from the animal's average.

This trial evaluated those behavior changes an individual animal undergoes you might not see when BRD is just getting started. Evaluators looked at several bunk-related measurements including time to approach, time eating, time with head down and time between bunk visits. They also looked at eating rate and feed intake in addition to time between and variation around the non-eating periods.

GrowSafe feed intake bunks were used to measure bull feeding behaviors. After four days of determining what each bull's normal behavior looked like, the computers went to work predicting BRD. Each day an animal wasn't sick, new normal data were added making the model more sensitive and accurate after a relatively short training period.

While all the measured behaviors helped predict BRD, **CONTINUED ON NEXT PAGE**



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RESPIRATORY DISEASE FROM PREVIOUS PAGE

the key variables were time spent at the bunk, time with head down in the bunk and the variability of time spent not eating. The model predicted BRD onset about 2 days before cowboys could detect illness via observation.

While many suggest feed intake change as the key metric for BRD detection, when added to the behavior model, prediction barely improved. This may be due to the relationship between feed intake and time spent with head down in the bunk.

Regardless the cause, limited prediction gain from adding feed intake to the model offers the promise of behavior technology reaching the farm gate sooner, since intake is so difficult to measure, and high-risk calves don't historically start on feed easily.

More than Meats the Eye

USDA takes lead oversight of lab-grown fake meat

The Missouri Cattlemen's Association (MCA) was quick to applaud the formal agreement announced March 7 by the U.S. Department of Agriculture (USDA) and Food and Drug Administration (FDA) on lab-grown "fake meat" oversight. The formal agreement gives USDA lead oversight in the production and labeling of lab-grown products. MCA Executive Vice President Mike Deering said the association, along with the National Cattlemen's Beef Association (NCBA), have been advocating for USDA to oversee all phases of lab-grown "fake meat."


According to NCBA, the terms of the agreement specify USDA will be responsible for inspecting all facilities that harvest, process, package or label cell-cultured products derived from livestock or poultry. All product labels will also be subject to USDA's approval and verification process.

—Source: MCA Prime Cuts. 

Key model metrics are sensitivity, specificity and accuracy, or simply put, can the model accurately detect a large enough change to signal treatment. The model was accurate over 83 percent of the time, correctly diagnosing BRD before visual symptoms.

Sensitivity measures the number of bulls missed that are indeed sick while specificity determines which animals are called sick but are really healthy. Most would say the reason for using technology to predict BRD is to improve antibiotic use. However, imagine the day when you can adjust the sensitivity and specificity settings on your feed bunk to optimize the labor available for sorting and treating potential pulls.

Respiratory disease represents the largest drain on labor and resources in all segments of the beef industry. We are closer than ever to technology that enhances animal well-being while improving operation efficiency.

—Justin Sexten is vice president of strategy for Performance Livestock Analytics. 

TRENDING NOW

MDA Launches New Tool for Cattlemen

Missouri's farmers and ranchers have another tool to assess the market value of stocker cattle.

The Missouri Department of Agriculture's Market News team has launched the Missouri Stocker Formula – a seven-day calculated weighted value for feeder steers weighing 400 to 649 pounds reported by the Department/USDA Market News Service.

This formula is aimed at helping cattlemen in Missouri who have interest in the stocker cattle market. It will serve as a barometer to allow individuals to quickly get a feel for price direction and volume of stocker cattle currently moving through the state's auction barns. The Missouri Stocker Formula is updated daily and can be found at <https://agmarketnews.mo.gov/reports>. 

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Forage Quality, Harsh Winters Impact Calf Survival

Forage testing critical, especially in adverse weather

Story by David Rethorst for Cattlemen's News

Once again, history repeats itself. The summer of 1992 was not conducive to good forage and was followed by a harsh winter, a wet spring and widespread flooding. Spring calving in 1993 was marked by thin cows and weak calves with lower than normal survivability.

Fast forward to 2018 when drought in many areas of the Great Plains resulted in forage that was marginal in quality and below normal in quantity. Thin cows, down cows and weak calves, have marked calving this spring. Cold, wet calving seasons combined with substandard forage is a costly combination.

The critical temperature for cows with a dry hair coat is 30 to 32 degrees F. For cows with a wet hair coat, the critical temperature is 55 to 60 degrees F. For each 1 degree below the critical temperature, the energy requirement of the cow increases 1 percent. One can readily see why adjustments need to be made in what the cows are eating during cold, and especially wet, conditions. It is tough enough to do this with quality forage, but when you have lower quality forage and not very much of it, it presents a considerable challenge.

The importance of protein, energy and trace mineral nutrition during the last three months of pregnancy has

been discussed previously in this column. If the cow is in a negative energy balance (losing weight) during this time, it makes sense that some cows go down and calf survivability goes down as well. An older University of Wyoming study shows that when cows lose weight during the last 30 days of pregnancy, birth weight goes down by about 9 pounds, calves born alive drops by nearly 10 percent and calves weaned drops by 29 percent. Additionally, nearly 20 percent more of the calves out of the cows losing weight developed scours, and 19 percent of the cows losing weight died of scours.

Other studies have shown that cows on restricted energy diets have calves whose daily heat production is reduced

11 percent. The calves out of these cows are also slower to stand and nurse. The colostrum from thin cows or ones losing weight is of lower quality due its lower fat content.

Dietary protein restriction has also been shown to reduce the calf's ability to produce heat by 11 percent. The calves born to protein-restricted dams do not absorb colostrum as well as the calves out of protein-enriched dams. This is in addition to the impact on lifetime health and performance that various fetal programming studies have shown protein to have.

While pre-calving trace mineral levels do not affect calf vigor to the extent that energy and protein do, they will impact the function of the calf's immune system. Deficiencies of copper, zinc, selenium and manganese can result in more respiratory disease, scours and abomasal ulcers.

A lower-than-normal-percent weaned calf crop has a dramatic effect on the profitability of a beef production system. **CONTINUED ON NEXT PAGE**



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Copper 15 mg/mL

OTHER SUBSTANCES:

Chlorocresol 0.1% w/v (as preservative).

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).

DOSEAGE 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

SUPPLEMENTATION PROGRAM	
BULLS	3 times per year
BEEF COWS	4 weeks before breeding 4 weeks before calving
DAIRY COWS	4 weeks before calving 4 weeks before insemination at dry-off
CALVES	at birth at 3 months and/or weaning
HEIFERS	every 3 months - especially 4 weeks before breeding
(program gives planned dates that can be varied to suit management programs)	

DOSEAGE 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
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TRENDING NOW

Restore, Protect Wetlands

Deadline nears for NRCS conservation easement program

The USDA Natural Resources Conservation Service (NRCS) has set an April 15 deadline to apply for wetland and agricultural land easements in Missouri. NRCS provides technical and financial assistance to help private landowners, tribes, land trusts and other groups protect valuable lands through easements.

The Agricultural Conservation Easement Program (ACEP) focuses on restoring and protecting wetlands as well as conserving productive agricultural lands and grasslands. Landowners are compensated for enrolling their land in easements.

Through ACEP Wetland Reserve Easements, NRCS helps landowners restore and protect wetland ecosystems by compensating landowners for the easements. Wetlands provide many benefits, including critical habitat for a wide array of wildlife species. They also store floodwaters, clean and recharge groundwater, sequester carbon, trap sediment, and filter pollutants for clean water.

"This program gives landowners a way to restore and preserve wetlands long-term while also easing the impact of the land not being available for agricultural production," said State Conservationist J.R. Flores.


Wetland conservation easements are either permanent or for 30 years. Eligible lands include farmed or converted wetlands that can successfully be restored, croplands or grasslands subject to flooding, and riparian areas that link protected wetland areas. As part of the easement, NRCS and the landowner work together to develop a plan for the restoration and maintenance of the wetland.

Through ACEP Agricultural Land Easements, NRCS provides funds to conservation partners to purchase conservation easements on private working lands. This program

helps keep productive lands working, especially in areas experiencing development pressure.


Partners include state or local agencies, non-profits and tribes. Landowners continue to own their property but voluntarily enter into a legal agreement with a cooperating entity to purchase an easement. The cooperating entity applies for matching funds from NRCS for the purchase of an easement from the landowner, perma-

nently protecting its agricultural use and conservation values. Landowners do not apply directly to NRCS for funding under this program. Easements are permanent. Eligible lands include privately owned cropland, rangeland, grassland, pastureland and forestlands.

Landowners and tribes interested in ACEP Wetland Reserve Easements and partners interested in ACEP Agricultural Land Easements should contact their local USDA service center. Applications for ACEP are taken on a continuous basis, but only those Missouri applications received by April 15 will be ranked and considered for funding this year. 

FORAGE QUALITY FROM PREVIOUS PAGE

The importance of having the dams on the proper plane of nutrition prior to calving to provide for good calf vigor and survivability cannot be over-emphasized. Adverse weather conditions during forage production can negatively impact the protein, energy and trace mineral content of the forage. I encourage you to use forage testing, especially in adverse production years, and make certain what the cows are eating meets their requirements. Nutrition matters.

—Source: Dr. David Rethorst is a veterinary practitioner and consultant, BeefSolutions, Wamego, Kansas. 

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Protecting the Future

Farm, ranch families testify in support of MO SB 391

More than 20 people testified in support of Senate Bill 391, sponsored by Sen. Mike Bernskoetter (R-6), at the Missouri State Capitol during the Agriculture, Food Production and Outdoor Resources Committee on March 5. The legislation is supported by nearly 30 organizations representing agriculture, business, lending and education. The stated goal is to advance Missouri agriculture by ensuring regulatory certainty for farm and ranch families.

According to the bill summary, the legislation would essentially prohibit counties from promulgating rules and regulations on agricultural operations that are more stringent than regulations at the state level. Missouri Cattlemen's Association (MCA)

President Bobby Simpson says the legislation eliminates the current patchwork of regulations in Missouri's 114 counties and provides certainty for current producers and the next generation.

"There is a problem and it needs fixed," said Simpson at the hearing. "Counties should not have the power to put law-abiding people out of business. There are stringent laws, rules and regulations rooted in sound science at the state level to ensure people, animals, the land and its resources are protected. These county ordinances, which are almost always void of science, are not local control. It's just not, and I say this as someone who served as a county commissioner for 14 years. This is exploiting a state statute. SB 391 will right the wrong."

Many of the producers attending the hearing were under 40 years old and stressed the need for Missouri to protect the next generation of farm and ranch families.

"The average age of a farmer is nearing 60 years old, and less than five percent are under 35," said Traves Merrick, who is a fifth generation cattle producer from Miller, Missouri. "If we do not repopulate the land with the next generation, consumers will be paying more for food, and more of it will have to be imported. The next generation is ready, but we cannot handle the costly risks associated with farming and ranching if a county can pass a reactionary ordinance that stops all opportunities to expand the family farm."

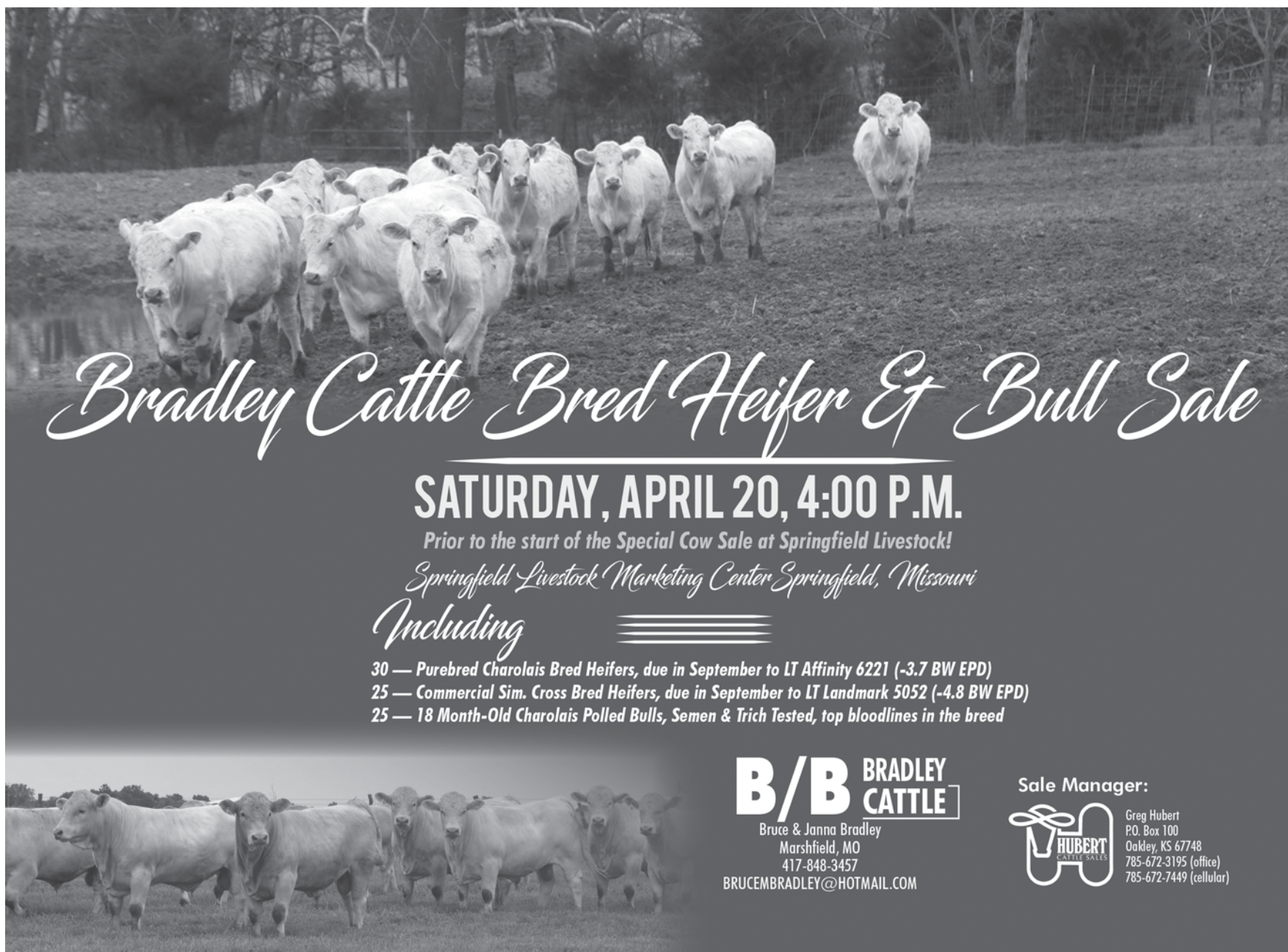
An University of Missouri economist cited research that shows county ordinances are a top hindrance to growth in Missouri agriculture. Several agricultural lenders also testified that they advise farm families to locate in a county

that does not have restrictive ordinances above and beyond the scientifically founded regulations currently enforced by the Department of Natural Resources and other agencies.

One senator on the committee asked an opponent of the legislation what a reasonable distance would be for an agricultural operation from a neighboring property. The witness said two miles. Simpson said that answer is why this legislation is needed.

"Just to be clear, a two-mile setback radius would require ownership of a whopping 8,042 acres," said Simpson. "This is beyond unreasonable and would completely shut out the next generation. That's exactly what these ordinances do - they kill any chance of growth. Who is going to be able to afford 8,000 acres?"

—Source: MCA Prime Cuts. 



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I will not complain about the rain. I will not complain about the rain. I will not complain about the rain.

This has been my mantra for the last several weeks, maybe even months, as I stand in puddles of mud. As my well-worn, hole-ridden Mucks allow the cold, life-giving liquid to saturate my socks. As the wind whips those cold, stinging raindrops of late winter/early spring into my eyes. But I don't dare say a word.

Let it rain.

I guess I am superstitious. I guess I am afraid that if I do utter the words my brain is thinking, the rain will stop. For good. And even though I've only been a "farmer" for a very short part of history, I have already felt the pain of no rain. It hurts. It hurts everywhere.

So I keep quiet. I open the gates. I stand in the mud as my husband navigates the poor, rut-filled pastures to feed our stock.

The other day — a particularly wet Tuesday — we set out to feed hay right at dinnertime. It was pouring rain. Raining cats and dogs. A real toad strangler. A gully washer. All the clichés rang true this day. And I was the gate monkey. It was only right. I cannot be trusted in the mud. I am sure I would have buried the truck up to the axles causing more harm than good. So, I accept my perpetual position. It is what it is. I open gates. It is a wet job but somebody has got to do it. And on this day my job was to watch the gate as the husband hauled tail through it without stopping to unroll the bale and get back out the gate all while not getting stuck in the mud. All was going according to plan until I

saw what seemed to be a red, furry head running the length of the fence on the opposite side of the field. Perfect.

Through the rain it was hard to see if the cow was on the right or the wrong side of the fence. So, I flagged down the hay feeder, and we went to investigate. By the time we made it over there, she was gone. We were pretty sure she was indeed out and we needed to find her since she was roaming our neighbor's property. In the rain. In the cold, stinking rain.

To keep from tearing up his pasture the hubs took off on foot down one fence row. I

stayed in the truck to help steer her back through the open gate if she happened to run back.


Sitting in the truck would normally be a respite from my gate monkey duties but we have an OLD feed truck. Don't get me wrong, I am super thankful for it, but it is not water tight. And as I was sitting there, my tail and feet were filling with water as the seat and floorboard took in water from the driving rain. Unpleasant is an understatement.

We never found her on that side of the fence. She turned up in a group of cows that also held her dad. Well that was not going to work. She had to be sorted off and moved back to the correct herd. Rain or shine, our bull and his calf-rearing daughter could not be bunked together. Yikes!

Sorting her off was not an issue. Neither was pushing her through the gates. But guiding her through the pastures where she belonged meant some running. Side note: I have had four kids. I am NOT one of those supermoms who can run without consequence. But when the husband says to run over there and do it fast. You do it. So I ran as fast as my out-of-shape body and rain-filled boots could muster. I filled that hole while he drove her into the correct pasture.

And then the rain stopped.

But that's life. My grandma used to say, "Into everyone's life a little rain must fall."

So true. Rainy days can make our paths muddy and hard to navigate. But those same rainy days can bring forth growth both in our lives and our pastures. Happy spring! 

