

Agenda

2025

8:30 – 9:00 am Registration, Visit Vendors, and View Posters

9:00 to 9:45 – Research Hot Round 1 – Cow-Calf Production Systems

9:00 Evaluation of Management Strategies for Winter Feeding and Grazing on Beef Cow-Calf

Productivity

C. S. Phillips, U of Ark

9:15 Efficient Forage Utilization in Mature Beef Cows

Sam Talley, OSU

9:30 Supplementally Feed Corn Silage to Cows on Fescue or Bermudagrass Pastures: Effects on Cow, Calf, and Pasture

Tatiana Jones, K-State

9:45 – 15-minute break

10:00 to 10:45 - Research Hot Round 2 - Reproduction

10:00 From Tradition to Innovation: Addressing Barriers in Beef Reproduction Practices

Mamie-Cate Haydon, OSU

10:15 Using Automated Activity Monitors to Predict Pregnancy by Artificial Insemination in Beef Cows

Zane Grigsby, OSU

10:30 Impact of Prolonged CIDR Insertion on Follicular Dynamics, Estrus Timing, and Pregnancy
Outcomes in Beef Cattle Submitted to Estrous Synchronization

Morgan Brown, Mizzou

10:45 – 15-minute break

11:00 to 11:45 - Research Hot Round 3 - Replacement Heifer and Feedlot

11:00 The Effects of Diets Containing Soybean Oil Formulated for Developing Heifers on Reproductive

Efficiency

Kirsten Midkiff, U of A

11:15 The Cost of Selecting Cattle for Growth

Chris Johnson, OSU

11:30 Evaluation of Ground Grain Sorghum vs Dry-Rolled Corn for Finishing Beef Steer Diets

Harleigh Johnson, K-State

11:45 to 12:15 - Lunch, Sponsor Recognition, Poster viewing

12:15 to 1:00 – Research Hot Round 4 – Stocker Systems

12:15 Effects of Stocker Steer Performance while Consuming Essential Oil or Ionophore Mineral

Tatiana Jones, K-State

12:30 Supplementing Dried Distillers Grains (DDGS) Cubes and Tubs to Stocker Calves Grazing

Paul Vining, OSU

12:45 Effects of Injectable Trace Mineral Timing on Calf Performance and Health Indicators

Mary Goulais, U of A

1:00 – 15-minute break

1:15 - Replacement Heifer Retention in Todays Economic Climate

Derrell Peel, OSU

2:00 - 2:45 - Research Hot Round 5 - Forages and Related Work

2:00 Stockpiling Sorghum-Sudangrass for Winter Forage

Carson Roberts, Mizzou

2:15 Arkansas Hay Verification Program

Bronc Finch, U of A

2:30 The Effects of Fescue Toxicosis and Heat Stress on Immune Function in Beef Cattle

Eric Bailey, Mizzou









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Evaluation of Management Strategies for Winter Feeding and Grazing on Beef Cow-Calf Productivity

C. S. Phillips

Objective: The objectives were to evaluate the impact of these systems on cow body condition scores (BCS), calf performance, and economic costs.

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Study Description: The trial assessed three winter management systems: rotational grazing of cool-season annuals planted by traditional methods (TCSA), rotational grazing of cool-season annuals seeded by broadcasting (BCSA), and free-choice bermudagrass hay with supplementation (HSUP). Thirty multiparous winter-calving beef cows were randomly assigned to one of the three groups. The grazing treatments (TCSA and BCSA) involved rotational grazing of a ryegrass-rye mixture, where cows rotated through paddocks and had access to free-choice bermudagrass hay. Stocking rates were adjusted according to forage availability, and grazing ended when pasture canopy height dropped below 4 inches. The HSUP group had free-choice access to bermudagrass hay supplemented with additional feed (up to 1% of body weight per day). Animal performance was measured by assessing BCS at the start and end of the grazing season, along with calf weight measurements at birth and post-grazing.

Results: While cattle performance showed no significant differences between treatments, the costs were notably higher for the HSUP system. This study provides valuable insights into cool-season forage establishment and management, as well as cattle performance across the different systems, refining current recommendations for winter feeding strategies in beef cattle operations.

