VOL. 1 ISSUE 5 · JULY 2021

CATTLECAL NEWSLETTER

ANNOUNCEMENTS

Welcome to the CattleCal newsletter for July 2021! In this issue we have exciting information on supplementing potassium in feedlot diets, the career and research of UCCE livestock and range advisor Matthew Shapero, and a look at a study supplementing methionine and lysine in the diet of calf-fed Holsteins early in the feedlot. If you would like to hear more detailed conversations about the articles in this issue look for our CattleCal podcast on Spotify. Descriptions of this month's episodes and a link to the podcast can be found on page 3. If you have any questions, comments, or would like to submit a question for our Quiz Zinn segment, feel free to contact us. Our contact information can be found on the last page of the newsletter.

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THIS MONTH IN RESEARCH

This month we continued our two research projects. We bolused 20 steers with temperature probes and 20 steers with probes that measure pH and temperature. This will give us real time measurements of temperature and pH during the hottest part of the summer. Animals performed extremely well. Below you will find performance data for these calves. In June we saw average maximum temperatures of 106° F and average minimum temperature of 71° F. Six days in June reached maximum temperature at or above 110° F.

PERFORMANCE SUMMARY

Body weight (d 55)	645 lbs
Body weight (d 84)	787 lbs
ADG	4.85 lbs/d
DMI	18.0 lbs/d
F:G	3.72

June 2021

July 2021

CATTLECAL PODCAST JULY EPISODES

Quiz Zinn - CCP#016

In this episode, we asked Dr. Richard Zinn a question from our listeners related to the addition of potassium in feedlot diets.

BONUS EPISODE - CCP#017

In this episode, we discuss some research updates on the research we are conducting at our facilities at the Desert Research and Extension Center.

Career Call - CCP#018

In the career call of the month, Brooke Latack and Pedro Carvalho called Matthew Shapero. Matthew is the UCCE Livestock and Range Advisor at Santa Barbara and Ventura counties. He discussed his path from being pre-med during undergrad to developing a passion for agriculture.

Research Call - CCP#019

Brooke Latack and Pedro Carvalho call Matthew Shapero again. Matthew shared information about the potential use of using grazing animals to fight against fires in California.

Feedlot Research Call - CCP#020

In this episode, join Pedro Carvalho and Brooke Latack as they discuss a study looking at supplementation of feedlot diets with methionine and lysine.

Listen on Spotify at this link:
https://open.spotify.com/show/6PR02gPnmTSHEgsv09ghjY?si=2zV59nGbSE2mf8DiOqZLhw

Have any questions, comments, or suggestions? Want to send in a Quiz Zinn question? Contact the creators through the below email or through their social media profiles.

- Email: cattlecalucd@gmail.com
- Website: cattlecal.sf.ucdavis.edu
- Instagram: @cattlecal

QUIZ ZINN

We're well into summer here with our temperatures reaching close to 120° Fahrenheit in the Southwest. Other areas are experiencing that same increase in temperature. Some dairy producers are using potassium carbonate to help mitigate the heat load on their cattle. Could you explain the use and benefits of potassium in feedlot diets?

This is actually a very good question and very complicated. The mineral requirements for cattle, as well as all animals, is variable. Some of them are factorial, in other words, they're based on tissue growth. Potassium is a different one. It is, along with magnesium, the principal intracellular cation, and is very important for cellular function.

During the very warm high temperature periods animals will increase water intake due to sweating which leads to increased urination. Holsteins will have an especially high level of water intake during these high ambient temperature periods. This increased water intake will increase potassium loss through the urine. There is obviously a rationale for increasing potassium levels during this period. The conventional potassium source is potassium chloride, because of its lower cost, it doesn't do anything for the cation-anion balance. When we add potassium carbonate then we're able to add that potassium without a negative effect of chloride. This is the interest in the use of potassium carbonate. Potassium carbonate has benefits not only as a source of potassium, but also with use as a buffered. So, there's two added potential benefits during that time. In studies where they've looked at the addition of potassium carbonate in cattle diets, they've seen decrease liver abscess. You can see that there's other side benefits to adding potassium.