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Biosecurity and You

Think patience, practicality, prevention

Story by Macey Hurst for Cattlemen's News

Bovine Viral Diarrhea Virus (BVDV), Trichomoniasis, Johne's Disease and Bovine Respiratory Disease (BRD) are just a few of the many illnesses farmers and ranchers encounter across the beef industry. However, one simple and incredibly effective tool is available for producers to use to combat these issues—biosecurity. Missouri Department of Agriculture team members Dr. Larry Forgey, laboratory director, and Dr. Sarah Reinkemeyer, state epidemiologist and district veterinarian, have advice for those hoping to maximize biosecurity on their operations.

"Biosecurity is important in order to prevent the spread of disease and maintain herd health," Reinkemeyer said. "Any disease within a herd can be very detrimental to the production status of that herd."

Forgey echoed those thoughts, noting the beef industry needs to take special care when it comes to securing their operations. Biosecurity is similar among species, although many pastures, entrances, and points of contact make beef security especially difficult.

In fact, a number of factors make cattle ranchers susceptible to biosecurity issues. "Mov-

ing new animals into the herd, visiting other farms or ranches frequently, having a lot of visitors to your farm or ranch, mixing your cattle with other cattle and then putting them back with the herd, and, one overlooked example, attending a livestock show or cattle sale," Forgey said.

In addition to the animals that could expose livestock to diseases, human visitors can also be carriers.

"As producers, we must consider everything and everyone that comes onto our operation," said Forgey. "Anyone could have had contact with a disease that we do not have on our farm or ranch and could introduce that to our herds. This would include hired or volunteer help, visitors, feed deliveries, construction workers, utility workers, or anyone else coming onto farm or ranch for any reason."

While both professionals emphasized the negative effects of comingling cattle, Reinkemeyer added that sharing equipment without proper disinfection can make way for diseases. In addition, quarantine protocols should be taken seriously and incorporated into a biosecurity plan.

"Producers should strive to have a written biosecurity plan

for the farm, including the biosecurity protocols the farm is implementing on a day to day basis," Reinkemeyer said. "One reasonable strategy that may be considered within the plan is establishing a quarantine pen. New arrivals should be kept there and monitored for any signs of disease for at least three weeks. The quarantine pen works best when you can ensure no further nose-to-nose contact with other animals on the property."

This written and strategized plan should be developed after detailed risk evaluation, said both Forgey and Reinkemeyer. Even if the risk is perceived low, they said it is important to analyze the operation and form a plan of action to eliminate those risks. Once those plans are in place, it takes time and money to put them to work.

"It takes a lot of time to thoroughly evaluate what our risks are, identify which risks we can reduce or eliminate to mitigate risks, and put them into a plan," Forgey said. "Often times, following a biosecurity plan is not convenient, especially if we are in a hurry. Keep in mind that any disease that is new to your farm or ranch will be expensive and disruptive to any routine or profit."

Reinkemeyer added, "The placement of a biosecurity plan takes time and research into which practices can be put into place for your farm or ranch. The other kind of investment would be the monetary investment in items such as a quarantine pen, disinfectants and other items needed to implement a farm-

specific plan. To ease the stress, keep in mind that it is easier to prevent the disease than it is to control the disease."

Persistence and pragmatism are key pieces of advice Forgey and Reinkemeyer recommend for producers.

"Be patient and don't get frustrated with the process," Reinkemeyer said. "This is a change, so we want to make those changes practical. Do not hesitate to reach out to your veterinarian, extension agent or the Missouri Department of Agriculture for advice or opinions on your biosecurity plan."

Forgey advises beef producers make their biosecurity plan practical.

"If it is something that you can and will do every time, every day, it's more likely to help protect your herd," he said. "Plans sometimes sound like great idea, but when we put them into practice, we just need them to work. Be patient and keep working on it because risks change with time, so you'll need to evaluate plans regularly."

Patience, practicality and prevention are key words in tackling cattle diseases such as BVDV, BRD and Trich. Biosecurity is a big word with big effects, but it does not have to be a big challenge. Use the tips and resources offered by Forgey, Reinkemeyer and the Missouri Department of Agriculture to ensure disease prevention through biosecurity on every operation.





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It's Picking Time

Bull selection strategies that improve cattle operation profit potential

This time of year, cattle producers begin looking for a new bull. Patrick Davis, University of Missouri Extension regional livestock field specialist, has some advice for cattle producers.

First, determine your cattle operation's direction or goal and how the new bull fits into that plan. Bull-to-cow ratio is also important. A good rule of thumb is the number of cows a bull is exposed to during the breeding season should equal his age in

months up to 2 years. Bulls older than 2 years can be exposed to 25 to 35 cows comfortably.

Next, select phenotypically sound bulls. Pay close attention to feet, legs and hip structure making sure bulls are structurally correct and move with ease. Bulls need adequate muscle and rib shape. Bulls that show these features have grown well and should pass those positive traits onto their progeny. In addition, structurally sound bulls should stay in the herd longer, resulting in more return on investment.

Once potential herd bull prospects are determined phenotypically sound, evaluate bulls genotypically by using expected progeny difference (EPD) information. Davis suggests purchasing bulls with genomically enhanced EPDs. A bull with these EPDs has improved accuracy, which means the bull's progeny is more likely to perform like the EPDs show.

Bull EPD Evaluation Pointers

Are bulls being bred to cows or heifers? Pay close attention to the calving ease direct (CED) EPD when bulls are bred to heifers. Bulls bred to heifers need a high CED since that increases the chance that progeny will be born unassisted. Visit with your local MU Extension regional livestock field specialist on proper CED range for heifers.

Are your calves sold at weaning or do you retain ownership to slaughter? Progeny sales point influences EPD use during bull selection. If calves are sold at weaning, place selection pressure on the weaning weight EPD without sacrificing other traits. However, if calves are retained to slaughter, place selection pressure on growth and carcass trait EPDs without sacrificing other traits.

Use multi-trait selection index EPDs. A multi-trait selection index EPD is a combination of multiple traits and their economic values into one dollar value that is used for selection purposes. Using a selection index EPD that properly incorporates economically relevant traits into your cattle operation improves progeny and operation profit potential.

Use EPD percentile rank information in evaluating bull EPDs. EPD percentile ranks is probably the easiest way to determine where your potential bull prospects rank in relation to the rest of the bulls in the breed for traits of importance. The scale is from 1 to 99 percent. Bulls more favorable for a trait are closer to 1 percent. Bulls least favorable for a trait are closer to 99 percent. Bulls that you select should have EPDs close to 1 percent for traits that are important to your cattle operation.

Use your eyes and mind to select bulls that phenotypically and genotypically improve the profit potential of your cattle operation.

—Source: University of Missouri Extension release.

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MANAGEMENT MATTERS

Reap the Benefits of Forage Variety

Consider native warm-season grasses to complement tall fescue

Native warm-season grasses can yield more forage than traditional tall fescue, says Tim Schnakenberg, University of Missouri Extension agronomy specialist.

Fans of native-warm season grasses like to use big bluestem, switch grass, Indian grass and eastern gamagrass for hay and pastures. The grasses also serve as a wildlife habitat. “These grasses are superior at minimizing fertilizer and lime expense, are highly palatable, and provide a large quantity of forage at needed times,” says Schnakenberg.

Some producers say the cost of establishment outweighs benefits. They report that stands did not develop quickly, or at all. Some stands died out after a few years.

“Tall fescue is the dominant forage in Missouri, and it should be,” Schnakenberg says. “We have an outstanding cow-calf industry because of tall fescue’s palatability, durability, ease of establishment, and fall and winter grazing capability that can majorly offset the expense of feeding hay. However, we miss some huge benefits if we depend solely on fescue.”

Missouri beef producers lose about \$160 million yearly in production from the toxic endophyte in Kentucky 31 fescue, he says. Fescue makes quality hay in Missouri at key times. But weather and fescue’s natural speed of maturity often mean untimely harvest, resulting in loss of energy and protein.

A growing number of southwestern Missouri farmers are turning to warm-season grasses to complement their fescue fields. “These do not have endophyte issues and can be hayed at more suitable times,” Schnakenberg says. In many cases, these grasses prove more productive than fescue for pasture and hay. One southern Missouri producer averaged 5.3 dry tons of hay per acre from two cuttings on a 2018 big bluestem stand. The stand was part of a demonstration project in cooperation with the NRCS+MU Grasslands Project and the Missouri Department of Conservation.

This is consistent with trials in two other states. A University of Kentucky study found that tall fescue plots averaged 3.1 tons per acre. Native warm-season grass plots averaged 3.9 to 5.3 tons per acre per year, depending on the species. A University of Tennessee study reported that big bluestem plots yielded 5.6 tons per acre using less fertilizer than fescue.


Missouri producers who successfully converted to native grasses credit a chemical, imazapic, commonly found in Plateau® and Panoramic® herbicides.


These products can be used safely, even during the establishment year, on new and old stands of big bluestem and Indian grass. Weed control in the first year leads to a higher success rate.

Once established, stands need care. If used for grazing, use a management-intensive grazing system. Keep post-grazing heights high and move cattle off pastures for rest periods. “Native grasses cannot be managed the same as fescue,” Schnakenberg says. “If someone intends to manage a stand like their fescue stands, we do not recommend considering these grasses.”

For hay, leave a high stubble so carbohydrate storage in the lower stems is not compromised. Contrary to common thinking, this does not lower overall yield.





Schnakenberg recommends that producers make the switch on small acreages to lower risk.

—Source: University of Missouri Extension release. 



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*USDA estimate



Efficiency Matters

The skinny on cow weight maintenance, forage intake

By Donald Stotts

Weight gain is almost a national obsession the first few months after the new year, and while humans may be most interested in dropping pounds, cattle breeders are more concerned with helping cows maintain a good body weight at a reasonable cost.

Animal scientists with Oklahoma State University's Division of Agricultural Sciences and Natural Resources (DASNR) have long been paying attention to factors that affect cattle efficiency, and this past year decided to take a closer look at total calories a cow consumes relative to her calf's weaning weight.

"In this experiment, we set out to determine if we could potentially reduce annual cow maintenance costs with Her-

ford-sired black baldy cows compared to straight bred Angus cows," said Dave Lalman, Oklahoma Cooperative Extension Service beef cattle specialist with DASNR's department of animal and food sciences.

"While there is substantial older data available on the question of heterosis, there is not much data available on the influence of crossing a breed known for lower feed intake – the Hereford breed – with the popular Angus breed," he said.

First, a bit of background: Considerable research exists indicating that a simple crossbreeding system can result in improved cow longevity and fertility compared to a purebred or straight bred system. In fact, years of crossbreeding studies conducted at the Meat Animal Research Center



An Oklahoma State University study showed black baldy cows averaged a better body condition score than straight Angus cows.

—Photo by Joann Pipkin.

showed an average improvement in weaning weight per cow when a simple two-breed rotation was used with bos Taurus breeds such as Hereford and Angus. This advantage is known as heterosis or hybrid vigor.

Another potential benefit of crossbreeding, and one often

overlooked, is to select the second breed in the crossbreeding system based on inherent characteristics that might reduce costs or improve income in the operation. The idea of selecting breeds that complement one another in this way is known as "breed complementarity" in

CONTINUED ON NEXT PAGE

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DOSEAGE 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

SUPPLEMENTATION PROGRAM

BULLS	3 times per year
BEEF COWS	4 weeks before breeding 4 weeks before calving
DAIRY COWS	4 weeks before calving 4 weeks before insemination at dry-off
CALVES	at birth at 3 months and/or weaning
HEIFERS	every 3 months – especially 4 weeks before breeding
(program gives planned dates that can be varied to suit management programs)	

DOSAGE TABLE			
ANIMAL WEIGHT (lbs)	CALVES UP TO 1 YEAR 1 mL/100 lb BW	CATTLE 1 - 2 YEARS 1 mL/150 lb BW	CATTLE ≥ 2 YEARS 1 mL/200 lb BW
50	0.5 ml	-	-
100	1 ml	-	-
150	1.5 ml	-	-
200	2 ml	-	-
300	3 ml	-	-
400	4 ml	-	-
500	5 ml	-	-
600	6 ml	-	-
700	7 ml	-	-
800	-	5.3 ml	-
900	-	6 ml	-
1000	-	6.6 ml	5 ml
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1200	-	-	6 ml
1300	-	-	6.5 ml
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EFFICIENCY MATTERS FROM PREVIOUS PAGE

the animal breeding world.

The OSU researchers broke the study into two phases: Maintenance energy requirements and voluntary feed intake. How well do black baldy cows retain body condition compared to Angus cows? What is the forage intake difference between the black baldy cows and the straight Angus cows?

"As cattle producers know, cow-calf operations need to have pregnant cows that are able to maintain a good body condition through the relatively harsher winter months while also providing needed nutrients to the as-yet-unborn calf inside them," Lalman said. "If the cows can do that while consuming fewer nutrients, the reduction in input costs provides an advantage in annual cow costs."

The OSU study showed the black baldy cows averaged a better body condition score than the straight Angus cows. In fact, the crossbred cows maintained better body condition throughout both phases of the experiment.

"On average, we measured just under 2 pounds per day less moderate quality forage intake in the crossbred cows," Lalman said. "On an annual basis, the black baldy cows would be expected to consume about 725 pounds less forage."

And that has led to an interesting consideration for cow-calf producers: Some of the more productive native range in Oklahoma produces about 3,000 pounds of forage per acre. However, studies by rangeland ecologists have led to recommendations that cattle producers should aim for only about 25 percent consumption of available forage by livestock per acre. Do the math: 25 percent of 3,000 pounds is 750 pounds.

"By using the crossbred female and taking advantage of lower feed intake and maintenance requirements of Hereford cattle in our crossbreeding system, we should be able to increase stocking rate or reduce the number of acres required by about one acre per cow-calf unit," Lalman said.

The OSU animal scientist stressed nobody is saying that raising purebred animals is a bad thing as there are many reasons to do so. However, simple, planned crossbreeding systems using breeds that complement one another can reduce the cost of maintaining a cow herd and increase ranch output through improved longevity and fertility.

"Raising livestock is not, nor has it ever been, a one-size-fits-all solution," Lalman said. "Cow efficiency is one more important feature in the cattle producer's toolbox, relative to the decision-making process."

—Oklahoma State University release.

2 Quick Management Tips

1 Good fences make good neighbors. Summer pastures should have had fences checked, repaired or replaced by now.

2 Check equipment (sprayers, dust bags, oilers, haying equipment) and repair or replace as needed. Have spare parts on hand; downtime can make a large difference in hay quality.

—Source: Dale Blasi, Kansas State University Extension.



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DEALER INQUIRY INVITED

Hands-On Learning Prepares Students for the Future

Miller FFA members get a taste of meat processing

By Kelsey Harmon for Cattlemen's News

Most educators believe that hands-on learning is crucial to students' ability to think critically and solve problems. In Miller, Missouri, the school's FFA chapter operates Cardinal Pride Meats, the only state-inspected meat processing facility inside a high school in the state.

In meat science class, a two-hour dual credit class through Missouri State University, students learn the basics of Hazard Analysis of Critical Control Points (HACCPs), carcass fabrication, equipment operation and meats evaluation. Students are responsible for all aspects of processing — from fabrication, processing and cooking to curing, smoking and record keeping. During processing days it is not uncommon for other classes to spend time in the lab.

"We started Miller FFA Cardinal Pride Meats because we wanted to offer our students authentic instruction, real-life experiences and give them job-ready skills," says Lyle Whittaker, agriculture education teacher and FFA advisor. "Profits from meat sales help fund our chapter activities."

Cardinal Pride Meats was set into motion in 2004 when Miller school district discontinued the industrial arts program, and the school's woodshop became available for use by the agriculture department. The school's agriculture teachers, Whittaker and Jay Shepherd, wanted to put the space to use and began researching and writing a Vocational Technical Enhancement Grant through the Missouri Department of Elementary and Secondary Education. The grant had to be written around a high-demand occupational area identified by the state, which in this case was poultry, fish and meat cutters.

Once Shepherd and Whittaker secured the \$45,000 grant, they began renovating the woodshop into a meats laboratory. This included purchasing a meat band saw, 100-pound capacity mixer and grinder, stainless steel sink and tables, 600-pound capacity smoker, vacuum pack machine, meat slicer and startup consumable supplies. They also constructed a walk-in cooler from an existing closet and built a wall to create an adjoining classroom.

Getting approved for a state inspection required Cardinal Pride Meats to submit written and approved Hazard Analysis of Critical Control Points (HACCPs), Standard Sanitation Operational Procedures (SSOPs) and Standard Operating Procedures (SOPs). These programs are designed to reduce biological, chemical and physical hazards and also to establish testing and verification procedures while processing. To ensure food safety, Cardinal Pride Meats has to meet a number of mandatory programs of inspection that require pre-operational inspection of equipment, record keeping and verification procedures. Records ensure temperature control at processing and cooking to reduce pathogenic growth of bacteria.

After a lot of planning, paperwork and plain hard work, Cardinal Pride Meats opened in January 2005. Today, items sold by students are further processed from USDA-inspected boxed product from a meat wholesaler. These products include steaks and chops, smoked hams and turkeys, summer sausage, bacon, smoked brisket and pulled pork.

"(Since) these procedures and standards are very time-consuming, and our main goal is education and not a profit-



Miller, Missouri, FFA Advisor and Agricultural Education Teacher Lyle Whittaker instructs students in the school's meat science class. Miller is home to Missouri's only school-housed, state-inspected meat processing facility. —Photo by Kelsey Harmon for Cattlemen's News.

able business, for the last two years we've operated under retail exempt and custom processing," Whittaker explains. "Basically what we do is conduct a meat sale in the fall as a chapter fundraiser."

Cardinal Pride Meats also does a limited amount of beef and pork custom processing for local producers when it fits into the instructional calendar. These custom processed meats differ in that they are not inspected and must be stamped "not for sale." Custom processed meat goes back to the producer for personal use.

Whittaker says Cardinal Pride Meat's biggest obstacle has been meeting the demand for products and the time-consuming aspects of inspection.

"We have learned to say 'no,'" Whittaker says. "If I said 'yes' to every call we get for custom exempt processing, we wouldn't have time to teach any other aspect of agriculture."

Although the chapter has encountered a number of obstacles through the program, many benefits also exist.