The Bottom Line: Utilizing grazing pastures results in lower cost of production as compared to feeding hay with supplements.



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Efficient Forage Utilization in Mature Beef Cows

Sam Talley

Objective: The objective of this experiment is to determine if intake and feed efficiency is correlated among stages of production (lactation and gestation) in mature beef cows consuming a strict forage diet. We also explored the potential financial impacts of selecting for cows that are productive and efficient utilizers of forage.

Study Description: Forty-one lactating 4- and 5-year-old Angus and Angus cross cows were fed long-stem, unprocessed bermudagrass hay (12.5% CP and 56% TDN) in SmartFeed intake units during lactation (100 days) and gestation (89 days). During both experiments measurements of individual animal forage dry matter intake (DMI), weight gain, calf weaning weight, milk yield and milk energy concentration, body condition score (BCS), ultrasound body composition, and methane (CH₄) and carbon dioxide (CO₂) emissions were collected.

Results: There were strong positive correlations between DMI and residual feed intake (RFI) between lactation and gestation (r = 0.86 DMI and r = 0.75 RFI). Efficient classified cows consumed 21% less hay during lactation and 31% less during gestation compared to inefficient cows, with no difference in body weight, BCS, milk production, or calf performance. Using data from this experiment, an economic model was created showing the potential benefits of selecting for forage feed efficiency based on RFI in beef cows (Table 1).

Table 1. Potential economic impact of efficient vs non-selected cows

	Annual			Net	Net
	Pair Feed	Pair Stocking	Calf	Return Before	Return Before
	Cost	Rate	Revenue	Taxes	Taxes
	\$/Cow	Acres/Cow	\$/Year	\$/Year	\$/Acre
Efficient 1/3	\$501.25	12.7	\$101,200	\$28,310	\$28.31
Non-Selected	\$535.21	13.8	\$92,767	\$22,505	\$22.51
% Difference	6.6%	8.0%	8.7%	22.8%	22.8%

1,000-acre central Oklahoma ranch

3,500 lb. forage/acre with 25% harvest efficiency

\$94.16/head/year supplement cost

\$2.92/lb. base calf price & \$1.10/lb. cull cow price

\$245/head/year misc. costs (health, breeding, interest, etc.)

Assuming equal reproductive performance

The Bottom Line: The development of practical methods to identify forage efficient beef cattle could have major economic benefits for the cow/calf sector of the beef cattle industry. Our current research program is focused on developing a system to identify forage-efficient cattle without the need to conduct an expensive and labor-intensive forage efficiency test.



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Supplementally Feeding Corn Silage to Cows on Fescue or Bermudagrass Pastures: Effects on Cow, Calf, and Pasture

Tatiana Jones

Objective: Determine the effects of supplementally feeding corn silage to cows on fescue and bermudagrass grass during pregnancy through early lactation.

Study Description: A total of 72 bred heifers and cows grazed either Fescue pastures (Study 1) or Bermudagrass pastures (Study 2) and were either fed corn silage at 1% of body weight on dry matter basis daily (SUPP), or allowed to only graze (NON). In Study 1 the cows had access to either toxin-producing fescue varieties of pasture (TOXIC), or non-toxin-producing fescue pastures (NONTOX). Cows were weighed (BW), body condition scored (BCS), hair scored (HS), and rump fat (RF) measured at mid-second trimester, beginning of 3rd trimester, ~2 weeks before calving, and approximately 60 days after calving. Calf birth weight was recorded and estimate of milk production occurred ~60 days into lactation. Monthly pastures were clipped to measure forage availability and accumulation.

Results: Study 1 Fescue: There was a tendency for cows grazing NONTOXIC to have heavier weights immediately prior to calving through peak lactation (P = 0.10). Supplementation did not affect BW, BCS, or RF (P > 0.21) during gestation; but during lactation SUPP increased BCS (P = 0.01) over NON. Hair length and HS were greater for cows grazing TOXIC pastures at the beginning of 3rd trimester (P = 0.06) and immediately prior to calving (P = 0.04). Calf birth weight and estimates of milk output were not different for grass type or supplementation (P > 0.23). Forage mass (FM) tended to be 11% greater in TOXIC pastures than NONTOXIC (P = 0.06) and SUPP pastures tended to have 6% greater FM than NON (P = 0.09).