Feeding potassium to reduce shrink

If you spike the diet at the end of the feeding period with higher levels of potassium, it may also reduce shrink when cattle are shipped to slaughter. This is especially important if cattle are transported some distance (two or three hours or so) and then are standing around overnight waiting for harvest the next morning, which is when there will be some tissue shrink. We conducted some experiments to show that by spiking the diet with potassium we were able to reduce that shrink. We found that improvement is about 0.5% in dressing percentage, which is very significant. So, obviously, in the Imperial Valley where a lot of the cattle are only shipped a very short distance to harvest, that may not be so important. Where cattle are being transported some distance for harvest, this could be very important.

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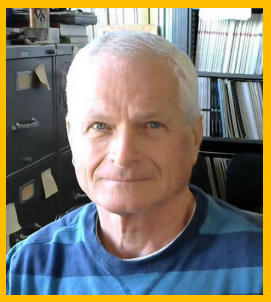

If the cattle are going to be shipped some distance, do you have any recommendations on how early we should increase the potassium in the diet?

In some of our work we looked at increasing it maybe three weeks or so before, which would coincide for those that are using a beta agonist. At the end of feeding, they could add the potassium to that diet and that might be beneficial. We've also looked at just the last seven days before harvest and that was sufficient to increase dressing percentage by 0.5%. This timing may work in feedlots where they're going back and having beta agonist withdrawal, for example of they were using so Zilpaterol, then they could just add that the last three days or four days in the withdrawal diet. So that could be convenient mechanism for adding it. But again, this is mainly a factor cattle are going to be harvested some considerable time after being shipped from the feedlot.

Magnesium/Potassium Interaction

One of the things that people don't understand is that potassium and magnesium are very, very closely related. Magnesium is essential for maintenance of properly functioning sodium-potassium ATPase, which regulates the concentration of potassium inside the cell to be maintained. This is important because about 75% of the cellular energy expenditure is in maintaining that gradient. One of the benefits that we see when we see improvements in gain efficiency and growth during periods of high ambient temperature is proper concentration of not only potassium, but also magnesium. When you look at the literature, the National Research Council has been variable on what they consider potassium requirements. Part of that problem is because they have paid very little attention to magnesium requirements, so you can be assured that in most feedlot diets, magnesium levels are not adequate. When feedlots increased potassium in the diet, they've actually depleted magnesium even further than it was. In a lot of those studies where they show negative responses to higher levels of the potassium, in my opinion, that's due to the fact that the diets were very deficient in magnesium. Here at the Desert Research Center we conducted two large experiments showing the importance of increasing magnesium levels and how that has helped improve performance. Our diets are normally high, about 0.8% potassium. You'll see in the High Plains, in the Midwest, and other parts of the country, the dietary potassium levels are usually down around 0.4%. In a strictly corn based diet, they would be down around 0.4% potassium. The National Research Council recommends about 0.6%. Those diets hitting around 0.4% potassium would be deficient no matter what.

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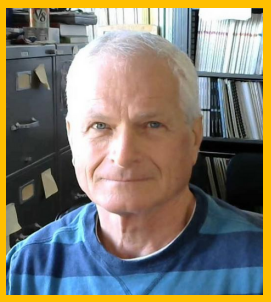

Typically, a nutritionist paying attention to that would increase that potassium level with a little bit of potassium chloride, maybe 0.15-0.2% potassium chloride in the diet. Although molasses is expensive, out here in the west we add a little molasses to the diet and that brings our potassium levels to 0.75-0.8%. We are feeding a higher level of potassium than other parts of the country without the need for additional potassium to bring that level up. The problem is that we need to increase the magnesium level, especially during the summer time. Our research indicates that level should be 0.28-3% magnesium in the diet. The National Research Council recommends 0.1%, but we should understand that zero studies, except the ones we've conducted here, have been conducted with functioning ruminants and addressing the magnesium requirement. The National Research Council estimation of magnesium requirement is probably way off.

Is there a situation where you wouldn't want to add additional potassium to the diet or where it would not have a benefit?

Potassium can reduce the palatability of the diet. We have to recognize, that especially if we have to add a lot of potassium carbonate, for example. You can also run into potassium toxicity if you give it in too high of a level. There are some studies where they fed extremely high levels of potassium and they saw some serious reductions in animal performance. If we're not increasing magnesium, increased potassium levels, using either potassium chloride or potassium carbonate, could depress performance. That's due to the change in acceptability of the diet and you need to be very careful about that. Be wise in your approach to adding potassium. Usually we're talking about a conventional diet with 0.4% potassium and adding 0.35-0.4% potassium to the diet, not 1%.