"I would say the biggest outcome is hands-on education," Whittaker says. "When students complete the class they have extensive knowledge of the meat industry and processing."

He says Cardinal Pride Meats allows the agriculture teachers to connect science with action and that as a result, many Miller high school graduates go to college and major in agriculture, some of which attend college on meats judging scholarships.

With no real substitution for hands-on, authentic learning, Miller High School is enriching student's education while preparing them for careers in the agriculture industry. For more information about Cardinal Pride Meats, contact agriculture teachers Lyle Whittaker at lwhittaker@millerschools.org or Emily Paul at epaul@millerschools.org. You can also connect with the Cardinal Pride Meats fall fundraiser by following the Miller FFA Facebook page.

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Dangerous Forage

High nitrate in hay killing beef cows in complex ways

Two years of abnormal weather changed plant growth, which changes livestock digestion. In the end, cows die.

The phrase, “It’s very complex,” kept popping up in a University of Missouri emergency teleconference of state and regional MU Extension specialists.

This winter, farmers found groups of cows dead, often on newly unrolled baled hay. In the worst cases, half the herd died. Often the first sign of trouble is 10 dead cows.

The MU Veterinary Medical Diagnostic Laboratory in Columbia, Missouri, diagnosed more than 200 deaths from nitrate poisoning in the last month. The lab’s toxicology section head, Tim Evans, said it first: “It’s very complex.”

A bit later, MU Extension beef nutritionist Eric Bailey told of first aid to help nitrate-stricken cattle. Feed shelled corn to cows normally fed hay. “It’s very complex,” he adds.

Unusual weather the last couple of years set up this problem. Too much rain turned to too much drought. Hot weather turned very cold. Such extremes affect the biology of plant growth. Also, lots of pastures didn’t grow. That led to hay shortages.

Fertilizer and poultry litter make grass grow. Nitrogen enters the plant as nitrate. That adds growth and protein for hay fed to cattle. Nitrogen fuels a cow’s rumen, the first stomach in digestion. In the end, nitrogen creates protein, making meat.

Normally, more nitrogen on hayfields helps. More protein-rich hay grows healthy cattle.

When rains turn to drought, biology stops working. When plant juices stop flowing from roots to leaves, the raw nitrate stays in grass stems. When farmers bale nitrate-rich grass, the hay turns toxic.

What is normally a good practice of fertilizing grass becomes a bad practice. Who knew? As specialists said, “It’s very complex.” Many variables come into play.

The cow rumen needs nitrates to digest hay and make protein. Too much nitrate in hay stems overwhelms the digestive system. Toxins spill over into the blood.

This is where it gets more complex. An oversupply of nitrate ends up as nitrite. Nitrites prevent oxygen from binding with red blood cells. Without oxygen, animals die. That’s how nitrate-rich hay kills cows quickly.

All a farmer sees of that complexity are dead cows beside hay just unrolled.

Nutritionist Eric Bailey spoke up with a fix. Adding starch to the cow’s diet absorbs much of that extra nitrate in the rumen. Normally, farmers are advised to go slow adding corn to a rumen on a hay diet. At first, starch upsets rumen microbes.

In this unusual year, plain corn gives an answer. But adding a protein-rich supplement worsens the problem. Protein adds unneeded nitrogen. At first sign of trouble, take away any protein supplement.

Corn, a starch, speeds up digestion in the rumen. That moves toxic hay right on down the digestive tract.

At first sign of nitrate poisoning, which often can be death, remove bad hay.



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CONTINUED ON NEXT PAGE

DANGEROUS FORAGE FROM PREVIOUS PAGE

As a first step, farmers should test suspect hay for nitrates, says Craig Roberts, MU Extension forage specialist.

“Know your hay,” Roberts said. Know where it came from and whether fertilizer or poultry manure was used. Risks rise in hay made in drought. Hay detective work doesn’t come easy.

Farmers face a serious problem now. After two years of drought, not much hay was baled. Buying good hay becomes almost impossible. It’s hard to find.

County MU Extension centers may have quick-test kits left over from last summer’s droughts. A few drops of the acid turn dark blue on split stems of high-nitrate grass.

Blue indicates a quantitative test is needed.

Evans says quantitative nitrate tests report parts per

million. Less than 2,500 ppm seems safe.

More than 5,000 ppm means danger. At 10,000, watch out!

Evans says added problems come when cold fronts descend from the Arctic. Cattle sense weather changes in advance, and then they overeat, filling the rumen with forage for the cold spell. Even borderline toxic hay not causing trouble becomes potentially toxic in an overloaded rumen.

Too much nitrate in hay stems can overwhelm a cow's digestive system. Nitrate-rich hay kills cows quickly. Forage specialists advise producers to know their hay, where it came from and whether fertilizer or poultry manure was used. —Photo from Southwest Region University of Missouri Extension.

Pregnant cows near calving are vulnerable. Unborn calves die of nitrate poison. They lack oxygen.

Cows in poor condition suffer most. With low hay supplies and bad weather, cows started winter in lower body condition. Thin cows with less fat reserves are more vulnerable.

Roberts says toxin management includes watching each

cow. Weakness could be an early sign of poisoning. That warns of complex problems ahead.

Ask for help from veterinarians or extension specialists sooner rather than later.

The MU Extension guide “Nitrate Problems in Livestock Feed and Water” is available for free download at extension.missouri.edu/p/g9800.



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Ways to Stretch Cash Flow

Try these 13 tips to save money

By Robert Tigner and Austin Duerfeldt

Over time, negative cash flows will put farm and ranch businesses, and the lifestyle of the owners, at serious risk. The following suggestions for additions to cash flow are adapted from Iowa State Extension AgDecisionmaker C3-58, Farm Financial Management: 16 Ways to Stretch Cash Flow, written by William Edwards, retired extension ag economist.

1 Cancel or renegotiate leases that are unprofitable. Not all cropland is worth the same as other land. Rental rates should fit the productivity of the land. Flexible cash rents or a crop-share lease can be proposed in place of fixed cash rent.

2 Use financial reserves. These may include savings, liquid financial assets such as stocks or bonds. However, con-



Canceling or renegotiating leases that are unprofitable is one way to help stretch your cash flow. —Photo by Joann Pipkin.

sider the taxes that may accompany selling investments. Review current market prices and your basis to determine capital gains tax owed.

3 Sell current assets. These current assets include stored crops and market livestock. But don't simply sell off market livestock that might be discounted as they are not yet market ready since the discount could be too steep.

4 Use credit reserves or unused borrowing capacity. Analyze the decision to use more debt first and have a realistic plan to repay that borrowing.

5 Refinance debt by using equity. Lengthen repayment terms or refinancing loans with balloon payments. Again, look at the ability, if needed, to refinance the balloon payment.

6 Defer capital asset purchases. Sometimes making a purchase or leasing could reduce costs by lowering repairs that use more cash than the lease or purchase payment. Analyze carefully which strategy best reduces cash flow.

7 Use Farm Service Agency (FSA) guaranteed loans.

8 Use FSA low interest marketing loans. Placing grain under loan can be used to pay off high interest rate loans.

9 Increase non-farm earnings. Even if one member of the farm family is already working off the farm now, all may need to at least for a time.

10 Decrease non-farm and family living ex-

penditures. Set and use a family living budget. The budget needs to prioritize expenditures to those necessary such as utilities, food and health insurance. Defer expenditures such as vehicle purchases, vacations, recreation expenses and discretionary expenses.

11 Sell assets that aren't learning their keep. Farmland that is consistently unprofitable, machinery that costs more than custom work or assets that no longer have a use on the farm or ranch meet this definition. Consider selling them to raise cash. Funds gained from the sale can be used in a more productive manner such as paying down existing debt, or investing into an asset that will provide returns. Capital gains tax will be owed on any business property that is sold for more than its reported basis. For assets sold that were held longer than one year, that capital gains tax rate can be 0 percent, 15 percent, or 20 percent depending on your taxable income and filing status.

12 Consider joint machinery ownership. This can work, but communication and periodic compromise may be necessary for success. Spending time in the beginning creating a written agreement can avoid unnecessary fallouts later, and periodic reviews of the agreement insure that it remains relevant.

13 Seek outside investors or lenders. Think through lending to or borrowing from family. It can be a difficult situation for all involved.

—Source: University of Nebraska Extension release.



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<i>Cooperia oncophora</i> – Adults and L ₄		<i>Bunostomum phlebotomum</i>	150 days
<i>Cooperia punctata</i> – Adults and L ₄		<i>Cooperia oncophora</i>	100 days
<i>Cooperia sumabada</i> – Adults and L ₄		<i>Cooperia punctata</i>	100 days
<i>Haemonchus placei</i> – Adults	Grubs	<i>Haemonchus placei</i>	120 days
<i>Oesophagostomum radiatum</i> – Adults	<i>Hypoderma bovis</i>	<i>Oesophagostomum radiatum</i>	120 days
<i>Ostertagia lyrata</i> – Adults		<i>Ostertagia lyrata</i>	120 days
<i>Ostertagia ostertagi</i> – Adults, L ₄ , and inhibited L ₄		<i>Ostertagia ostertagi</i>	120 days
<i>Trichostrongylus axei</i> – Adults and L ₄	Mites	<i>Trichostrongylus axei</i>	100 days
<i>Trichostrongylus colubriformis</i> – Adults	<i>Sarcoptes scabiei</i> var. <i>bovis</i>	Lungworms	
		<i>Dictyoaulus viviparus</i>	150 days

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WARNINGS AND PRECAUTIONS

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PASTURE PLANNING

Pasture Quality Improvement

Add legumes to fescue pastures for better profits

Cattle producers see more profit when they add legumes to fescue pastures and manage grazing systems properly, says Patrick Davis, University of Missouri Extension specialist in livestock.

Fescue remains the hardy mainstay of southwest Missouri pastures. Adding legumes gives fescue fields more nutritional punch and profit.

Davis says proper management is key to making grasses and legumes work well together. This begins with a management intensive grazing system (MIG).

Under MIG, cattle graze on forage between 3 to 8 inches tall. Cattle begin grazing at 8 inches and eat forage to 3 inches followed by paddock rest until the forage reaches original height. This strategy promotes stronger roots. Cattle graze the best quality forage. Forage in this range also contains less ergovaline, a toxic ergot alkaloid. The highest concentrations of ergovaline are in the bottom 2 inches of the plant and seed heads.

Add legumes into fescue pastures for other benefits. Pasture quality improves, and the amount of toxic fescue is diluted when mixed.

“Proper incorporation and management of legume species, including red and white clover, or lespedeza is important for their persistence into your fescue sod,” says Davis.

Two seeding options are frost seeding or no-till drilling. Contact your local MU Extension agronomy field specialist for advice on seeding methods or download MU Guide G4652 from <https://extension2.missouri.edu/g4652>.

To persist, legumes need time to grow without fescue competition and time to delay grazing pressure. Proper MIG allows both, says Davis. After grazing, allow a 4- to 5-week rest period for young legume plants to improve chances of persistence.

Before planting, test soil. Make sure soil pH is greater than 6.0 for red and white clover and over 5.5 for lespedeza plantings. The local MU Extension Center and agronomy field specialist can advise on proper soil testing procedures and fertility for growing these legumes.

“Legumes are higher quality than grasses because of the lower stem-to-leaf ratio. This results in lower neutral detergent fiber and increased protein concentrations. This combination improves forage intake, cattle performance and operation profit potential,” says Davis.

Total pasture legume coverage should be approximately 30 percent. If coverage is above 50 percent, then cattle bloat potential increases.

Davis gives these tips to reduce cattle bloat potential:

- Restrict grazing and allow cattle time to adapt to the legume field.
- Provide cattle dry hay before turning them out to legume pasture to reduce legume intake.
- Provide poloxalene to cattle through bloat blocks or other ways of supplementation.

Contact the MU Extension livestock or agronomy field specialist in your area for more information. You may also find more information on how to improve your grasslands at <https://extension2.missouri.edu/programs/nrcs-mu-grasslands-project>.

—Source: University of Missouri Extension release.

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MANAGEMENT MATTERS

Preconditioned Calf Program Helps Arkansas Cattle Producers

Interested cattlemen can benefit from going green

Story by Shane Gadberry

The University of Arkansas Division of Agriculture is working with producers, health and marketing segments of the cattle industry to highlight Arkansas cattle meeting best management practices that promote life-long calf health and performance. The program is called the Natural State Preconditioned Calf Program, but it's picked up the slogan "GoGREEN" from the green program tag that qualifying calves receive for marketing.

The program was launched in the summer of 2018, and agents across the state of Arkansas are educating producers about preconditioning calves and program requirements. The program is very similar to many other Vac-45 type programs.

To participate in the GoGREEN program, producers must be BQA-certified, so agents are offering BQA classes. Producers can also complete BQA certification online at www.bqa.org.

In addition to BQA certification for ranch operators, calves must meet a set of minimal processing and vaccination standards that include the first and second (booster) shot requirements for respiratory disease vaccines and blackleg vaccines. Calves must also be treated for internal parasites

and external parasites as needed. Bulls must be castrated and completely healed. Horns must be completely removed and healed. Heifers cannot be pregnant at time of marketing, and no cattle can be marketed within any product withdrawal period.

A 45-day minimal holding period between weaning and marketing also exists. This is a good time to train calves to drink from a water trough and eat supplemental feed from a feed trough.

The health history of these calves is documented on a qualifying form, which serves as the producers affidavit that all program guidelines were met. The qualifying form and attached copies of product purchase receipts are supposed to go with the calves to market so buyers know who raised the calves and the history.

We're teaming up with auction markets by asking them to use the program however they see it benefiting their markets, sellers and buyers. The main thing we ask is if the program tag shows up at their markets, relay the information. Request the qualifying form from the seller, and make the program and history and copies of the qualifying form available to buyers.

We're also teaming up with health product providers. Although the program does not require a veterinarian to administer the health products, producers are encouraged to work with their veterinarians to determine the best solution that meets or exceeds the program minimal standards.

For example, the program does not require a modified live or killed vaccine history because of possible reproductive risk in introducing modified live into naïve herds. A veterinarian can determine if and how modified live vaccines can be safely used. Also, producers that like to work with all products from the same company may find that they can co-mar-

ket cattle for meeting other programs. Producers should visit with their pharmaceutical reps about preconditioning programs and guidelines.

Arkansas producers can enroll in the program through their county extension offices and pick up tags from the county office. The general enrollment is \$10 for three years, and each tag costs \$2.

For more information about the program, visit the program website at www.uaex.edu/go-green, or Arkansas residents can contact their county extension agents.

—Source: Shane Gadberry, University of Arkansas.

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MANAGEMENT MATTERS

Beef Up Your Cattle's Resume

Missouri Steer Feedout deadline May 10

The 2019 Missouri Steer Feedout will provide an excellent opportunity for cow-calf producers to pad their cattle's resume. That is if the post-weaning feedlot performance and carcass data turn out favorably.

"More and more, we talk up the need for feeder calf raisers to take a proactive approach in marketing their cattle. Steer feedout results can be a valuable resume piece along with genomic results from half-sibs, expected performance differences (EPD) of recently used sires and other feedlot results," said Eldon Cole, livestock specialist with University of Missouri Extension.

A resume takes time and effort to develop, but the returns can be significant financially.

"After the feedout data reveals the worth of the cattle regarding gainability, health carcass quality grade, yield grade and overall profitability, your next step is to share it with your market representative or a program of your choice," said Cole.

The next Missouri Steer Feedout begins June 4 when fall and late summer 2018 steers are assembled and sent to southwest Iowa for finishing.

Pickup points are at Paris and Joplin Regional Stockyards, Carthage. Entry deadline is May 10.

An entry consists of five or more steer calves born after July 1 with a fee of \$20 per head payable by the deadline. All other expenses will be deducted from steer receipts after the feedout.


The Missouri Steer Feedout is conducted in cooperation with the Tri-County Steer Carcass Futurity, (TCSCF), Lewis, Iowa; University of Missouri Extension; and the Missouri Cattlemen's Association.

The program is designed for both commercial and purebred breeders. Some purebred breeders encourage their bull buying customers to make entries.

For entry forms and more details, go to <http://extension.missouri.edu/lawrence>.

—Source: MU Extension release. 🐄







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MANAGEMENT MATTERS

Mind Your Magnesium

Preventing grass tetany in lactating beef cows this spring

By Karla H. Jenkins

As spring nears and grass begins to turn green, producers are anxious to get cows out to grass. However, cool season predominate areas tend to have lush spring growth that can lead to grass tetany in cows. While treatments exist for cows caught early, prevention is always the best policy.

Grass tetany occurs when circulating Magnesium (Mg) is low in the beef animal. Symptoms include staggering, convulsions, excitability, twitching, and it can be fatal. While it can affect growing cattle, it generally affects older lactating cows. The Mg requirement in the pregnant cow is 0.12 percent of the diet on a dry matter basis and jumps to 0.2 percent with lactation. Moreover, the Mg in colostrum is three times what it is in the milk the rest of the lactation.

Additionally, unlike some other minerals, Mg is not stored and mobilized in the tissues for times when it is deficient in the diet. Magnesium is absorbed across the rumen wall, and how much Mg is circulating in the blood is highly dependent upon how much was consumed.

In addition to the fact that the Mg requirement increases with lactation, if the feed is high in potassium (K) or nitrogen (N) as many lush growing forages can be, then Mg absorption can be compromised as well. Cool, cloudy days associated with wet springs often increase the risk of grass tetany issues.

To help prevent issues with grass tetany, producers should start providing a high-Mg mineral to cows about a month before turning out on lush pasture to get them used to consuming it. Continue to provide high-Mg supplement until grass starts to elongate and mature and the risk of grass tetany is low. While providing high-Mg mineral helps reduce the incidence of grass tetany, producers should talk to their local veterinarians and have a treatment plan in place for cows who do succumb to grass tetany, as treatment must take place quickly in those cows.

—Source: Karla H. Jenkins is with UNL Cow/Calf Systems and Stocker Management.

Cool, cloudy days associated with wet springs can increase the risk of grass tetany issues in beef cows. To help prevent problems, provide a high-magnesium mineral to cows about a month prior to turnout on lush pasture. —Photo by Joann Pipkin.