Study 2 Bermudagrass: Supplementation did not affect cow BW, BCS, HS, or HL during gestation nor early lactation (P > 0.13). Calf birth weight was not affected by their dams being fed corn silage in late gestation (P = 0.91). Forage mass and forage accumulation did not differ (P > 0.78) based on supplementation method.

The Bottom Line: Non-toxin producing varieties of fescue result in better measures of performance in pregnant cows than toxin-producing fescues. Supplementally feeding half of a cows daily diet as corn silage did not off-set toxicosis symptoms. Supplementing corn silage while cows are grazing bermudagrass during the summer had no measurable effects on production.



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From Tradition to Innovation: Addressing Barriers in Beef Reproduction Practices

Mamie-Cate Haydon

Objective: This project aims to understand the barriers preventing beef cow-calf producers from utilizing advanced reproductive technologies (ART) to increase herd productivity. Despite the proven economic and genetic benefits of ART, technologies like estrus synchronization, artificial insemination, embryo transfer, ovum pick-up (OPU), and in-vitro fertilization (IVF) are underutilized. Through targeted surveys and interviews, data generated will identify the factors hindering broader adoption. These factors may include financial concerns, generational tradition, reluctance to embrace risk, or skepticism toward new methods. While similar issues have been cited in previous work, studies fully addressing social and economic barriers of change are lacking in current literature.

Study Description: This study will gather data through surveys, interviews, and field observations with a representative group of U.S. cow-calf producers. Researchers aim to discover and understand the educational, economic, and cultural factors shaping reproductive management decisions in cow-calf producers. The results will guide researchers in the creation of targeted extension programs to address these barriers and encourage ART use.

Results: Based on findings, targeted extension programs will be developed and employed to increase ART adoption among Oklahoma beef producers. These programs will be tailored to meet producer demographics and will cover ART education, economic planning, operational integration, and herd-health management.

Comparing Assisted Reproductive Technologies' Embryo Production Methods

	Type of ART Breeding Method					
ART Elements	In-Vitro Fertilization (IVF)	Conventional Flushing/Superovulation				
Collected Material	Oocyte or "egg"	Embryo				
Collection Method	Ovum Pick-up (OPU) or ultrasound guided follicular aspiration of oocytes or "eggs"	Foley catheters are placed in either uterine horn of a bred cow for the flushing of embryos				
Fertilization Method	In-vitro (Lab- fertilized/cultured) *Embryos develop ~7 days after in-vitro fertilization*	In-vivo (Dam/Cow) *Embryos develop and cows are flushed 7 days after breeding/A.I.*				
Semen Used for Fertilization	Conventional semen/ Sexed semen	Conventional semen/Sexed semen				
Embryo Options	Embryos produced can be transferred fresh or frozen depending on grade & viability	Embryos produced can be transferred fresh or frozen depending on grade & viability				
Transferred Material	Embryo	Embryo				
Recipient/Surrogate Breeding Time	Embryos produced are transferred into recipients ~7 days after standing heat/estrus	Embryos produced are transferred into recipients ~7 days after standing heat/estrus				

The Bottom Line: This study will not only assess and analyze current needs of producers but provide valuable insight into the challenges preventing the adoption of ART. This information will aid in developing targeted ART extension programs to address these issues, while working to improve reproductive practices and support the economic growth of the U.S. beef industry.



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Using Automated Activity Monitors to Predict Pregnancy by Artificial Insemination in Beef Cows

Lucas C. S. Branco/Master's student

Cecilia C. Rocha/Assistant Research Professor

Introduction: 40 to 60% of beef cows submitted to artificial insemination (AI) are non-pregnant on day 30 post AI. Accurate detection of estrus has potential to reduce pregnancy loss. Automated activity monitors (i.e. accelerometer) have been implemented in dairy operations for precision in estrus detection using artificial intelligence. Our group recently validate the same device for estrus detection in beef cows. The question that remains is if the variables detected by the accelerometer software can be used to predict the pregnancy outcome.

Objective: To test the ability of the accelerometer software in predicting the probability of pregnancy/AI in grazing beef cows.