TAKE HOME MESSAGES

- Always pay attention to magnesium when adding potassium to the diet.
- A spike in dietary potassium shortly before being shipped to slaughter can reduce shrink and increase dressing percentage. This is specifically for animals being shipped some distance, not short distance.
- Molasses has a greater amount of potassium, so diets supplementing molasses may not need additional potassium.
- Heat increases water intake, which increases loss of potassium through urine. Potassium supplementation during this time could be beneficial.
- Holsteins may drink up to twice as much as crossbred cattle in the hot months. This can mean a greater loss of potassium in Holsteins in the feedlot.

CAREER CALL WITH MATTHEW SHAPERO

Where are you from and what do you do?
I am from California. I'm actually from Santa Barbara, which is the city that is in Santa Barbara County. I have to say, it's a funny feeling because growing up in Santa Barbara I didn't really grow up in agriculture, so even though I'm back in the county that I grew up in it feels like a different place in a strange way. I currently work in Santa Barbara County and Ventura County. On my mother's side I am a sixth generation Californian, so I have deep roots in the state.

You're a livestock and range advisor working in Santa Barbara and Ventura Counties. What do you do in a day as an advisor?
One of the best parts of these cooperative extension jobs is that they are incredibly varied. Every day is different. As you noted, I'm the livestock and range advisor with Cooperative Extension which means that I work on rangelands in two counties. I work with livestock producers predominantly, although that also includes other land owners of rangeland and other agencies or non-profits or government organizations that manage rangeland. Our jobs are two-fold. We conduct research that's relevant to our clientele but then also to extend that research that we ourselves conducted or other research across the state or the country that's relevant to our clientele. That means 50-75% of the time I'm in the office coordinating research, answering client phone calls, serving on various capacities within the university. I do get a significant amount of time out in field, which is nice. That's more seasonal, so you have big pushes in the field in the fall and spring, which are typical seasons for field work in the range discipline. We get to pursue a lot of different threads, a lot of different interests. Whether that's livestock health, livestock production, range health, etc. Everyday is different.

Why did you decide to work with livestock and what is your educational background?
So even though I sort of landed back more or less in the same place where I grew up, I took a pretty circuitous path in between. I got initially exposed to and interested in agriculture in probably one of the strangest places on earth for that to happen, which is New York City. I was an undergraduate at Columbia University in Manhattan. Toward the end of my time as an undergraduate I became interested in food systems and food production farming on the East Coast. There's a very robust and vibrant small farm movement in the northeast. I was pre-med and graduating in December of 2008, in the middle of the financial crisis. I had a job all lined up to work on an ambulance as an EMT for FDNY. They froze hiring. I decided that was just as well and I was more interested in agriculture, anyway. I went out and worked on farm. Fast forward a little bit, I ended up returning to Northern California. I tried to start several small farm and ranch businesses from running livestock and growing specialty crops. I came to extension from the perspective of a producer.

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CAREER CALL WITH MATTHEW SHAPERO

I was really affected by and benefitted from working with the livestock and range advisor up in the Nevada county, Roger Ingram, who is retired. I experienced firsthand the power of extension and how important it can be in supporting agricultural production and providing information to what I was, which was a fledgling upstart agricultural operator. Partly inspired by working with Roger I returned to get my range science degree at UC Berkeley. A few years after getting that degree this job opened up. I have been in extension for the last four years.

That's a big swing going from pre-med and working on an ambulance to agriculture. What was that decision like?

My story is not dissimilar to a generation's story. I think there's been a renaissance or re-blossoming of interest in agriculture in a particular way, which is thinking about how our food and the things that consume can be sustainably or thoughtfully produced. That was kind of where I was coming from, originally. I don't know what it was about that particular time in my life that thinking about agriculture and wanting to be involved in agriculture really resonated with my values and with my general interest in wanting to understand how the things that I consumed worked and how they were produced. There's always been, for many generations, romance around agriculture. The Yeoman farmer out toiling individually on his or her plot of land and is in some ways part of the American vision or manifest destiny. Since then I've been disabused of a lot of those romantic notions and visions and understand that it's a complex, complicated, expensive, and difficult endeavor. I attempted to be a farmer/rancher myself. At the end of the days I couldn't put together an economically viable business. It's interesting being in the position that I'm in to be able to sort through some of those complexities and straddle the worlds of the idealistic notions of how agriculture can save the planet but then also the real nuts and bolts of what it takes to run an operation. It's been a real transition and odyssey in the way that I've related to agriculture.