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PASTURE PLANNING

Three Tips to Get More Hay

Remember: Put back what you take off

By Rebecca Mettler for Cattlemen's News



Mother Nature hasn't been the least bit forgiving lately. The four-state area is coming off a particular rough winter that followed an extremely dry summer and fall. With that said, beef producers are rejoicing in spring—even though it was late in coming—and are likely jumping at the chance to get into the hay field to replenish their hay stockpiles.

Here are three tips for boosting hay production this year to make the most of what Mother Nature will provide.

1 Focus on Fertility

The key to fertility is to put back the nutrients taken during hay harvest, according to Tim Schnakenberg, University of Missouri Extension regional agronomy specialist located in Stone County.

It's not uncommon for Schnakenberg to evaluate a soil test submitted by a producer that shows soil nutrients are depleted. For every ton of fescue hay taken off of a field, 45 pounds of potash are removed. Over time, the removal depletes the soil nutrients if fertilizer isn't applied and results in lowered yields and added weed pressure.

"You just can't compromise

fertility when you are wanting to make hay, regardless of the forage species," Schnakenberg said. "Your fertilizer dollar usually pays off. You usually get back what you put into it."

From the standpoint of fertility, Schnakenberg often sees producers put a lot of emphasis on applying nitrogen. However, phosphorous and potassium levels must be addressed, too.

"Nitrogen is the icing on the cake," he said. "Phosphorus and potassium are needed to build the cake. You have to build the cake before you can ice it."

The law of diminishing return applies to nitrogen application if phosphorus and potassium aren't addressed. Phosphorus is needed for root development and potassium helps build the structure of the plant, which are obviously both essential to growing a healthy stand of hay.

2 Look to Renovate

Schnakenberg believes that 2019 might be the year to consider renovating hay fields if the stand is in poor enough shape. When evaluating the forage variety to come back with, Schnakenberg urges producers to consider introducing a warm-season grass variety.

"In our area we are missing

something, especially in hay production because we've struggled over the years to harvest good quality fescue on time," Schnakenberg said. "The climate in Missouri is not conducive for harvesting high-quality fescue hay."

Instead, an addition of a warm-season grasses, including bermudagrass and crabgrass, or native warm-season grass species such as big bluestem or Indiangrass, can provide a better window for hay production to get away from the late-spring rains that plague fescue hay harvest.

"You can retain the hay quality in a warmer environment with warm-season grasses," Schnakenberg said.

Native warm-season grasses can be very productive compared to cool-season varieties with nearly double the tonnage and good quality if harvested in the boot stage. Native grasses must be managed properly and cannot be abused with overgrazing. Native species can be planted from April through June.

Bermudagrass, another warm-season grass option, is also very productive but requires a lot of fertility to maintain. This variety can be planted late April through May.

Schnakenberg says there's still time to introduce crabgrass into a cool-season grass stand in late April, and it's not that expensive to establish.

If considering renovation, Schnakenberg recommends

that producers start small, say 15 or 20 acres at a time since a lot of producers don't have the land resources to renovate too much at one time.

Bottom line, producers need to take the time to evaluate the stand. If a full renovation isn't needed, but the grass stand needs beefed up, plan to come in around the first of September and drill fescue and/or orchardgrass seed, or red clover seed to boost next year's hay production in cool season fields. For producers with warm-season grass stands, drilling wheat or triticale in the fall will provide some early spring forage.

3 Weed out Weeds

"I do think that weed control may be a bigger issue this year," Schnakenberg commented.

Droughts have a way of weakening a stand of grass and allowing weeds to enter. Producers need to watch for weed pressure, especially if the field was used as a cow pasture over the winter. Schnakenberg predicts that some hay fields won't be as thick as they once were, so added attention may be needed.

A little optimism is necessary

While the later start to spring has Schnakenberg a little nervous, not all is lost because the season can catch back up in a hurry. After all, aren't farmers and ranchers the eternal optimists of the world; we plan for the worst but hope for the best!

Stay on top of fertility and weed control to get in shape for the forage growing season. And, have hay equipment greased and waiting for the first dry spell in the weather. The first cutting of fescue hay can be harvested as early as late April to capture fescue in its optimal high-quality stage of growth.

"Take a few risks to get hay harvested early," Schnakenberg said. "The quality will be so much better. You will get less tonnage, but higher quality. Then 40 to 45 days later take a second harvest when some people are starting their first. You will have two harvests of good quality forage instead of one harvest of lower quality."



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MIG 101: The Basics

Reduce erosion, improve water quality

By Kelsey Harmon for Cattlemen's News

Managing grassland resources for long-term sustainability, it's what management intensive grazing (MIG) is all about. The approach uses a number of grazing systems where livestock are allowed to graze only a small portion of a pasture or paddock while other areas are rested for plant recovery.

Mark Kennedy, Missouri Forage and Grassland Council (MFGC) and Grazing Lands Conservation Initiative (GLCI) grazing specialist, discussed MIG in late February at the annual southwest Missouri Spring Forage Conference in Springfield, Missouri.



Mark Kennedy

Kennedy started the session by setting three main objectives of grazing management. The first is for grazing animals to take one large bite or mouthful off as many plants in the pasture as possible. The second objective is to remove the animal from the pasture before any regrowth occurs or by the time no more than 50 percent of that pasture has been harvested by the grazing animal. And the third objective is to have enough pastures or paddocks in the grazing system to give the plants sufficient recovery.

Kennedy compared a pasture to a solar factory. Most factories have a warehouse for times when demand exceeds production capabilities so that they can pull from that warehouse to continue filling orders. A plant is set up in a similar way. What is above ground functions as the fac-

tory, and the lower crown, rhizome, stolons and upper part of the root functions as the warehouse. When the plant is manufacturing more carbohydrates than it needs, it fills its warehouse for times when it needs more energy than it can produce, or the plant has to go dormant due to drought or the winter.

Kennedy said carbohydrates are produced during the daylight in the growing season by the plant leaves and then stored in the stems. Perennial plants must have stored energy to survive the winter, survive being grazed too hard and to regrow in the spring. The amount of plant residue left affects the root system, health of the plant and the rate of photosynthesis. When more leaves are left on the plant photosynthesis, water conservation and livestock intake increase. As a result, it is important for producers to control stubble height. This means scheduling recovery time between grazing periods for plants to replenish carbohydrates. Proper recovery time helps leave enough good leaf area for photosynthesis, increase vegetative reproduction and will keep roots grow-

ing between grazing periods.

A common problem, overgrazing is taking grass too short and bringing animals too quickly to graze before proper plant recovery can occur. Kennedy said producers should consider that the root system is almost a mirror image of the top growth. When grass is overgrazed the root system is also pruned. He suggested producers implement a take half, leave half rule: They should not take more than 50 percent off of the top of the plant.

"When you take a pasture too short and graze it into the ground you lose four to five times the soil per acre, per year, which is not sustainable," Kennedy said. "Plants are the best erosion control device ever created."

Overgrazing also has significant impacts on water conservation. "When we do a good job with pasture management, maintaining 95 percent ground cover, only 10 to 15 percent of annual rainfall is lost to runoff, and the rest goes into the ground," Kennedy said. "Overgrazing

CONTINUED ON NEXT PAGE



Carrying capacity of pasture is determined by four factors:

$$\text{Carrying Capacity} = \frac{\text{Forage Production} \times \text{Seasonal Utilization Rate}}{\text{Daily Intake} \times \text{Length of the Grazing Season}}$$

MIG 101: THE BASICS FROM PREVIOUS PAGE

causes us to lose 70 percent of rainfall and negatively impacts livestock intake because too short of grass impacts the animal's ability to wrap their tongue around grass and consume each bite."

The Natural Resources Conservation Service (NRCS) standards on prescribed grazing for different classes of forages advises to start grazing cool season and to introduce warm season grasses at 6 to 10 inches tall, while grazing should end at 3 to 4 inches. For introduced native grasses, start grazing at 12 to 24 inches tall and end at 6 to 8 inches tall.

Suggested rest periods differ throughout the year because grass grows at different speeds seasonally. Kennedy said minimum rest recovery days on average for southwest Missouri should be 15 to 20 days in spring around April and 30 to 45 days in summer, provided adequate moisture occurs. During drought, days might need to stretch to 60 or even 90 days.

While overgrazing is an issue, Kennedy advised against grazing livestock on over mature grass due to the decreased quality and digestibility. He said producers can monitor manure piles to determine forage quality. For cows, consistency should be somewhere between a stiff batter and pumpkin pie. Piles that stack up like cakes indicate undigested fiber and that nutritional needs are not getting met.

Kennedy breaks down the three main types of grazing systems.

"In a continuous grazing system, livestock consume around 30 percent of forage grown or about 600 pounds out of every ton of forage," Kennedy said. "With man-

agement intensive grazing, we can get that utilization rate up to between 50 and 70 percent depending on how often you are moving those animals (consuming 1,000 to 1,400 pounds of every forage grown)."

A rotational grazing system with four to seven paddocks allows for about 75 percent plant rest, some control on grass heights, some plant stand persistence and does maintain enough ground cover to reduce erosion and improve water quality. Kennedy said this system also helps with soil erosion and water conservation, but he doesn't suggest going with the bare minimum unless using polywire fence to further subdivide paddocks.

For MIG with more than eight paddocks and grazing periods of one to three days, forage quality increases in addition to increased persistence and efficiency. Another benefit is uniformity of manure distribution over the landscape, which requires less fertilizer. Kennedy suggested keeping grazing periods less than five days to improve use and maintain good health and plant vigor.

Kennedy said the number of paddocks needed depends on the length of the grazing period desired and the producer's goals. Management intensive grazing periods begin at eight paddocks. Enough paddocks are needed to keep grazing periods less than a week and still manage the recovery period needed by the plant. He provided the above helpful formulas for producers. Kennedy concluded his presentation with this: the number of livestock is not causing the environmental issues, rather the time that animals are kept on pasture, hence the need for MIG. 🐄

ON THE CALENDAR

Lower Feed Costs, Improve Livestock Profits

Attend a Management-Intensive Grazing School in southern Missouri

Management-intensive Grazing (MiG) Schools in southwest and southern Missouri are set for 2019.

Producers who follow the MiG system (rotational grazing) manage for both the benefit of livestock and forage. Livestock graze in each pasture long enough to harvest the forage but are moved before eating too much of the leaf area.

The result is lower feed costs and improved forage production. That means more money in the pocket of the beef cattle producer.

"Cost control, not the amount of production, separates profitable from unprofitable farm operations. Through an MiG system, you can keep your cost down and production in most cases will increase, all while helping out the environment," said Tim Schnakenberg, agronomy field specialist with University of Missouri Extension.

In addition, attendees may be eligible to receive cost-share to help establish a MiG system. Attendance at a grazing school is one requirement to be eligible for state cost-share programs.

Upcoming Classes

- **Halfway**, April 23, 26, 27, 30, May 3 (evenings plus one Saturday). Contact: Dallas County SWCD at 417-417-345-2312, ext.3, or debbie.henderson@swcd.mo.gov
- **Hartville**, April 30-May 1. Contact: Carol Ellis at 417-741-6195 ext. 3, or carol.ellis@swcd.mo.gov
- **Mount Vernon**, May 7, 8, 9 (daytime). Contact: Lawrence County Extension at 417-466-3102 or ColeE@missouri.edu.
- **Neosho**, June 4, 5, 6 (daytime). Contact: Newton County SWCD at 417-451-

1007, ext.3 or email Tracy.White@swcd.mo.gov

• **Ozark**, June 11, 12, 13 (daytime). Contact: Christian County SWCD/NRCS at 417-581-2719, ext.3, or Henry.Rauch@mo.usda.gov

• **Squires**, June 17-19. Contact: Douglas County Extension Center at 417-683-4409

Additional classes are set for later this year in Houston, Greenfield, Marshfield, West Plains and Springfield.

Handouts include the Missouri Grazing Handbook, Forages and Weeds of Pastures, Watering Systems for Graziers, Electric Fencing for Serious Graziers and a grazing stick that includes a wealth of information on it. Lunch each day is included.

Registration contacts are also specific to each location. Each location has limited space, and the enrollment fee varies.

History of Success

Grazing schools started in 1995. Since that time, the schools have been held at various locations, dates and in different formats to meet the diverse needs of livestock producers.

To date, thousands of individuals have attended the schools to learn about the basic principles and practices of MiG. The schools have also helped livestock producers qualify for thousands of dollars in various cost-share programs through NRCS or FSA.

USDA - Natural Resources Conservation Service, University of Missouri Extension and the county Soil and Water Conservation Districts sponsor the MiG school. University of Missouri Extension specialists from southwest Missouri teach many of the sessions during the school.

Source – University of Missouri Extension. 🐄

Give 'Em a Little T-L-C

Pasture management following last year's drought

By Lisa Henderson for Cattlemen's News

Despite a winter that provided ample moisture, the effects of last year's drought might linger in your pastures.

"Last year's weather will definitely impact our pastures and hay fields this year, and possibly a year or two more," says Drexel Atkisson, area soil health specialist with USDA's Natural Resources Conservation Service in Springfield, Missouri. "The extremely dry soil conditions causes dormancy in the microbiology in the soil, and some of that biology may even die."

That view is shared by Travis Watson, precision area sales manager with Columbia, Missouri-based, MFA, Inc.

"When the growing conditions are right for grasses to wake up and begin growing this spring, the problems become apparent," Watson says. "Producers may see areas with thinner forage stands or areas where grasses have died out completely due to not having enough fertility."

The extreme cold temperatures seen across the four-state area this winter might have even made these problems worse.

"Simply, the plants just didn't have enough fertility in the soil to weather the drought and cold weather," Watson says. "In those areas affected, there will be less ground cover and winter annual weeds may have already established themselves."

Atkisson says that when moisture returns to those drought-stressed pastures, "there is a nutrient flush from the death toll and the reactivation of the biology. Many folks saw this last year in the fall, with excellent grass growth being the evidence. After this spike, there is a bit of a lull getting things back to normal. That may be realized this spring."

Both Atkisson and Watson remind producers that soil

health depends on plant health, and to exercise proper forage management.

"In some cases, weak and or diseased plants have been eliminated (due to drought-stress), so stands may not be as thick as they were," Atkisson says.

Producers are often inclined to use extra fertilizer to simulate forage growth, but be cautious.

"Always be sure to utilize a soil test to determine the appropriate amounts of phosphorous



Soil tests can help you build good soil fertility to ensure plants get the nutrients needed for proper growth and maximum production.
—Photo by Jillian Campbell.

and potassium," Atkisson says. "Too much is not good,"

Overapplication of fertilizer makes it more difficult for the plant biology to recuperate, he adds. "A soil without biology is dirt and will not support plant life, even with excellent fertility," Atkisson says. "Proper management and use of the forage this year will do much to shorten the duration of the ill effects of the drought."

Watson agrees that if you haven't tested your pasture soils lately, you should get samples pulled and sent off for evaluation soon.

"Soil tests give us a lot of information to help build good soil fertility so that plants have

most everything they need to grow and produce at max production," Watson says. "Just like a physical, these soil tests tell a producer what needs corrected."

A long-term pasture fertility program is recommended, and if implemented correctly, will build soil fertility while raising a crop. Watson says Nutri-Track is MFA's premium soil sampling service that covers

termine if replanting is necessary. The local USDA-NRCS office offers the publication Determining Pasture Trends, and completing the form for each pasture can help prioritize where to focus resources such as seed, fertilizer and extra management.

"Now is an excellent time to overseed with clovers to replace plants that may have been lost," Atkisson says. "Keep in mind the most return on investment will come from the best soils on the farm."

Your local NRCS office also offers information about your soils and can help identify where the best soils on your farm are located.

"Management is key, often what happens now sets the pattern for the whole farm for the year," Atkisson says. "Do not overgraze early in the year. Allowing animals grazing privileges too early will greatly reduce the whole year's production."

Atkisson emphasizes not to overstock. "Farms that are 90 percent stocked only have to mitigate adverse conditions three to four years out of 10," he says. "Those that are 80 percent stocked only one to two years out of 10. Those at or above 100 percent stocking rate are mitigating forage issues more years than not, and as many of us have experienced, mitigation is expensive."

To prepare for a potential drought, Atkisson says to promote plant health.

"There is a direct relationship between soil health and the amount of water our soils can infiltrate and hold for the plants to use in the future," he says. "Healthy soils do much of the mitigating for us. A healthy soil can absorb or infiltrate eight-tenths of every inch of rain that falls while soils that are suffering will only take in two-tenths of each inch."



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TRENDING NOW

More High-Quality Heifers

MU Southwest Research Center research holds promise

By Jordan Thomas for *Cattlemen's News*

Last fall, the University of Missouri Southwest Research Center in Mount Vernon announced a new plan for its beef herd. With support and input from our advisory board and key stakeholders regionally and nationally, we put in place a reproductive and genetic management plan to expand and improve the center's beef herd.

Currently, it is a crossbred herd, and it will continue to be. However, the breed composition, sire selection criteria and heifer retention criteria have changed. The center has begun using maternally oriented Red Angus genetics to produce replacement heifers with AI, and growth and performance-oriented crossbred sires to produce terminal calves.

To do this, we are taking advantage of technologies for estrus synchronization, timed AI and genomic-based selection. Heavy emphasis will also be placed on selecting and retaining animals that can excel on a fescue forage base.

In early December, we hosted an open house and timed AI demonstration for area beef producers. Eldon Cole, Jared Decker and I shared information about the Show-Me-Select Replacement Heifer Program, using EPDs to make selection decisions, and implementing an estrus synchronization and AI program. The center's heifers were set up with estrus synchronization to receive timed AI following the program that morning.