Study Description: Pluriparous cows (n = 100) were submitted to a synchronization protocol and split-time AI. When cows displayed estrus in the accelerometer software (SenseHub; Merck Animal Health) the data of estrus behavior was collected. We used the variables peak activity, peak heat value, heat duration, heat index, daily eating, raw activity, and proestrus duration for our analysis. Pregnancy diagnoses was conducted 30 days post-AI. The outcome of the pregnancy was associated with the changes in behavior in the software.

Results: Peak activity did not differ (P=0.78) between pregnant and non-pregnant cows, while peak heat value, heat duration, and heat index were from 4.63% to 6.87% reduced in pregnant cows (P=0.011, 0.052, and 0.0004). Daily eating trended to be 18.72% greater pregnant than non-pregnant cows. Proestrus duration was 9.46% reduced in pregnant cows.

Table 1. Mean \pm SEM of accelerometers measurements in pregnant and non-pregnant cows.

Variable	Pregnant	Non-pregnant	P-value
Peak activity	512 ± 16.23	523 ± 15.7	0.78
Peak heat value	94.8 ± 1.32	99.4 ± 1.17	0.011
Heat duration	20.31 ± 0.56	21.9 ± 0.62	0.052
Heat Index	90.83 ± 1.37	97.55 ± 1.18	0.0004
Daily eating	280.7 ± 32.36	236.44 ± 31.53	0.077
Raw activity	585.11 ± 15.93	636.75 ± 14.74	0.12
Proestrus duration	66.70 ± 3.53	73.67 ± 3.47	0.001

Conclusion: Accelerometers have potential to predict pregnancy/AI in beef cows. It is likely that in the future we will be able to select which cow that is most likely to become pregnant and perform target breeding in beef operations.



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Impact of prolonged CIDR insertion on follicular dynamics, estrus timing, and pregnancy outcomes in beef cattle submitted to estrous synchronization

Morgan E. Brown

Introduction: It has been reported that extending the time of CIDR insertion may positively impact overall response to synchronization, and generate a more compact, shorter interval to estrus which would be more favorable for FTAI.

Objective: To evaluate the effect of prolonging the time of CIDR insertion from 7d to 8d or 9d on: (i) estrous response and synchrony, (iii) size of largest ovarian dominant follicle, (iii) pregnancy per AI of beef cows submitted to the CO-Synch program.

Study Description: In 2024, spring or fall cows and heifers from REECs and local producer's herd (n= 457) were submitted to one of three CO-Synch treatments with varying CIDR lengths: (CIDR 7d [n= 154], CIDR 8d [n= 149], and CIDR 9d [n=153] total) and AI based on estrus for 3-d or FTAI after the 3-d period. At CIDR removal, the diameter of the largest ovarian follicle was measured, and pregnancy was checked 30d after AI, using ultrasound.

Results: The size of the largest ovarian follicle at CIDR removal did not differ (P = 0.10) between treatments (CIDR7d: 10.61 mm vs. CIDR8d: 11.15 mm vs. CIDR9: 11.01 mm; SEM: 0.41) nor (P = 0.24) did the estrus response (CIDR7d: 65% vs. CIDR8d: 69% vs. CIDR9: 60%). However, prolonging time of CIDR insertion shortened (P = 0.02) time to estrus after CIDR removal (CIDR7d: 53.2h vs. CIDR8d: 50.1h vs. CIDR9: 49.1h; SEM: 1.6) and decreased (P = 0.08) proportion of pregnancy due to AI (CIDR7d: 50.7% vs. CIDR8d: 46.3% vs. CIDR9: 38.4).

Table 1. Effect of prolonged CIDR treatment on size of dominant follicle, estrus response and interval, and pregnancy per AI.

Variables	CIDR7	CIDR8	CIDR9	SEM	P - value
Number	154	149	153		•
Size of ovarian follicle at CIDR removal, mm	10.61	11.15	11.01	0.41	0.10
Estrus response, %	65	69	60		0.24
Time to estrus, h	53.2a	50.1 ^b	49.1 ^b	1.6	0.02
Pregnancy per AI	50.7 ^a	46.3 ^{a,b}	38.4 ^b		0.08

Conclusion: Despite shortening the interval to estrus after CIDR removal, prolonging the time of CIDR insertion did not improve pregnancy per AI in beef cows or heifers submitted to the CO-Synch program.