Can you tell what your favorite thing to do on the daily basis? And maybe your least favorite thing to do in your position?

I think back to when I first found out that I had gotten this job. I was it in the process of accepting the position and I reached out to my major professor Jamie Bartolome, a longstanding range professor at UC Berkeley. He congratulated me and really emphasized this notion of service and what cooperative extension is fundamentally a way to serve the public, serve our clientele, and be of service to other Californians. The parts of my day that I like the most is when it feels like I'm really helping people. Sometimes that's fewer and farther in between. Ranching and agriculture is really hard. It's really complex and there's a lot of pieces that go into what it takes to run a productive and profitable farm or ranch. I'm not sure that all of my research on this one really sort of nerdy topic is ultimately going to fundamentally change an individual's operation.

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But, there are moments throughout my days and weeks when I either get feedback or can sense the information or the work that I do on behalf of the clientele are really meaningful. I got a call from a rancher friend/colleague. We talk all the time about prescribed fire and he helps me with some of my range monitoring work. He just called the other day to say thank you for all that I do for the community and that was unexpected recognition. It also nicely reminded that at the end of the day what we do impacts people's lives in our own little way. So, as general answer it's probably this positive feedback that we get from the community. One of the challenges of our system is that as public funding diminishes, advisors are expected to cover more and more ground. While I love serving the two counties I do, it's a lot of moving around and big distances. There are a couple of major cities in my counties that are in between where all the ranching and rangeland production happens, so traffic and just being in the truck a lot. I can't complain and I get probably more work done in the truck than I should. I often get a call from a colleague and every time I pick up he says "Now are you being a good range advisor on the road somewhere?" and I said sure enough Jeremy, I am.

You mentioned mentors previously. Can you discuss the role of mentors in your career and any tips you have for people looking for mentors?

I don't know that I'm the sort of person who proactively seeks advice and mentorship. It's just kind of my personality. I do have to say that in my range career and professional life I have had a lot of folks who have stepped up to be a part of my career, to give me advice, and support me whether I liked it or not. One thing I can say is that in California we are in a fairly small discipline which means there's not a lot of us who are professionally engaged and thinking on rangelands. It's a tight knit community. People care about one another and, especially the older generation, really want to support the younger people. There's actually a lot of career opportunity in the range discipline. There's a lot of agency jobs, federal jobs, and land managing jobs. Especially in California with more and more land moving from private ownership to non-profit ownership through land trusts or special districts that are administered by counties, there's increasingly a need for well qualified and well trained individuals to manage that land or at least act as a sort of conduit between the agency and the people and the ranchers or livestock producers who are managing the land. That's all just to say that I think there's a lot of opportunities for people who may be interested in land or natural resource management. There are really incredible elders and advisors and mentors who are still interested in supporting that. That happens with the university systems, so Humbolt State, Davis, Berkeley, Cal Poly, and San Luis all have rangeland academics, teachers, and coursework. There are people who are there that are naturally inclined toward work with students and supporting young people. There's a lot of opportunity in the discipline for that.

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CAREER CALL WITH MATTHEW SHAPERO

What is it like working and interacting with cattle producers?

I feel like the premise of these jobs are a little bit funny, especially when young people get moved into a region, maybe one that they didn't grow up in and don't necessarily have local expertise. I'm technically supposed to be some sort of expert and advise producers and clientele about what to do. I find that more often than not they have more to teach me than I them. The irony of it is by the time I finally really made the am an expert and have been in the community long enough to know how things work and understand what people need it's going to be near the end of my career. I'm exaggerating a little bit, but there is a sort of natural flow to the these jobs work. One of the ways that I found to be the most effective is parsing or making sense of what producers need and then working on their behalf to get them resources or the information or the attention that they wouldn't otherwise be able to achieve or access on their own. Sometimes I get called with questions about how a particular grass work or what to seed with or sort of cattle disease. I'm first to admit I'm no veterinarian. Everyone knows how to do internet search now but I do have a better sense of the resources to lean on and so I'm able to gather and collate information and present it in a more digestible way to a producer. One of my strengths or one of the things that this position has the potential to be strong in is working on behalf of producers to be able to achieve policy or affect change. One program that we're in the midst of rolling out is what we're calling the Ag Pass, which is a little bit related to fire but more specifically wildfire. There was a program in Ventura County that allowed agriculturalists access behind road closures during disasters, typically fire, that way they could care for livestock or irrigate crops. The program was marginally successful in Ventura County and has been around a long time. What I was able to do was identify that this was a need that benefited my clientele and livestock producers, really work behind the scenes at a county level to try to get that program reinvigorated. I then also took the program concept and provided a little bit more energy to the process in Santa Barbara County. Next week we have our third and probably final training of this season. We're handing out Ag Pass ID cards to producers in Santa Barbara County. Hopefully they won't ever need to use them, but when wildfire does impact their ranch or roads or highways are closed around them, they can gain access to take care of livestock. That's a very tangible card that's an outcome of effort that I put in supported by many others. It's a concrete example of a way that cooperative extension lubricates action.