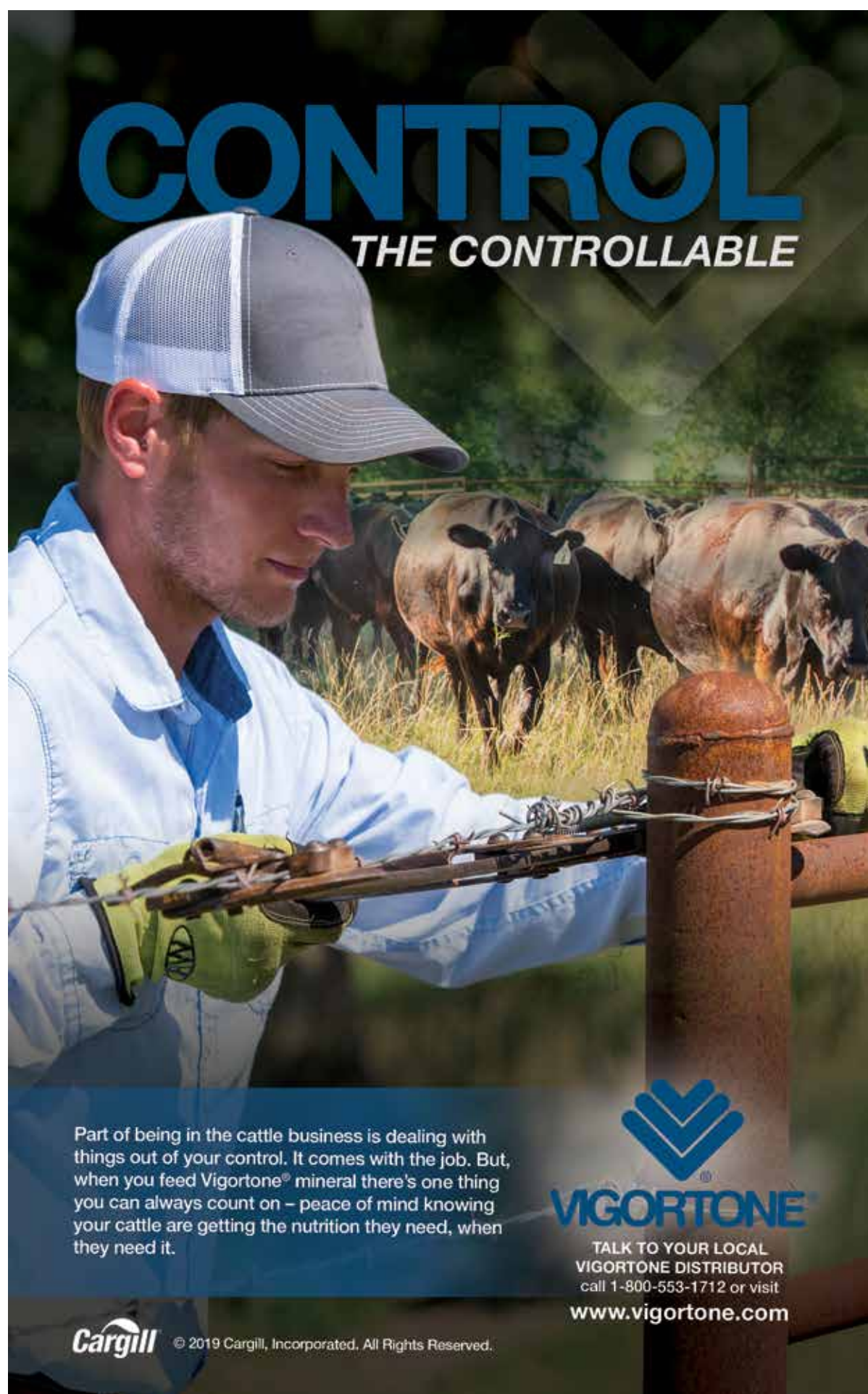
It was a cold day for a demonstration, but almost everyone that attended joined us to watch the AI process and ask questions. It is clear that southwest Missouri is serious about cow-calf production and using profitable technologies. We will continue to do similar events each year.

In terms of research efforts, my lab put the center crew through the paces this fall. All of the staff at the center deserve a lot of credit for putting up with us, and for being such a great crew to work with. Since the center is seeking to grow its herd by retaining replacement heifers, we are taking advantage of the opportunity to research development of a new estrus synchronization system specifically tailored to sex-sorted semen.

As you may know, using this product in timed AI is challenging, but the hypothetical advantages of sex-sorted semen are huge. I won't spoil our research trial design by sharing it here, but I will tell you that this project was a substantial undertaking. We had five experimental treatments, lots of blood sampling and ovarian ultrasound, and even an electronic WiFi-based estrus detection system.

Yes, the research is a bit intensive and complicated, but the end goal is to develop a simple, producer-friendly protocol that results in exceptional fertility when using sex-sorted semen for fixed-time AI. If these research efforts are successful, reproductive management in the beef industry will look a lot different 10 years from now than it does today.

Southwest Missouri and the University of Missouri Southwest Research Center will have had a major role in that change. The first calves resulting from this project will hit the ground this fall calving season. Again, I won't spoil the research results just yet, but



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**HIGH-QUALITY HEIFERS
FROM PREVIOUS PAGE**

I can tell you that there will be a lot of AI-sired heifer calves. We are all excited, and I hope you are too.

So why is all of this important? Well, across the state of Missouri and more broadly across the country, one thing is clear. It is hard to make much of a profit producing commodity cattle. Much of the cow-calf industry still functions this way, producing low-information calves and marketing them simply on a per-pound basis. That era is quickly coming to an end, and frankly, it needs to end. We can do better.

With the clear profit potential of modern tools for genetic selection (EPDs, Economic Selection Indexes, genomic testing, etc.) and reproductive management (estrus synchroniza-

tion, timed artificial insemination, etc.), commercial beef producers can add tremendous value to their cow herds and calf crop.

Of course, in addition to adding value, producers also need to be able to capture value. One obvious opportunity to get rewarded for quality is the Show-Me-Select Replacement Heifer Program, in which the center will participate every year moving forward. Opportunities on the steer side exist as well, and you will hear us talking more about premium programs and marketing strategies for steer calves over the coming years.

Lastly, know this. University of Missouri Research Centers are your resource. Whether it is a field day, open house, demonstration, or you are simply curious about something and

want to drop in, stop by the MU Southwest Research Center. You are always welcome, and I think you will be proud of the work underway.

—Source: Jordan Thomas, Ph.D. is an assistant extension professor and state beef reproduction specialist at the University of Missouri.

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Revved Up Pastures

Consider fescue toxicity in renovation projects

By Lisa Henderson for Cattlemen's News



Last summer's drought stressed many four-state area pastures, and cattlemen are now evaluating the need to renovate those grass stands.

The decision to renovate pastures depends on what the producer is trying to accomplish. A partial renovation is often the objective of most producers and can be defined as adding seed to already existing forage stands to increase density of desirable forage. No-till seeding is the typical method used for partial stand renovation.

"If a fescue stand just needs to be thickened, it would be okay to broadcast additional fescue during the spring," says Jill Scheidt, University of Missouri agronomy specialist. "If the producer is switching to a novel fescue variety or another cool season grass, fall seedings (August and September) usually have far less weed competition and more favorable moisture conditions than late spring seedings. If planting new paddocks of warm season grass, wait until the soil is warmer; most warm

season grasses are planted from April to June, depending on the type selected."

Pasture renovation requires some down time with forage production until a new stand establishes.

"If you've reduced your cattle herd to survive last year's drought, then a 'spray – summer smother with sudangrass – spray and replant' novel fescue in the fall may be a good decision," says University of Missouri extension livestock economist Joe Horner. "Psychologically, it is easier to kill a stand of grass that is thin and tromped up from winter hay feeding than it is to kill a highly productive pasture."

Fescue is the primary forage in most pastures in the four-state area, and any pasture renovation should consider the prevalence of fescue toxicity.

"To reduce the negative effects of fescue toxicity, producers need to assess the entire resources available on the farm," Scheidt says. "There are two choices when it comes

to reducing fescue toxicity in pasture: add legumes or switch to another grass."

An economic analysis suggests renovating pastures can pay dividends.

"Producers who are practicing rotational grazing, have higher stocking rates, and still have problems from endophyte infected fescue will have an easier time renovating fields and have the fastest payback from renovating their fields to either a novel endophyte or another grass" Horner says. "Problems from infected fescue include lower calf crops, lower weaning weights, and treatment costs for ailments like fescue foot."

Adding legumes to a fescue pasture simply dilutes the effect of the fescue toxicity by lowering the plant density of fescue in the pasture.

"If you don't notice livestock being affected by the fescue in a particular pasture, this is probably the easiest solution and, as an added benefit, it increases pasture quality when grazing or haying," Scheidt says. "It is also a good option if a producer is unable to leave a paddock out of the rotation for a period of time."

The key is to watch for cattle that spend a lot of time in the shade or standing in water. If cattle show low weight gains or conception rates, fescue toxicosis might be a bigger problem that can be addressed by choosing alternative forage.

"If producers want to diversify their pastures, they can convert some KY31 fescue pastures to warm season grasses," Scheidt says. "Try converting one or two paddocks to warm season to see if you like it. If you do, convert no more than 20 percent of the farm to warm season. This allows livestock to be off KY31 during the summer months and allows the fescue more time to rest between grazing periods. Be aware warm season grasses require different management practices than cool season grasses; they take longer to establish and require higher stubble heights (if planting natives) to persist than fescue."

Another option is to convert

KY31 fescue to a novel fescue, Scheidt says. The University of Missouri does not recommend using endophyte-free varieties of fescue, although performance increases, plant persistence significantly decreases.

"Novel fescues have a different strain of fungus that allow the fescue to retain its persistence while increasing livestock performance," Scheidt says. "If a novel variety is chosen, follow the spray-smother-spray method to achieve best results. Spray-smother-spray method entails killing the current stand of KY31 in the spring, planting a summer annual and after harvesting that summer annual, spraying a herbicide again to kill any escaped KY31. Then plant a novel fescue two to three weeks following the spray, preferably in late August to mid-September."

Scheidt says she does not recommend interseeding warm season grasses into a cool season pasture. Different growth periods can cause bare spots in pastures, allowing weeds the opportunity to grow in those bare spots. She says it is best to create separate warm and cool season paddocks.

Interseeding warm season grasses into a cool season pasture creates "difficult management challenges in terms of grazing height and rest periods, making it difficult to maintain warm season grass persistence," Horner says.

He lists several benefits of adding native warm season grass fields on a farm or ranch made up predominately endophyte-infected pastures, including:

- Increased drought tolerance;
- Improved summer grazing gains on calves;
- Making hay later in summer when weather typically is more settled;
- Shifting summer grazing away from fescue fields to allow fescue stockpiling to replace fall and winter hay feeding; and
- Potentially better reproduction than grazing infected fescue.

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Expected Progeny Differences

Frequently Asked Questions: Part 1

By Lauren Hyde

1. How do you balance EPD selection and actual phenotypes?

Expected progeny differences (EPDs) have a clear advantage over less sophisticated predictors such as raw weights and contemporary group ratios. Performance data are subject to environmental influences, such as available feed and management, and cannot be compared from one herd, or even one pasture, to another. Contemporary group ratios are more informative

than actual or adjusted measurements, but they don't take into account differences in performance from selective mating, nor do they include comparative performance data on related individuals in other herds.

EPDs are calculated using complex statistical models and methodology. The statistical models use all known information on a particular animal to calculate its EPDs. This information includes its own performance data, such as birth, weaning, and yearling weights; records on its progeny and other relatives; and genomic data on all of these animals. Performance records are adjusted for such factors as age and sex of the animal and age of the dam prior to being evaluated. These adjustments allow performance records to be fairly compared in the analysis. In addition, genetic merit of mates is accounted for so that animals' progeny records are not influenced by superior or inferior mates.

The statistical analyses used for EPD calculation also account for the effects of environment (e.g., nutrition, climate, geographical location) that exist between herds. These environmental effects can be estimated due to the widespread use of artificial insemination (AI). Through AI, the same bull can be used in several herds throughout the world. These common sires create genetic links among herds with differing environments and serve as the foundation for large-scale genetic evaluation. For these reasons, animals with published EPDs within an evaluation may be directly compared regardless of age and origin.

Finally, the genetic relationships that exist between various traits are also considered in the EPD calculations. Growth traits provide a classic example of this. Some genes affect growth only during certain stages in an animal's life, while others affect growth in general. These genes affect two or more traits, and as a result, the traits are genetically correlated.

2. What is a ratio and how useful is it in selecting animals for their genetic merit?

A ratio is the performance on an individual animal relative to the average performance for his or her contemporaries. Suppose that 10 bull calves weighed an average of 600 pounds at weaning. One calf weighed 630 pounds, so his ratio is 105, which means he is 5 percent heavier than his contemporaries.

$$\text{Ratio} = (630 \div 600) \times 100 = 105$$

Another calf weighed 570 pounds, so his ratio is 95, which is 5 percent lighter than the contemporary group average.

$$\text{Ratio} = (570 \div 600) \times 100 = 95$$

Ratios can be a useful tool for within-group selection; however, they do not



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PROGENY DIFFERENCES
FROM PREVIOUS PAGE

correct for mating bias or allow for comparisons on animals outside of the contemporary group. Use of more advanced selection tools, like EPDs, provides comparisons among all animals in the evaluation with greater accuracy.

3. When selecting easy-calving bulls, is it better to emphasize the calving ease EPD or the birth weight EPD?

Economically relevant traits (ERTs) are traits that directly generate revenue or incur costs in beef production systems. For a commercial cow-calf producer, dystocia (or calving difficulty) is what generates costs in a cow herd through direct losses of calves and their dams, increased labor costs, and lower reproductive rates among cows that have experienced dystocia. Calving ease is an ERT.

Birth weight, on the other hand, is an indicator trait. It provides some information on calving ease, but by itself, doesn't directly generate revenue or incur costs independent of calving ease. Based on results from several research studies, birth weight accounts for only 55 to 60 percent of the genetic variation in calving ease.

This means that selection for reduced birth weight alone won't improve calving ease as much as selecting directly on calving ease. In addition, birth weight is strongly genetically correlated with other growth traits, so reduction in birth weight is associated with lighter weights at wean-

ing and yearling.

4. Why does my bull have a high birth weight EPD but his actual birth weight is low?

Birth weight EPDs are computed using not only the birth weight of the bull but also his own weaning and yearling weights; the birth, weaning, and yearling weights on his calves and other relatives; and the genomic data on all these animals. Weights are adjusted for known environmental effects, like sex of calf and age of dam, that do not have a genetic component, and therefore, are not transmitted from parent to offspring. For example, all things being equal, a heifer calf will weigh less than a bull calf. A bull born to a heifer will weigh less than a bull born to a mature cow. A bull born during a drought will weigh less than a bull born during a time of abundance. Because of these environmental effects and all the other data used to compute an EPD, actual birth weight isn't a particularly accurate measurement of a bull's progeny's birth weight. A bull with a low birth weight can have a high birth weight EPD and vice versa.

5. Why should I trust EPDs when I know that some breeders turn in fabricated data?

Genetic evaluation relies primarily on field data collected by many different breeders with varying knowledge and interest in the principles of animal breeding and genetics. Therefore, these data are subject to error, intentional or not.


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EPDs are based to a large extent on the performance of relatives, so it is imperative that the pedigrees of all animals are correct. However, misidentification of parents is not unusual — even in humans! Parentage testing through DNA has been very useful in identifying pedigree errors and has been invaluable to high-quality genetic evaluation.

On the performance side, some breeders deliberately falsify records. They want to make their animals look better than they really are. Some breeders only report data on

their “good” animals. More frequently, breeders guess animal performance rather than carefully measure it. Data like these can cause bias in the evaluation; however, statistical procedures can identify and filter out biased data. In addition, bias due to reporting errors is generally short-lived. As soon as an animal has progeny, especially in different herds, pedigree and performance errors of its own and of its collateral relatives are of little consequence.

6. Why should I use EPDs when they change from one evaluation to the next?


EPDs change over time as

more and more data are included in successive evaluations. But change is not necessarily a bad thing. With more data comes improved accuracy, and higher accuracy means the smaller the amount of possible change in future evaluations. In other words, EPDs on a high-accuracy animal will change very little in future evaluations compared to those on a low-accuracy animal. Higher accuracy leads to less risky selection decisions. With EPDs updated on a weekly basis through the IGS Multi-breed Genetic Evaluation powered by BOLT, ASA provides the most accurate, most rapidly available tools to optimize selection decisions.

7. How can I improve my bull's EPDs?

Although you can't make your bull's EPDs better, you can improve the accuracy of those EPDs through data collection. Collect performance data on the bull and all of his contemporaries. Get all of them DNA tested. If possible, ensure that his calves' data are reported. Although his EPDs may move in an unfavorable direction, more data improves accuracy, and higher accuracy leads to less risky selection decisions.

—Source: Lauren Hyde, IGS Geneticist.



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Plentiful Pastures

Use sound practices to reduce overgrazing and weeds

Weed problems may explode this year thanks to the drought of 2018 and residual problems associated with overgrazing in parched pastures, says University of Missouri Extension agronomist Valerie Tate.

Last year's extreme weather conditions created a forage shortage. As a result, many pastures were overgrazed.

When pastures are overgrazed, little green leaf material is left to make sugars for plant growth, says Tate. When more than half of the aboveground plant material is removed, root growth slows or even stops. Weakened root systems reduce the ability to take up water and nutrients.

"Overgrazed pastures provide an opportunity for weeds to fill in the open spaces left when the forage is grazed short and plant roots are stunted," Tate says.

A cooperative program between Natural Resources Conservation Services and MU Extension provides forage and livestock producers an opportunity to get technical help to design grazing plans that give pastures periods of rest. These rest periods make pastures stronger and healthier.

Well-rested pastures let more water into the soil and allow plants to have more vigorous root systems. Deep root systems and large carbohydrate stores help forages resist environmental stresses such as drought.

Proper soil fertility also helps reduce the encroachment of weeds in pastures. During a two-year period, MU Extension weed scientist Kevin Bradley and his students surveyed 46 Missouri sites every two weeks from April through October.

They found that 80 percent of the pastures surveyed showed low or very low soil phosphorus levels. Thirty-seven per-

cent presented low or very low soil potassium levels. Soil pH averaged 5.8. When pH increased by one unit, total weed density shrank by more than 4,000 weeds per acre. Common ragweed and lanceleaf ragweed dramatically decreased when pH increased. Yellow foxtail also fell significantly.

If annual weeds like ragweed and foxtail are problems in pastures and hayfields, improving pH, phosphorus and potassium levels may be more beneficial than controlling weeds with herbicides, says Tate. Perennial weeds like horse nettle and ironweed are more effectively controlled with herbicides.

For more information, contact your local University of Missouri Extension agronomist or go to NRCS-GrasslandsProject.missouri.edu.

—Source: University of Missouri Cooperative Media Group.

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Flying the Skies for Farmers, Ranchers

Aerial application business helps producers zero in on pest, weed and brush control

By Rebecca Mettler for Cattlemen's News

Midland Flyers is an aerial application business that operates out of the Miami Regional Airport north of Miami, Oklahoma. This three-plane business is owned and operated by Greg and Dee Epperson. Greg is a pilot, and Dee keeps everything running smoothly from the ground.

Roughly 13 years into his 38-year career as an aerial applicator pilot, Greg had the opportunity to buy the business from the previous owner; the rest is history.

Midland Flyers offers several aerial chemical applications, including crop herbicide, insecticide, fungicide and fertilizer applications. Pasture applications include weed and brush control, along with seed and fertilizer applications. The crew also does a fair bit of work with pecan groves in the area. Owning a ground rig sprayer and adding retail agricultural chemical sales to the mix further diversifies their business.

Today, Zach Lawson, the Epperson's nephew from Grove,

Oklahoma, and Randy Wyrick, Fairland, Oklahoma, make up the remainder of the pilot crew for Midland Flyers.

As Randy and Zach become more central to the company's piloting activities, Dee describes Randy and Zach as their lifeline and saviors because of the ability of the young men to keep the company successful and moving forward.

"I'm very thankful for these guys and their wives," Dee said.

Randy, who has previously served as a passenger plane pilot, prefers the work as an aerial applicator. With a spray tank that can hold 802 gallons, Randy flies the largest of Midland's three planes.

Zach's plane can carry 550 gallons of water, and Greg's can hold 510. With an application rate of 2 gallons to the acre, Randy can spray 350 to 400 acres per load, and Zach can generally spray 250 acres before heading back to the airstrip to fill up again. On a good day, they can spray 1,500 acres per plane, de-

pending on the type of land they are flying across.

Efficiency is a key factor of success for an aerial applicator business. It's what also keeps the price of aerial application competitive with other forms of chemical application.

"There are still some people who don't realize that our prices are competitive. They think that a ground rig can do it for a lot cheaper," Dee said.

Aerial application has several benefits, including the speed in which an application can be completed and the fact that tire tracks aren't left in the field.

"A lot of the time when growers call, it's because they have an emergency and need someone in the field now, or the ground is too wet for the ground rigs," Greg said.

Application accuracy is of obvious importance to farmers and ranchers. A GPS unit in each plane is central to maintaining an application accuracy of 1 foot with an aerial application.

Greg speaks to a time when he first started flying when "marker men" would stand out in the field during an application to step off the plane's next pass. Then they upgraded to paper markers, and finally to GPS — talk about technological advancement!

Aerial application is unique because it's a low-volume application. The down force created by



(l-r) Zach Lawson, Randy Wyrick, Greg Epperson and Dee Epperson make up the team at Midland Flyers. — Photo by Rebecca Mettler for Cattlemen's News.

the plane as it flies low to the ground circulates the air, which allows the water/chemical droplets to get on the underside of the plant. This provides the coverage needed to get good control with fewer gallons of water than if applying with a ground rig, Randy says.

Mother Nature, specifically wind, is an aerial applicator's most frequent reason for being grounded.

"Wind must be less than 15 miles per hour; it depends on the area, and we must go by label directions," Greg said. "But, once you get past 6 or 7 miles per hour, it gets tricky."

Caution and concern for the land and neighbors comes second nature for the team. Maybe land stewardship is especially important to the Midland Flyers crew because each one of them is involved in production agriculture.

"The first question out of our mouths is what do you have by the property you want to spray? I'm going to ask what do you have on the four sides of your property," Dee said.

Respect for the farmer/rancher, the land, livestock and surrounding neighbors is central to success for this family-owned and -operated business.

"We treat every field like it's our field," Zach said. "We have to have returning customers, if not we wouldn't be here."





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Bermudagrass Options

Using complementary forages provides more grass

Story by Macey Hurst for Cattlemen's News

You feed hay. Then, you feed more hay. Then it's spring, and you're tired of feeding hay. Grass is growing so you bale more hay. Then, you're tired of baling hay. Before you know it, that's how you've spent an entire year.

Jennings offered other options.

"What we don't want to do is get in this situation where we bale hay all summer and feed hay all winter," Jennings explained. "The key point to keep in mind is that growing pasture crop takes exactly the

annual grasses that require less time and labor and provide higher payout.

For cattle producers in southern Missouri, bermudagrass is the No. 1 option.

"Bermudagrass is a warm season perennial grass," Jennings said. "Its optimum growing range is 85 to 95 degrees Fahrenheit. The growth slows rapidly when the nighttime temperatures drop into the 50s, and when the nighttime temperatures hit the 40s, it's done."

effective and quite simple to interseed with current cool season annuals.

Other options presented by Jennings included different grasses and storage practices.

"One thing that's very easy to do without planting anything at all is stockpiling bermudagrass for fall," Jennings said. "If you do that, you can graze stockpiled forage from October all the way into early December. You can also plant small grains and ryegrass into other bermudagrass pastures, which can possibly give you some late winter grazing and for sure spring grazing. We can plant clover in that system as well. Annual clovers work very well, crimson clover, arrowleaf clover and some other legumes, give us grazing in the spring. Turnips, rape and things like that work very well for the fall."

He continued by saying that summer annuals can also be used for fall. Early-planted small grains can be grazed in fall, and small grains planted later in October can be ready to graze in late February. By following certain recommendations, alfalfa can also be planted into bermudagrass to produce a high-quality hay crop.

While these are just a few of the very viable options available to farmers and ranchers across the Midwest, it can all sound quite intimidating. However, Jennings said what is most important is simply to be educated and prepared.

"You've got to learn when your existing forages should grow, which new forages can fill grazing gaps, and how to plan a system using that knowledge," he said. "You should always plan at least one season ahead."

For more information on incorporating annuals into pastures and to see the research done, visit the University of Arkansas Division of Agriculture Extension page at <https://www.uaex.edu/>.



A warm season perennial, bermudagrass is effective and simple to interseed with current cool season annuals. Its optimum growing range is from 85 to 95 degrees F, making it a good substitute for Missouri producers. Small grains and ryegrass can also be planted into bermudagrass pastures to provide late winter and spring grazing. — Photo from University of Arkansas Extension.

This is how Dr. John Jennings, professor and forage specialist at the University of Arkansas, describes many midwestern farming and ranching forage practices. Although he said it with a snicker, he had a valid point in that Missouri farmers and ranchers often rely heavily on their hay production and use. However, at the annual Southwest Missouri Spring Forage Conference held in late February in Springfield, Missouri, Jen-

nings offered other options.

In years such as the few prior, drastic deficiencies of water and endless high heat made it difficult to reach maximum hay yields. This issue then rolls over into the fall and winter months, creating shortages during times of several feet of snow and below freezing days, such as many producers have recently endured. Therefore, Jennings suggests incorporating other

With these conditions, its growing season is mid-May to early October, and it serves as a perfect substitute for Missouri producers. In addition, Jennings says it creates a great sod grass and has an incredibly high capacity for recovery, healing itself when faced with adverse circumstances to return the next year, if given the proper environment. However, bermudagrass is not at all tolerable of shade. Even so, these attributes make it highly



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Stocking Rates: Think Optimize

Using a proactive process to determine stocking rate

By Kelsey Harmon for Cattlemen's News



At what rate should you stock your pastures? It's one of the most important decisions a livestock producer has to make.

That's what Hugh Aljoe, director of producer relations for the Noble Research Institute, told attendees at the annual southwest Missouri Spring Forage Conference held in late February in Springfield, Missouri.

Aljoe said stocking rate should not be a static decision nor should it be made without due consideration for the variability in weather and management.

Aljoe began his presentation by defining both stocking rate and carrying capacity in simple, memorable terms. He said stocking rate is essentially the number of cattle on a given piece of land at a given time. He explained stocking rate is expressed in three main measurements: animal units (AU), number of head and pounds of live weight per acre. Aljoe said to think of it as the amount of forage demand.

Carrying capacity is defined as the amount of forage pounds of production, or the amount of forage supply. He explained this is usually expressed as total dry matter production or pounds per acre within a growing season or year.

Aljoe noted that carrying capacity is a function of both weather and past management. As a re-

sult, carrying capacity changes continuously and the stocking rate should be adjusted. He said most producers don't think about the implications of not managing the stocking rate once it has been established. Producers, then, incorrectly use the stocking rate they set as a goal to be reached or maintained and not as a metric to be adjusted based on the outcome of management inputs, climatic conditions and weather, he said. Grazing land resources suffer as a result of not adjusting the stocking rate.

"What you did last year and the years preceding are going to have implications on the carrying capacity," Aljoe said. "If you take care of your soils, land and forage types, you'll have more production potential the next season. Carrying capacity is not just a function of rainfall. It is also influenced by pasture management."

Aljoe explained that indications of being overstocked are based on experiences and observation. Often, bare soil in a temperate to high-rainfall climate, a body condition score less than 5.5 for mature cattle during most of the growing season and a cow herd conception rate of less than 85 percent (calves should be born in the first half of the calving season) are signs that an operation could be overstocked.

If overstocked, Aljoe said a method for determining how

much the carrying capacity is over in an operation. If the producer's records show that winter hay feeding periods are exceeding management and resource goals, the stocking rate is exceeding carrying capacity. For every month of hay feeding over planned or intended, the producer is at least 8.3 percent overstocked. Multiply 8.3 by the number of months overstocked to determine the percent overstocked.

For those grazing native grasses during the winter, for every month that a producer forces cattle to hustle (consume plant material other than the leaves) the pasture is overstocked by 8.3 percent. Multiply 8.3 by the number of months cattle hustle to determine the percent overstocked.

"When you think about all of the things that we have influence over as operation managers, there's a lot of decisions to make," Aljoe said. "Stocking rate is one of those decisions we need to make on a regular basis to ensure our stocking rate is not exceeding our carrying capacity."

To estimate stocking rate, Aljoe said to begin by estimating the carrying capacity of a property, which requires a good quality map of the land. Assistance could also be needed from a pasture and range professional

like the Natural Resources Conservation Service (NRCS) grazing land specialists to ensure that it is a reasonable estimate.

Aljoe suggested using a table of information, such as the Excel spreadsheet pictured below created by the Noble Research Institute, to help determine the proper considerations for calculating carrying capacity and then converting it to a stocking rate. Important columns for a cow-calf operation in this table of information are pasture name, total acres, grazable acres, forage type, estimated pounds of production per acre, units of nitrogen applied, total production per acre with nitrogen, utilization percentage, total available for grazing, total animal units, animal unit equivalents and total mature cows.

Once the spreadsheet is completed, producers can use this information to estimate the carrying capacity, which can then be converted to stocking rate. Using this method to calculate the proper stocking rate will help ensure a feasible cattle-per-acre ratio exists, which can result in efficient grazing and help producers save money.

"A conservative stocking rate provides for flexibility, opportunities and risk management," Aljoe said.

NRI Carrying Capacity/Stocking Rate Auto-Template													
										% of Carrying Capacity			
										Cows		1.2	AUE
												10	Months
										Steers		1.1	AUE
												10	Months
										Hay Requirements			
										55.8		Tons	
Pasture	Total Acres	Grazeable Acres	Forage	Forg. Prod. Lbs/ac	Lbs N	Total Production	% Util.	Useable Production	# AUs	Alloc. Cows	Alloc. Steers	# Cows ??-??	# Steers ??-??
1W	233	50	RG/BG	2000	70	187,500.00	65%	121,875.00	12.84	0%	100%	0.0	14.0
1S	240	40	RG/BG	2000	70	150,000.00	65%	97,500.00	10.27	0%	100%	0.0	11.2
2	38	25	RG/BG	4000	120	175,000.00	65%	113,750.00	11.99	0%	100%	0.0	13.1
3	59	45	BG	3500	100	292,500.00	65%	190,125.00	20.03	0%	100%	0.0	21.9
4	64	50	BG	3000	100	300,000.00	65%	195,000.00	20.55	0%	100%	0.0	22.4
5	14	12	RG/BG	3000	120	72,000.00	65%	46,800.00	4.93	0%	100%	0.0	5.4
6	35	25	RG/BG	3000	120	150,000.00	65%	97,500.00	10.27	0%	100%	0.0	11.2
7	69	60	BG	3000	100	360,000.00	65%	234,000.00	24.66	0%	100%	0.0	26.9
8	286	200	BG/FE	3000	100	1,100,000.00	65%	715,000.00	75.34	0%	100%	0.0	82.2
9	85	40	BG	3000	100	240,000.00	65%	156,000.00	16.44	0%	100%	0.0	17.9
10	142	35	BG	3000	100	210,000.00	65%	136,500.00	14.38	100%	0%	14.4	0.0
11	44	15	BG	3000	100	90,000.00	65%	58,500.00	6.16	100%	0%	6.2	0.0
12	127	110	BG/FE	3000	100	605,000.00	65%	393,250.00	41.44	100%	0%	41.4	0.0
	1436	707.00		38,500.00	1300	3,932,000.00		2,555,800.00	269.32	29%	71%	61.99	226.18

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NETWORK KNOW-HOW

Youth Connect with Agriculture

Missouri third graders honor farmers during National Ag Week

National Ag Week is always an exciting time to celebrate agriculture and the farm families who provide us with everyday products. For students who participate in the Ag Education on the Move™ (AEOTM) program, it is another opportunity to express their interest and share with others what they have learned through the course of the program. Students learn

early that farming is a 365-day a year job — rain or shine.

This year, Missouri Farmers Care wanted to allow students to convey the important message of animal care and land stewardship through a sponsored essay and poster contest. Contestants could enter in either or both categories to display their writing and artistic abilities. The content of the entries was to showcase Mis-



souri agriculture and how its story is personal to us all. Winners included (pictured above, l-r), Katelynn Hanson (Freistatt) with Southwest Regional Educator Cherri Middleton; and below, Kylie Dameron (Vandalia), with AEOTM Director Luella Gregory. Not pictured, Bella Day of Conception Junction.

As part of in-classroom efforts, students learn about modern agriculture practices and how technology allows farmers to provide more with fewer resources. Participants learn first-hand about land and soil conservation and how farm families work to preserve their farm for future generations.

AEOTM is a proactive, educational effort that brings passionate, trained educators to the classroom. Students learn about crops, livestock, soil and water conservation, nutrition and careers in agriculture.

Participating classrooms receive 10 weeks of STEM-focused, agriculture science and education. Curriculum meets classroom objectives. A hands-on component provides a fun and interactive way of learning. Students can make bread, corn and soybean plastic, butter, feed rations, soil profiles and more.

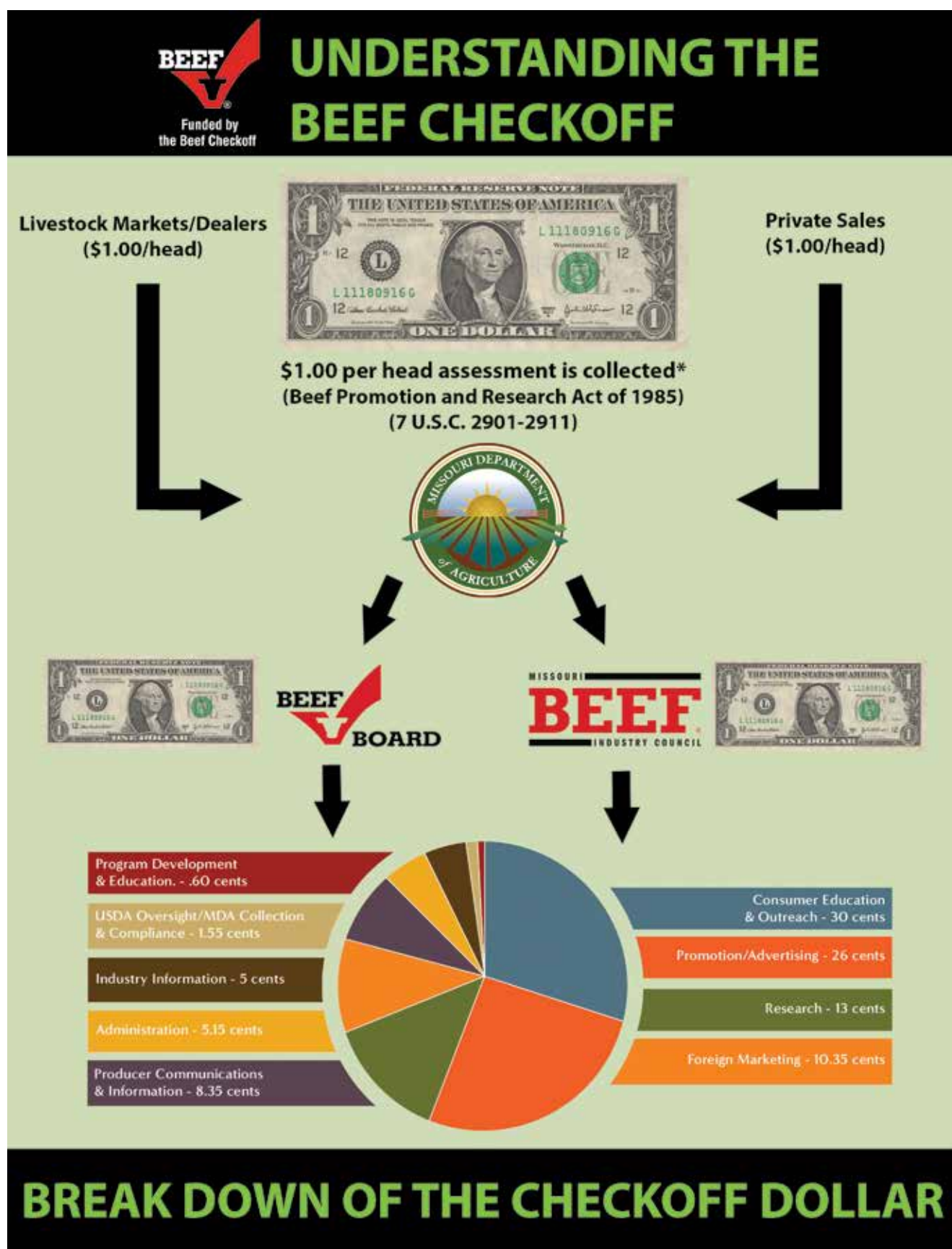
During the livestock units of the program, students learn about indoor housing, veterinary care, feed and nutrition, calving, breeds of livestock, technology used on today's farm and a va-



riety of career paths involved in agriculture.