What is your favorite food?

I have been hooked on a fried chicken sandwich they are serving a new restaurant in Lompoc, which is not far from where I live in Santa Barbara County. I will say since I work predominantly with ruminants that I don't typically eat chicken. I stick more to the ruminants, but there's something that's just irresistible about this fried chicken sandwich.

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CAREER CALL WITH MATTHEW SHAPERO

What type of music, podcasts, or audiobooks do you like to listen to?
My favorite type of song is a song that keeps me awake. With the amount I drive and the hours I drive, I frequently feel a little sleepy. I like to listen to stuff I can sing along to. Preferably loudly.

What is one thing you would like to tell your younger self?
Take it slow. I remember that first week or my first month in this job, sitting in my office chair, twiddling my thumbs and waiting for some paperwork to come back from UC Davis feeling like I didn't have enough going on. I told a few colleagues that and remember them saying, “Well just you wait.” Sure enough, I've waited and now I've got way too much going on. I need to learn to be really strategic about when I say yes and to feel more comfortable about saying no to things and not trying to bight off too much. It begins to feel like you're not doing much of anything very well when you have too much on your plate. Yeah, so, take it slow.

CattleCal top tip:
The first thing that comes to mind is a DVD that I recently purchased. I know folks aren’t buying DVDs much now that most things are streaming. The reason I bought the DVD is it's not available on the streaming services. It’s a documentary that I saw for the first time a decade ago when I was first getting interested in agriculture. It's called Sweetgrass (2009). It was made and produced by PBS. It was made by two documentarian filmmakers and it catalogs a sheep drive up in the mountains of Montana. It’s very beautiful. It’s distinctive because it's ambient scenes. There's no story. If nothing else, it makes you appreciate the beauty of the landscapes that we work on. For anyone who likes livestock and likes rangelands. It's a really pleasant beautiful film to watch.

How can our listeners follow your work?
UCCE website: http://ceventura.ucanr.edu/Staff/?facultyid=36948

Facebook: UCCE Livestock & Range (https://www.facebook.com/UCCE-Livestock-Range-2076006222691088)

Instagram: @livestockandrange (https://www.instagram.com/livestockandrange/?hl=en)

RESEARCH CALL WITH MATTHEW SHAPERO

We're going to talk to Matthew Shapero about one of his projects related to livestock grazing to manage burning of rangeland during wildfires.

Can you tell us a little bit about the project and how you developed the idea for the project?
My program has kind of been almost defined by fire in a way. I started just a couple of months before the Thomas fire, which folks may remember was, at the time, the state's largest fire in recorded history at 283 thousand acres burned. The first couple of days of the fire burned a tremendous amount of grazed rangeland. Fire has been on my mind for the length of my career. I've been engaged and in a couple of different projects related to fire, I've tried to think about fire and its interaction with grazing, and even policy work around fire. This particular project that I'm happy to describe today is not really my brainchild. I have to give credit where credit's due. The project is funded through the Russell Rustici Cattle endowment at UC Davis. The project design was spearheaded by a colleague, friend, and a fellow graduate student back in the day, Roxanne Foss. She works for a private consulting firm out of the Bay Area called Vollmar Natural Lands Consulting. She came to a group of UC researchers with this idea to really understand in a little more detail and quantification the interaction of grazing and fire behavior.