Students are exposed to real, Missouri farm families and learn about their dedication, compassion, sacrifice and work ethic on the farm. Virtual farm tour opportunities allow some students to visit farms through online platforms, providing unique and interactive experiences for urban classrooms.

—Source: Agriculture Education on the Move™ is an educational effort through Missouri Farmers Care, funded partially by Missouri soybean farmers and Missouri beef producers and their checkoffs. Missouri Farmers Care implements activities to promote the continued growth of Missouri agriculture and rural communities through coordinated communication, education and advocacy. Visit www.MoFarmersCare.com.



Looking Forward to Open Farm Days

Have you started your punch list?

By Erin Luchsinger Hull for Cattlemen's News

Everyday we all walk through our farms (I say farm, you say ranch.

In the Northeast, we're all farms) and go about our daily chores. We feed our herds. We make sure water troughs aren't frozen. We operate our equipment, etc. And because it's cold and not much fun all winter, we may toss things to the way side. I have a tire that isn't holding air quite well on a tractor, so the air compressor sits out on the barn floor because I use it weekly. There may be a gate that broke and because it was brutal out that day, it gets tossed to the side. We all have those things that get "tossed to the side".

With spring upon us, I start looking forward to the upcoming open house days we host at the farm. With that being said, now is the time to start looking at my operation with an outsider's set of eyes, rather than my own. I've walked around that air compressor for months, and truth be told, I forget it's even there. That broken gate has sat there so long I forget it's even broken. It happens because those things start to become invisible to us. Once the snow has melted and the mud has dried, I work hard to walk around our operation and not look at it from my own point of view. I want to look at it from the point of view of a visitor. I don't want anything out of place. I certainly don't want any junk lying around. When I decide it's time to have that outsider's look, I have to mentally prepare myself for it and I take notes along the way. I go from thinking my operation is neat and tidy to feeling overwhelmed from all the things that need to get done.

This is a crucial step in my opinion before opening the gate to host an open farm event. I want visitors to focus on the animals. I want them to look at my fields and see Best Management Practices being put to good use. I want them to ask questions about agriculture. I don't want them to



focus on the broken gate that's propped up against the fence (that I know a curious cow will eventually cut themselves on) or the pile of lumber that I hope to use someday. When I'm done with my punch list of projects around the farm, I always feel like a weight has been lifted from my shoulders. It's always well worth the time put into cleaning up.

Before I started having open farm events, those projects always sat there. There was never a reason to make them a priority. It wasn't until I agreed to do my first farm event that I started to truly tackle the "back burner" projects. I'll be honest. The first year it was exhausting, and I took on too much in too short of an amount of time. What I thought would take me three days in realty should have taken 3 weeks. I decided the west wall of our large barn needed to be sided — a week before our very first event. After tearing off an entire side of our 80' long barn that is 100 years old, panic set in. I stood there with my hands on my hips thinking, "What have I done?" I had a group coming to the farm with the NY Beef Council in three days and the first thing they were going to see was a barn with no siding. This was not the impression I was hoping to leave in their minds. Needless to say, for the next two days my contractor and myself worked from dawn until dusk to get siding put on our barn.

I was physically exhausted. I was mentally stressed. But,

staring at gorgeous new siding on the barn and knowing that was the first impression my visitors were going to get of my entire operation was liberating. I had wanted to side that side of the barn for years but it was always "when we have the money" or "when we have the time." Neither of those things exist in excess — time or money. That project set off an entire series of projects that have improved the overall aesthetics of our operation and it was all because I agreed to do an open house from the state Beef Council. The stress of hosting an event was trumped by the satisfaction of seeing all those back-burner projects getting crossed off the punch list. Every year I make it a priority

to walk around the farm with an outsider's set of eyes to see what my visitors will see. Every year that punch list gets shorter, but it's always there.

Make the call to your local Beef Council, Farm Bureau, County Ag Council, etc. Tell them you'd love to open your farm to visitors and give them the real facts on where their beef comes from. And after you make that call get started on your very own punch list.

—Source: Erin Luchsinger Hull owns and operates Lucky 13 Beef in Tully, New York. She is a board member of the New York Beef Council and the 2017 Beef Promoter of the Year for New York state. Follow her online at www.facebook.com/lucky13beef.

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19340118

A 1/17/18 son of Panther Cr Incredible 6704 out of a Pathfinder dam. He posted a 205-wt 859 lbs, WWR 112, 365-wt 1453 lbs, YWR 109. CED +8; WW +77; YW +139 and \$B + 152.75.

CED +0
BW +3.9
WW +77
YW +141
\$W +54.10
\$B +153.16

19340120

A 1/19/18 son of the \$70,000 Panther Cr Incredible 6704 from a Pathfinder dam by Bushs Unbelievable423 that posts NR 3@107 and YR 3@105. His performance portfolio includes a 205-wt 821 lbs, WWR 107, 365-wt 1427 lbs and YWR 107. Top 1% YW EPD and \$F, top 2% WW EPD.

CED +11
BW -1.4
WW +70
YW +121
\$W +61.80

19342606

This 1/26/18 son of MGR Treasure boasts a tremendous EPD spread of CED +12, BW -1.5, WW +71 and YW +120. He was born unassisted out of a first-calf heifer and bested his contemporaries with a BWR 88, WWR 120 and YWR 106.

CED +3
BW +3.3
WW +62
YW +110
\$W +48.68
\$B +131.96

19199919

A 9/12/17 son of Musgrave Sky High 1535 from a granddaughter of B/R New Day 454 that posts a NR 7@107 and YR 7@104. He was a performance standout with a BW 85 lbs, 205-wt 805 lbs, WWR 106, 365-wt 1339 lbs and YWR 106.

CED +7
BW +9
WW +51
YW +85
\$W +50.42
\$B +95.18

18044817

A five year old daughter of Apex Windy 078 with NR 3@102, and a calving interval of 357 days. She sells with a 2/19/19 daughter of Musgrave Invasion at side.

CED +9
BW +1.8
WW +58
YW +101
\$W +49.66
\$B +116.63

19199884

A 9/7/17 daughter of Musgrave Sky High 1535 due in late August to Stevenson Declaration 70748 carrying a heifer calf.

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Further Resistance

K-State researchers confirm case of 2,4-D resistance in Palmer amaranth

A Kansas State University researcher is reporting the first-ever study confirming that Palmer amaranth has developed resistance to the herbicide 2,4-D. These findings may signal an important step in developing future controls for the pesky weed.

Vipin Kumar, a weed scientist at the Agricultural Research Center in Hays, Kansas, said

that since 2015, a few farmers had reported poor control with 2,4-D, but until now, researchers were not able to confirm the resistance levels to 2,4-D in Palmer amaranth.

Extremely aggressive, Palmer amaranth is considered the No. 1 weed problem in U.S. agriculture. It is commonly found in cropping systems and negatively affects soybean, corn, sorghum, wheat and fallow fields.

It is also a serious problem in wheat stubble.

Kumar and his research team have recently tested one strain of Palmer amaranth – known as a biotype – and Kumar says the results are sobering.

That biotype has been confirmed with low levels of resistance to 2,4-D, as well as resistance to glyphosate (Roundup PowerMax®), chlorsulfuron (Glean®), atrazine (Aatrex®), and mesotrione (Callisto®).

In addition, Kumar said the biotype showed less sensitivity to fomesafen (Flexstar®) herbicide, a commonly used herbicide in soybeans. He added that more research is underway to confirm if this biotype

has developed resistance to fomesafen.

"This discovery confirms the first case of 2,4-D-resistant Palmer amaranth biotype that has also developed multiple resistance to four other herbicide modes of action," Kumar said.

"We have been seeing a lot more populations with multiple resistance, especially with glyphosate, atrazine and HPPD inhibitors. There is increasing concern about Palmer amaranth's ability to resist multiple modes of action."

That situation has left farmers with few options to manage the weed.

"I would recommend growers use some of the pre-mixes, or tank mixes, that are still effective to control those biotypes so that they don't get into seed," Kumar said, noting that one female Palmer amaranth plant can produce as much as one-half million seeds.

"In addition to using effective herbicide programs, growers should look at crop rotation as a foundational practice of weed control," he said. "Grow those crops that are highly competitive with Palmer amaranth and try to grow some cover crops if you can in the fallow land. Don't leave fallow – that's the weakest link in this whole system where these weed species have been gaining resistance."

Kumar also suggests that farmers consider pre-emergent herbicides, depending on the crop being grown.

"Including PRE herbicide options can help growers manage some of these multiple-resistant weed biotypes, and delay the development of resistance in this weed," he said.

"If we are losing these tools, like 2,4-D or glyphosate, which are the key tools to control these weed species, then this is going to be economically expensive for growers," Kumar said. "So we have to bring more tools into our toolbox to tackle these problems."

Kumar's findings have been published in the journal, Pest Management Science.

—Source: Adapted release from Kansas State University Extension.



6th Annual Crowder College Calf Auction



Wednesday April 3, 2019 11:00 am



Calf will be auctioned off
@ Joplin Regional Stockyards
**100% of proceeds goes to support
Crowder Aggies & Vet Tech Activities**

Special Thanks to
Flying E Ranch
Gary and Linda Emmert
Seneca, MO

For more information contact: Jorge Zapata 417.455.5496



All donations will be appreciated.
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Newton/McDonald County Cattlemen and these sponsors:























TRENDING NOW

Old Missouri Bank Open for Business at New Building

Mt. Vernon, Missouri, gets new OMB location



neighbors as we continue to grow our community.”

Old Missouri Bank currently has seven Missouri locations; with additional offices in Springfield, Ash Grove,

Walnut Grove, Buffalo and a Loan Production Office in Carthage.

—Release from Old Missouri Bank.

Old Missouri Bank (OMB) officially opened the doors of its new building on Monday, Feb. 25, 2019. The building is located at 510 W. Mt. Vernon Blvd. in Mt. Vernon, Missouri, and is the former home of Eli's Short Stop. OMB was previously operating out of a temporary branch at 318 W. Mt. Vernon Blvd. and has permanently moved to the new location, effective immediately.

OMB broke ground for the new facility on Friday, May 18, 2018, at a publicly held event. Paragon Architecture designed the facility, and Federal Construction was the general contractor for the project. The new branch houses eight employees with room for added employee growth.

The Mt. Vernon branch is staffed by Joey Orr, community bank president; Cheryl Lathem, retail manager; and Carla Peterson, loan assistant. Operating hours of the branch are Monday through Thursday from 9 a.m. to 4 p.m., Friday from 9 a.m. to 5 p.m. and Saturday from 8 a.m. to noon. All customers can call the branch directly at 417-316-9288 for more information.

“We’ve experienced tremendous support from the community throughout the entire construction process,” said Joey Orr, senior vice president at Old Missouri Bank. “Mt. Vernon is home for my family, and I am looking forward to serving friends and



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**2 P.M. | WEDNESDAY | APRIL 17, 2019
DURING OUR REGULAR COW & BULL SALE**

**JOPLIN REGIONAL STOCKYARDS
I-44 & EXIT 22 | CARTHAGE, MISSOURI**

85 Charolais and Black Cows

Running ages. 15 spring pairs with calves out of Horned Hereford bulls. Balance are fall calvers due in September and October. All bred to Horned Hereford bulls. These cows were purchased from Joe Dahlman's dispersal sale.

Field Rep: Jackie Moore. Phone 417-825-0948.

20 Mixed Cows

Running ages bred to black Angus bulls.

Field Rep: Jim Hacker. Phone 417-328-8905.

45 Red Limousin Cows

3 years to short and solid.

Half are cow/calf pairs with remainder spring calvers.

Field Rep: Bob Shanks. Phone 620-674-1675.

28 Black and Charolais Heifers

Due to calve in September to Gardiner Angus low birthweight bulls.

Field Rep: Jason Pendleton. Phone 417-437-4552.

88 Cows - All from one farm

Approximately 35 spring pairs, approximately 35 fall pairs.

Remainder are bred cows due to either Angus or Hereford bulls.

Field Rep: Jared Beaird. Phone 573-776-4712.

9 Red and Red Whiteface Cows

Coming 4 years old. Bred to Hereford bulls.

Field Rep: Jared Beaird. Phone 573-776-4712.

40 Angus Cows

4 years old. Bred in second and third stage to Angus or Hereford bulls. 10 with calves at side sell as pairs.

Field Rep: Larry Mallory. Phone 417-461-2275.

11 Black and Black Baldie Bred Heifers

Bred in third stage to low birthweight Angus bulls.

Field Rep: Troy Yoder. Phone 918-640-8219.

9 Mostly Black and Black Baldy Heifer Pairs

Calves weigh 150 pounds.

Field Rep: Troy Yoder. Phone 918-640-8219.

42 Black Cows

4-6 years old and all home raised. 30 calves by side with balance fall calvers bred to Richard Eck Angus bulls.

Fancy set of home-raised cows. Complete dispersal.

Field Rep: Jackie Moore. Phone 417-825-0948.

100 Black and red Angus fall calving cows

3 years to short and solid. Bred to Charolais bulls.

Field Rep: Skyler Moore. Phone 417-737-2615.

1, 3 Year-Old Black Angus Bull

Mytty In Focus breeding.

Field Rep: Jim Hacker. Phone 417-328-8905.

2, 3-Year-Old Registered Beefmaster Bulls

Field Rep: Nick Flannigan. Phone 417-316-0048.

2 SimAngus and 1 Angus Bull

1, SimAngus 16 mos. old, Up Grade x Indew Time breeding.

1, SimAngus 18 mos. old, sired by SC MO Magic S47.

CE 10.1, BW 1.6, WW 70.5, YW 112.3.

1 Angus bull 18 mos. old, sired by PVF Insight.

Field Rep: Monte Nail. Phone 918-244-4950.

12 Angus Bulls from Sam Hawk

2 years old. Big, stout and high bred.

Field Rep: Skyler Moore. Phone 417-737-2615.

4, 2 Year-Old Reg. Charolais Bulls from Griffin Farms

Field Rep: Skyler Moore. Phone 417-737-2615.



www.joplinstockyards.com



Jackie Moore
417.825.0948

JRS Office
417.548.2333



Bailey Moore
417.540.4343

Skyler Moore
417.737.2615

MANAGEMENT MATTERS

Tick Study Expansion Planned

University of Arkansas Division of Ag researchers look further for clearer image of disease prevalence in state

By Ryan McGeeney

Researchers with the University of Arkansas System Division of Agriculture plan to expand a state-wide tick collection effort that began in 2017.

Ashley Dowling, an associate professor of entomology and researcher with the Arkansas Agricultural Experiment Station, is the primary investigator on that study. He said three to five years' worth of

data is required to provide an accurate picture of the prevalence of tickborn pathogens throughout Arkansas.

"We have about a year-and-a-half's worth of data right now," Dowling said. "And that's really just a snapshot, a moment in time. The more data you have, the less likely

CONTINUED ON NEXT PAGE

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TICK STUDY EXPANSION
FROM PREVIOUS PAGE

you are to be fooled by an anomaly.”

Dowling said he hoped to deliver a new batch of several thousand tick collection kits to extension offices this spring.

Dowling said the U.S. Centers for Disease Control and Prevention considers Arkansas and its neighboring states a “hot spot” for tickborn illness, including spotted fever, ehrlichiosis, tularemia and others.

“We’re typically No. 1 in any given year,” Dowling said.

In 2018, researchers confirmed the presence of the Longhorned tick (Haemaphysalis longicornis) in Benton County, Arkansas. The tick, which is known to carry and transmit both viral and bacterial tickborne diseases, is native to East Asia and was first detected in the United States in 2017. To date, however, only one Longhorned tick nymph

has been confirmed in Arkansas, Loftin said this week.

Despite the new arrival, Loftin said that residents should simply continue to exercise the same precautions they would with the state’s existing tick population. Recommended preventive measures include wearing long-sleeved shirts and long pants, tucking pants into socks, and applying insect repellent to both skin and clothes. Individuals should inspect themselves for ticks thoroughly as soon as possible after potential exposure.

Additionally, residents should maintain an effective tick control program on pets that are allowed outdoors. Piles of wood or rubbish should be kept far away from animals and homes, as they tend to serve as shelter or habitats for rodents, which can carry ticks, insects and disease.

—Source: Adapted from a University of Arkansas Extension release.

JRS VALUE-ADDED CALF TAGS



JRS CALF-VAC
SOURCED
(WHITE TAG)

Calves must be born on producer’s farm and given one round of shots within six weeks prior to sale date. These calves can be weaned but must still wear the calf-vac tag.

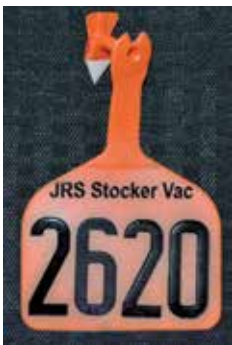
JRS WEAN-VAC 45
NON-SOURCED
(GRAY TAG)

Calves must be born on producer’s farm and given two rounds of shots. The second round boosters must be given 2-5 weeks after the first round, modified-live vaccine is required for the booster shot. Cattle must be weaned for a minimum of 45 days.



JRS WEAN-VAC 45
NON-SOURCED
(ORANGE TAG)

Calves must be given two rounds of shots with the second round booster given 2-5 weeks after the first round, modified-live vaccine is required for the booster shot. These calves must be weaned a minimum of 45 days. This program is for stocker cattle that are purchased and weaned for a minimum of 45 days.



Vaccinations should be administered in the neck area following Beef Quality Assurance guidelines. Write date of administration for each product used in appropriate area, month and day.

Administration Information: JRS recommends a good vaccination protocol - use name brand vaccines and wormers

PRODUCT ADMINISTERED			JRS Calf Vac Sourced
Vaccine Protocol	List Product & Brand in this column		1st Dose Date
Respiratory Virals IBR-BVD-P13-BRSV 1st Round MLV or Killed Booster Dose MLV only	1st		White Tag X
	2nd		
Clostridial/Blackleg			X
Haemophilus Somnus (Optional)			
Mannheimia (Pasteurella) Haemolytica			X
Parasite Control (Dewormer)			
Implant			

X indicates the vaccine is required and must be administered.

All males are to be castrated and all heifers are guaranteed “open”. If any bulls are found, seller will be billed for the loss of the buyer; sellers any of bred heifer(s) will be given the option to take home the bred heifers or billed the loss after the re-sale of bred heifer(s).

PRODUCTS ADMINISTERED ACCORDING TO BQA GUIDELINES _____ YES

I certify that the calves listed meet or will meet JRS requirements and products have been or will be administered according to label directions and BQA guidelines. I also certify that the information on this form is true and accurate.

Signature of either OWNER/MANAGER or VETERINARIAN is REQUIRED

Signature of Owner/Manager/Veterinarian _____ Ranch/Operation Name _____ Date _____

I wish to enroll in JRS Value Added Program

Check Protocol: ☐ JRS Calf / ☐ JRS Vac 45 / ☐ JRS /
 Vac Sourced / Weaned Sourced / Stocker Vac /

RANCH/OPERATION INFORMATION

RANCH/OPERATION INFORMATION

Name cattle will be sold under _____

Owner/Manager _____

Address _____

City _____ State _____ Zip _____

Phone/Cell _____ Fax _____

Field Representative _____

Marketing Information

Estimated Number of Steers _____ Estimated Number of Heifers _____

Weaning Date, if applicable (mm/dd/yy) _____

Approximate Marketing Date (mm/dd/yy) _____

Approximate Sale Weight _____ lbs. to _____ lbs

Breed _____

Check Marketing Choice:

- ☐ JRS Livestock Auction
- ☐ JRS Video Auction

Other Management Practice Information

Please check and date all that apply:

☐ Castrated/spayed _____ ☐ Dehorned _____ ☐ Bunk broke _____ ☐ Tank broke _____ ☐ Guaranteed Open
 (date) (date) (date) (date) day of Sale

Tags must be purchased through JRS _____ or a Complying Program such as MFA Health Track _____.

Please attach proof of purchase and return documentation and completed form to DAYS PRIOR TO SELL DATE to:
JRS Value Added Enrollment mailed to, P.O. Box 634, Carthage, MO 64836 or fax to 417-548-2370 - Can be scanned and
email to markh@joplinstockyards.com: For more info or questions please call Mark Hartman at 417-316-0101 or office 417-
548-2333. Info is also available on our website: www.joplinstockyards.com

COMPLETE FRONT AND BACK! INCOMPLETE FORMS WILL BE RETURNED!

Value-Added Feeder Cattle Sale

Thursday, June 27, 2019

Mean Date: May 13

Vaccinations should be administered in the neck area following Beef Quality Assurance guidelines. Write date of administration for each product used in appropriate area, month and day.

Write date of administration for each product used in appropriate area, month and day.

Administration Information: JRS recommends a good vaccination protocol - use name brand vaccines and wormers

PRODUCT ADMINISTERED		JRS Vac 45 Weaned Source		
Vaccine Protocol	List Product & Brand in this column	1st Dose Date	Booster Date	
	Respiratory Virals IBR-BVD-P13-BRSV 1st Round MLV or Killed Booster Dose MLV only	1st	Gray	Tag
	1st	X		
	2nd		X	
Clostridial/Blackleg		X	X	
Haemophilus Somnus (Optional)				
Mannheimia (Pasteurella) Haemolytica		X		
Parasite Control (Dewormer)		X		
Implant				

X indicates the vaccine is required and must be administered.

All males are to be castrated and all heifers are guaranteed "open". If any bulls are found, seller will be billed for the loss of the buyer; sellers any of bred heifer(s) will be given the option to take home the bred heifers or billed the loss after the re-sale of bred heifer(s).

PRODUCTS ADMINISTERED ACCORDING TO BQA GUIDELINES	YES
1. <i>Amoxicillin</i>	1
2. <i>Amoxicillin-clavulanate</i>	1
3. <i>Cefazolin</i>	1
4. <i>Ceftriaxone</i>	1
5. <i>Clindamycin</i>	1
6. <i>Doxycycline</i>	1
7. <i>Erythromycin</i>	1
8. <i>Furazolidone</i>	1
9. <i>Gentamicin</i>	1
10. <i>Metronidazole</i>	1
11. <i>Nafcillin</i>	1
12. <i>Penicillin G</i>	1
13. <i>Penicillin VK</i>	1
14. <i>Spectinomycin</i>	1
15. <i>Tetracycline</i>	1
16. <i>Vancomycin</i>	1
17. <i>Trimethoprim-sulfamethoxazole</i>	1
18. <i>Vancomycin</i>	1
19. <i>Other</i>	1

I certify that the calves listed meet or will meet JRS requirements and products have been or will be administered according to label directions and BQA guidelines. I also certify that the information on this form is true and accurate.

Signature of either OWNER/MANAGER or VETERINARIAN is REQUIRED

Signature of Owner/Manager/Veterinarian

Ranch/Operation Name

Date

EVENT ROUNDUP

April

- 6Panther Creek Ranch Bull & Female Sale
Bowen, Illinois
FMI: 217-430-9796
- 13Ozark & Heart of America Beefmaster Spring Sale
Springfield Livestock Marketing Center
Springfield, Missouri
FMI: 417-827-9391
- 18Prime Time Livestock Video Sale
Joplin Regional Stockyards, Carthage, Missouri
FMI: JRS office 417-548-2333 or
Colby Flatt, video manager, 620-870-9100
- 20Bradley Cattle Co. Bred Heifer & Bull Sale
Springfield Livestock Marketing Center
Springfield, Missouri
FMI: 417-848-3457
- 278th Annual Highland Cattle Auction
Mid Missouri Stockyard, Lebanon, Missouri
FMI: 417-733-3201

May

- 4LeForce Herefords Complete Dispersal Sale
Enid, Oklahoma
FMI: 580-984-1480
- 7Management-Intensive Grazing School
Mt. Vernon, Missouri
FMI: 417-466-3102

May

- 9Prime Time Livestock Video Sale
Joplin Regional Stockyards, Carthage, Missouri
FMI: JRS office 417-548-2333 or
Colby Flatt, video manager, 620-870-9100
- 11Harriman Santa Fe Complete Female Dispersal
Windsor Livestock Auction, Windsor, Missouri
FMI: 660-492-2504
- 11Miss Mid America Futurity & Beefmaster Sale
Locust Grove, Oklahoma
FMI: 254-541-4643
- 11T Bar S Cattle Co. Field Day
Billings, Missouri
FMI: 573-690-3813
- 14Management-Intensive Grazing School
Nevada, Missouri
FMI: 417-667-8137
- 17Show-Me-Select Replacement Heifer Sale
Joplin Regional Stockyards, Carthage, Missouri
FMI: 417-466-3102

June

- 4Management-Intensive Grazing School
Neosho, Missouri
FMI: 417-451-1007, ext. 3
- 6Prime Time Livestock Video Sale
Joplin Regional Stockyards, Carthage, Missouri
FMI: JRS office 417-548-2333 or
Colby Flatt, video manager, 620-870-9100

Vaccinations should be administered in the neck area following Beef Quality Assurance guidelines. Write date of administration for each product used in appropriate area, month and day.

Administration Information: JRS recommends a good vaccination protocol - use name brand vaccines and wormers

PRODUCT ADMINISTERED		JRS Stocker Vac	
Vaccine Protocol	List Product & Brand in this column	1st Dose Date	Booster Date
Respiratory Virals IBR-BVD-P13-BRSV 1st Round MLV or Killed Booster Dose MLV only	1st	X	Orange Tag
	2nd		X
Clostridial/Blackleg		X	X
Haemophilus Somnus (Optional)			
Mannheimia (Pasteurella) Haemolytica		X	
Parasite Control (Dewormer)		X	
Implant			

X indicates the vaccine is required and must be administered.

All males are to be castrated and all heifers are guaranteed "open". If any bulls are found, seller will be billed for the loss of the buyer; sellers any of bred heifer(s) will be given the option to take home the bred heifers or billed the loss after the re-sale of bred heifer(s).

PRODUCTS ADMINISTERED ACCORDING TO BQA GUIDELINES _____ YES

I certify that the calves listed meet or will meet JRS requirements and products have been or will be administered according to label directions and BQA guidelines. I also certify that the information on this form is true and accurate.

Signature of either OWNER/MANAGER or VETERINARIAN is REQUIRED

Signature of Owner/Manager/Veterinarian _____ Ranch/Operation Name _____ Date _____

MARKET WATCH

Joplin Regional Stockyards

Get the complete Joplin Regional Stockyards Feeder Cattle Market Summary online at www.joplinstockyards.com.

JRS Sale Day Market Phone: (417) 548-2012
Mondays (Rick Huffman) | Wednesdays (Don Kleiboeker)
Market Information Provided By Tony Hancock
Mo. Department of Agriculture Market News Service
Market News Hotline (573) 522-9244
Sale Day Market Reporter (417) 548-2012

Market Recap | Feeder Cattle Auction

March 25, 2019 • Receipts 7,087

Compared to last week, steer calves 3.00 to 5.00 higher, heifer calves and yearlings steady to 3.00 higher. Demand good, supply moderate to heavy. The USDA Cattle On Feed report showed 101 percent On Feed, Placements at 102 percent, and 101 percent Marketed. Placement numbers were higher than many expected. Live Cattle and Feeder Cattle futures responded with triple digit losses. Supply included: 100% Feeder Cattle (49% Steers, 46% Heifers, 5% Bulls). Feeder cattle supply over 600 lbs was 38%.

Steers (Per Cwt / Actual Wt) Medium and Large 1 250-300 lbs 212.50; 300-350 lbs 190.00; 350-400 lbs 192.50-200.00, Thin Fleshed 205.00, Fleshy 182.50-190.00; 400-450 lbs 186.00-196.00, Fleshy 182.00-190.00; 450-500 lbs 177.50-192.00, Fleshy 170.00-189.00; 500-550 lbs 172.50-188.00, Thin Fleshed 186.00, Fleshy 177.50; 550-600 lbs 162.00-192.00, Thin Fleshed 173.00-176.00, Fleshy 155.00-162.00; 600-650 lbs 156.00-173.00, Unweaned 150.00-156.00; 650-700 lbs 144.00-172.00, Full 141.00; 700-750 lbs 141.00-154.25; 750-800 lbs 137.00-147.00; 800-850 lbs 134.50-144.00, Unweaned 132.00; 850-900 lbs 134.00-137.10; 900-950 lbs 131.00-131.75; 950-1000 lbs 129.00; 1150-1200 lbs Fleshy 111.50. **Medium and Large 1-2** 300-350 lbs 165.00-187.50, Thin Fleshed 200.00; 350-400 lbs 175.00-187.50, Thin Fleshed 200.00; 400-450 lbs 167.00-182.50; 450-500 lbs 167.00-185.00, Thin Fleshed 188.00-192.50; 500-550 lbs 165.00-177.50, Thin Fleshed 180.00-182.50; 550-600 lbs 150.00-170.00, Fleshy 152.00; 600-650 lbs 150.00-157.50, Unweaned 153.00; 650-700 lbs 142.00-149.00; 700-750 lbs 135.00-144.00; 750-800 lbs 132.00-138.00; 800-850 lbs 133.00; 850-900 lbs 123.00-125.00; 900-950 lbs 126.00-127.00; 1050-1100 lbs 119.00. **Medium and Large 2** 400-450 lbs 162.00; 450-500 lbs 152.50; 500-550 lbs 146.00; 550-600 lbs 137.50; 650-700 lbs 138.00; 700-750 lbs 127.00-130.00. **Medium 1-2** 600-650 lbs 138.00. **Medium 2** 700-750 lbs 121.00.

Heifers (Per Cwt / Actual Wt) Medium and Large 1 200-250 lbs Fleshy 170.00; 300-350 lbs 158.00-165.00, Fleshy 160.00; 350-400 lbs 162.00-163.00, Fleshy 161.00; 400-450 lbs 155.00-165.00, Fleshy 150.00-155.00; 450-500 lbs 152.00-163.00, Fleshy 151.00; 500-550 lbs 145.50-158.00, Fleshy 138.00-151.00; 550-600 lbs 139.00-157.50, Fleshy 131.00-135.00; 600-650 lbs 138.00-144.00, Unweaned 135.00-138.00; 650-700 lbs 131.00-144.00, Unweaned 135.00; 700-750 lbs 127.75-135.00; 750-800 lbs 127.75-139.60; 800-850 lbs 124.75-128.50; 850-900 lbs 123.00-125.50; 900-950 lbs 119.00-123.00; 1150-1200 lbs Fleshy 100.00. **Medium and Large 1-2** 200-250 lbs 155.00; 300-350 lbs 140.00-165.00, Thin Fleshed 157.50-162.00; 350-400 lbs 145.00-157.00, Thin Fleshed 158.00, Fleshy 150.00; 400-450 lbs 148.00-161.00, Thin Fleshed 158.00-165.00, Fleshy 147.00; 450-500 lbs 138.00-156.00, Thin Fleshed 156.00-160.00; 500-550 lbs 132.00-141.00; 550-600 lbs 131.00-143.00, Thin Fleshed 142.00; 600-650 lbs 131.00-140.00; 650-700 lbs 128.00-136.00; 700-750 lbs 117.00-130.00; 750-800 lbs 126.00; 800-850 lbs 119.00-120.00; 850-900 lbs 122.00, Full 100.00; 900-950 lbs 95.00. **Medium and Large 2** 350-400 lbs 140.00; 400-450 lbs 132.00; 450-500 lbs 137.50-138.00; 600-650 lbs Unweaned 119.00; 650-700 lbs 117.50-120.00. **Medium 1-2** 350-400 lbs 133.00; 400-450 lbs 140.00; 500-550 lbs 138.00. **Medium 2** 500-550 lbs 132.00; 550-600 lbs 136.50. **Medium 2-3** 350-400 lbs 140.00. **Small and Medium 2-3** 400-450 lbs 142.50; 500-550 lbs 125.00.

Bulls (Per Cwt / Actual Wt) Medium and Large 1 350-400 lbs 183.00-190.00; 400-450 lbs 172.00; 500-550 lbs 165.00; 550-600 lbs 155.00-163.00; 600-650 lbs 155.00, Unweaned 145.00; 650-700 lbs Unweaned 144.00. **Medium and Large 1-2** 250-300 lbs 205.00; 350-400 lbs 168.00-200.00; 400-450 lbs 155.00; 450-500 lbs 156.00, Value Added 170.00; 500-550 lbs 160.00; 550-600 lbs 150.00; 600-650 lbs 157.00; 650-700 lbs Unweaned 142.00; 700-750 lbs 122.00; 750-800 lbs 111.00-117.50. **Large 1** 600-650 lbs Unweaned 142.00

Please Note: The above USDA LPGMN price report is reflective of the majority of classes and grades of livestock offered for sale. There may be instances where some sales do not fit within reporting guidelines and therefore will not be included in the report. Prices are reported on an FOB basis, unless otherwise noted.

—Source: USDA-MO Dept of Ag Market News Service. Rick Huffman, Market Reporter, (573) 751-5618. 24 Hour Market Report 1-573-522-9244



SAVE THE DATE!

**Value-Added
Feeder Cattle Sale
June 27, 2019**

Wean date: May 13

See Value-Added Program
forms on pages 53, 54 & 55
of this issue.



Tune in to the JRS Market Report

Station	Frequency	Day	Time
KKOW	860 AM	M/W	12:50 p.m. & 4:45 p.m.
KRMO	990 AM	M-F	9:55-10:05 a.m.
KRMO	990 AM	M/W/F	Noon Hour
KRMO	990 AM	T/Th	Noon Hour
Outlaw	106.5 FM	M/W	11:45 a.m.
The Z	102.9 FM	M/W	12:40 p.m.
KTTS	94.7 FM	M/W	11:30 a.m. & 12:30 p.m.
KGGF	690 AM	M/W	11:30 a.m. & 12:30 p.m.
KWOZ	103.3	M/W	11:30 a.m.
KHOZ	900 AM	M/W	12:15 p.m.



MARKET WATCH

Market Recap | Prime Time Livestock Video Sale March 25, 2019 • Receipts 613

Demand moderate to good for this Prime Time Video Auction at the Joplin Regional Stockyards. The Video Sale was held following Joplin's Regular Monday feeder cattle sale. The cattle offered are in Missouri, Oklahoma and Arkansas. An eight cent slide or an eighty cent right slide and two percent pencil shrink will apply. Deliveries are current through July, 2019. Supply included 58 percent steers, 42 percent heifers, with 100 percent over 600 lbs.

Southcentral States: Texas, Oklahoma, New Mexico

Feeder Steers: Medium and Large 1

Head	Wt Range	Avg Wt	Price Range	Avg Price	Delivery
117	850-875	862	140.00-144.25	142.11	Jun
60	850	850	144.00	144.00	Jul

Feeder Steers: Medium and Large 1-2

Head	Wt Range	Avg Wt	Price Range	Avg Price	Delivery
61	825	825	134.00	134.00	Current
61	825	825	136.50	136.50	Apr

Feeder Steers: Medium and Large 2

Head	Wt Range	Avg Wt	Price Range	Avg Price	Delivery
56	900	900	133.00	133.00	May-Jun



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Feeder Heifers: Medium and Large 1

Head	Wt Range	Avg Wt	Price Range	Avg Price	Delivery
60	850	850	132.50	132.50	Jun

Feeder Heifers: Medium and Large 1-2

Head	Wt Range	Avg Wt	Price Range	Avg Price	Delivery
70	735	735	133.00	133.00	Current

Feeder Heifers: Medium and Large 2

Head	Wt Range	Avg Wt	Price Range	Avg Price	Delivery
63	800	800	128.50	128.50	May-Jun

Eastern States: All states east of the Mississippi, Louisiana and Arkansas.

Feeder Heifers: Medium and Large 1-2

Head	Wt Range	Avg Wt	Price Range	Avg Price	Delivery
65	775	775	129.50	129.50	Current

—Source: MO Dept of Ag/USDA Market News Service, Rick Huffman, Market Reporter, 573-751-5618. 24 Hour Market Report 1-573-522-9244. www.ams.usda.gov/mnreports/JC_LS770.txt

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