Can you go into detail about what you're doing in the project and how it relates to the clientele you serve?
To me, one of the stunning realizations about the state of range science and wildfire science in California is that we don't have a clear sense of how grazing effects fire behavior. It's intuitive and anyone who spent time out on rangeland, grazed rangelands in particular, and have seen wildfire move through those landscapes knows that grazing changes fire behavior and reduces fire activity and fire behavior. So, yes it's a good prescription to graze as a way to either stop fire or mitigate or slow the effects of fire, but as our state becomes increasingly affected and impacted by the scale and scope of wildfires on an annual basis it seemed important to understand that relationship more specifically and concretely. The stunning part is that we don't really have that information. The basic way that we measure range use or the intensity of grazing is by measuring the amount of biomass that present on the landscape. That's measured in pounds per acre (lbs/acre). It's common to talk about there being 800 lbs/acre or 1500 lbs/acre or maybe at peak production there's 4000 or 5000 or 6000 lbs/acre. There's a number of like important conversions you can use to understand how much cattle or sheep are eating on a daily basis or how many grazing days you might have in acre, etc. A really important management tool that we have is this idea of residual dry matter, which is the amount of biomass that's left at the end of the grazing seasons or right before the first rains in California. For our Mediterranean climate that would hopefully be in the fall. A lot of the time agencies or land owners who are interested in controlling grazing on their property will set a mark of what level a producer can grazer his or her cattle.

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RESEARCH CALL WITH MATTHEW SHAPERO

That depends on slope, tree cover, and rain fall zone, but it's somewhere around 600-800 lbs/acre. Maybe 1200 lbs/acre towards the coast and systems that have more of a perennial grass component. But this fire research is piggybacking off of some of those more basic management concepts. What we were interested in doing was manipulating grass to be specific levels of biomass and then trying to understand how those levels of biomass relate to different fire behavior metrics. We're trying to do that on a statewide scale. We're aiming for at least 9 sites, hopefully 12, although we're finding that it's increasingly hard and complicated to get fires accomplished. I will admit the prescribed fire we are doing is not wildfire. Wildfire typically burns under more extreme conditions like lower relative humidity and higher temperatures. Prescribed fie is kind of the best we can do to replicate wildfire. We do try to push the envelope. Just last week we burned and it was in the 80s and the relative humidity was in the low 30s, so we're not far off what wildfire conditions would be. We set up these plots before the burn and the plots are three biomass levels and then we have a fourth level which is our sort of control or unmanipulated level. The mowing we use to achieve the biomass levels is not grazing, but it's attempting to be a proxy for grazing. The biomass levels were 250 lbs/acre, 750 lbs/acre, 1250 lbs/acre, and an unmanipulated control. During the fire we're burning these strips of land and measuring fire behaviors including how fast the fire is moving, how high the flames are getting, the intensity of the fire using temperature sensitive paint that burn off at different temperatures. We're able to get a sense of how hot these fires are. We're hoping to derive some quantitative relationships between rate of spread and flame height and these different grazing levels and hopefully begin to generate some recommendations about how hard you need to graze be able to reduce fire behavior in ways that are relevant for firefighting or fire suppression efforts. The experimental work that we're doing is just in grasslands, so we're not treating shrublands and woodlands. So that sort of relationship between pounds per acre and fire behavior will only hold for the grassland.

Is there any difference between the cattle and small ruminants in grazing? Is there one that would be preferred over another?

It's not something that we will be able to answer with this particular project because we're not using any grazing, we're using a weed wacker. I think a larger point is that there is a cattle industry in the state, there's still a sheep industry in this state, but there's also this new, blossoming industry of targeted grazing most often with small ruminants. It's a very different business model. Instead of paying to graze you actually get paid to graze. So many of these new operators are taking advantage of the very real threat of fire and people's willingness and desire to pay to have vegetation removed. The vegetation is frequently grassland but it's also often shrubland or woodland vegetation types. Sheep, goats, and cattle graze differently. For grazing on rangeland for fire suppression the difference is not necessarily in the mechanical way they eat, though there is a difference, but their diets and their vegetative species selection is different. People think of goats as being better browsers and eating shrubs and woodland species more readily, which is true.

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RESEARCH CALL WITH MATTHEW SHAPERO

There's that to consider when you're thinking about using grazing animals. You want to pick the right animal for the vegetation type you have. One point to make is that targeted grazers are willing to graze hard whenever you want to pay them to do that. Commercial production grazing that happens in a traditional cattle or sheep operation is very different. For example in a production cattle operation there's a much more nuanced feed management scenario. The rancher is needing some balance. One of the points of tension in California when it comes to balancing livestock production and fire ire is that commercial producers graze inherently conservatively, especially in the summer months because they're always needing to have feed to carry them through the year. In summer when you would want your grasslands to be grazed pretty hard in the context of slowing or stopping fire from moving across the landscape, ranchers are typically unwilling to graze that hard across their whole ranch because they need feed for six or eight more months. Perhaps in the context of the cattle operation, we need to think harder about whether there are strategic pastures that either typically have fire move on them or if the prevailing winds mean bring fire from a certain direction, so you want to graze those strategic pastures much harder in the summer, while leaving other pastures largely ungrazed for winter feed. Just by way of contrast, with targeted grazing you're able to graze much harder because the targeted grazers can graze your property and then move onto another one and they always have feed somewhere else for later in the year. One of the outcomes, of our work is giving people a better sense of how hard you have to graze to be effective in the context of fire. I've heard, anecdotally, stories of cities or counties or municipalities that have hired targeted grazers, typically sheep or goats, and have given them the instruction that they want certain grassland areas grazed down to dirt because that's what they think they need to ensure that fire won't affect that particular area. There are certainly some natural resource concerns when you graze down to dirt, and especially if you do it year after year in the same area. One of the anticipated outcomes of our work will be to demonstrate that perhaps you don't need the graze down to dirt to accomplish some of the same goals in terms of being fireproof or fire resilient. Perhaps it's not 0 lbs/acre, but instead it's 300 lbs/acre. It may accomplish the same thing but you're still leaving some vegetation above ground to address some of the other natural resource concerns.

FEEDLOT RESEARCH BRIEF

Effect of supplementation of calf-fed Holstein steer feedlot diets with methionine and lysine on performance

Introduction

- The initial feedlot growing phase is the period where metabolizable methionine is expected to be the first limiting amino acid in calves fed a steam-flaked corn-based diet with urea as the sole source of supplemental N.
- Deficiencies in amino acids early in feeding can lead to negative effects on performance which can lead to economic losses.

Methods

- 150 Holstein steers (323 ± 11 lbs) were blocked by weight and sorted into 30 pens (5 steers/pen) for a 112 day feeding trial.
- Treatments for the initial 56 days on feed were:
  1. No amino acid supplementation
  2. 0.032% methionine + 1.01% lysine
  3. 0.064% methionine + 1.01% lysine
  4. 0.096% methionine + 1.01% lysine
  5. 0.128% methionine + 1.01% lysine
- Animals were fed the same basal diet without amino acid supplementation from day 56-112

Results

- Initial 56 days on feed
  - No effect on ADG or DMI.
  - Increased gain efficiency (ADG/DMI) and estimated dietary NE.
- Day 56-112
  - Growth performance was no different between treatments.
- Overall (day 1-112)
  - The effects of supplementation during the initial 56 days on feed carried over throughout the entire feeding period.
  - Overall, effects on gain efficiency and dietary NE remained appreciable.

Item	Supplemental methionine level (% of dietary DM)				
	0	0.032	0.064	0.096	0.128
Ingredient composition (%, DM basis)					
Steam-flaked corn	74.95	73.91	73.88	73.84	73.81
Sudan grass hay	7.68	7.68	7.68	7.68	7.68
Alfalfa hay	3.84	3.84	3.84	3.84	3.84
Tallow	3.09	3.09	3.09	3.09	3.09
Molasses	7.37	7.37	7.37	7.37	7.37
Magnesium oxide	0.18	0.18	0.18	0.18	0.18
Dicalcium phosphate	0.49	0.49	0.49	0.49	0.49
Limestone	1.22	1.22	1.22	1.22	1.22
Urea	0.88	0.88	0.88	0.88	0.88
Trace mineral salt[2]	0.30	0.30	0.30	0.30	0.30
Smartamine[3] (%)	0	0.032	0.064	0.096	0.128
Aminoshure[4] (%)	0	1.01	1.01	1.01	1.01

Implications

Supplementation with rumen protected methionine and lysine in feedlot diets may enhance gain efficiency and dietary NE of growing calf-fed Holstein steers during the initial 112 days on feed.

CONTACT

Have any questions, comments, or suggestions? Want to send in a Quiz Zinn question? Contact the creators through the below email or through their social media profiles.

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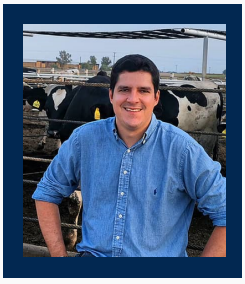

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