The Effects of Diets Containing Soybean Oil Forumulated for Developing Heifers on Reproductive Efficiency

Kirsten Midkiff, PhD

Objective: To determine the effects of including soybean oil in supplemental diets for developing heifers on reproductive tract scores, time of puberty and cyclicity, and pregnancy rates.

Study Description: A total of 80 crossbred Angus heifers were sorted randomly into one of eight pastures and pastures were assigned randomly to one of two treatment groups, being: 1) control group fed an isonitrogenous and isocaloric grain supplement with no soy product (CON); and 2) treated group fed grain supplemented with soybean oil at 2% of estimated total diet dry matter intake (SBO). Supplements were offered beginning approximately 30 days after weaning and continued through the breeding season. Body weights, hair coat scores, and body condition scores were recorded monthly. At 7-day intervals beginning on day 56, blood samples were collected via jugular venipuncture to measure serum progesterone concentrations, to determine the percentage of heifers pubertal and cyclic. Heifers were bred by artificial insemination (AI) at approximately 14 months of age. An ultrasound was performed on days 35 and 110 of pregnancy for AI pregnancy and overall pregnancy rates. A subset of 20 heifers per treatment group were identified for the study and when pregnancy was confirmed around day 35 of gestation for the AI bred females, females had an ultrasound taken to determine blood perfusion and area of the corpus luteum (CL).

Results: Body condition and hair coat shedding scores were not affected by the treatments (P = 0.13 and P = 0.87, respectively). Pubertal (P = 0.39) and cyclicity (P = 0.34) status were not affected by treatment. The percentage of females pubertal and cyclic by day 147 were numerically greater for the CON treatment (89.3% vs. 90.1%) than on the SBO treatment (80.5% and 75.2%). Heifers supplemented with SBO had numerically greater AI conception compared to CON supplemented heifers (52.6% vs. 42.5 %, respectively), but were not statistically different (P = 0.38). The area of the corpus luteum was larger for cattle supplemented with CON than SBO (P = 0.0077). However, integrated density was not different between treatment groups (P = 0.99). Further research is being performed to gather additional data for AI and overall pregnancy rates, effects of soybean oil inclusion in supplements on uterine blood flow and resulting calf performance. stress.

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The Cost of Selecting Cattle for Growth

Chris Johnson and Paul Beck

Objective: The objective of this presentation is to evaluate the effects of selecting sires for high or moderate growth (**HG** and **MG**) traits and its implication on their steer offspring's performance, health outcomes, carcass characteristics, and value at the end of the feeding period.

Study Description: Two hundred and thirty-nine steers (HG=105 and MG=134) were sourced from the Oklahoma State University Beef Cow Research Center's South and North Range Units. Calves were born between February 2022 through December 2023 and preconditioned at their respective Range Units for 60 days. Following the 60 day preconditioning period, calves were shipped to the Willard Sparks Beef Research Center for the finishing phase of the study. Animal health and performance metrics were obtained throughout the feedlot period. Once finished cattle were harvested at Creekstone Farms Premium Beef in Arkansas City, KS where carcass data was collected.

Results: High growth calves had 1.2% more 1st treatments for bovine respiratory disease (BRD), but MG had greater 2nd and 3rd BRD treatments during the preconditioning and feedlot periods. Consequently, MG steers cost \$3.11 more in antibiotics than HG steers. Death loss related to BRD was greatest for MG calves (5.36%), whereas HG calves had no respiratory related death. High growth steers gained more and had greater daily gains compared to MG steers (Table 1). Moderate growth steers consumed 0.53 lbs less feed, resulting in 322 lbs less in feed during the feeding period. High growth steers were on feed for 212 days and MG were of feed for 220 days. Hot carcass weights for HG steers were 27 lbs heavier than MG, but their dressing percent was 1% less than MG. Moderate growth steers graded Prime 3% more than HG steers. High growth steer carcasses generated \$17.53 more of revenue.

Table 1. Performance outcomes of ranch raised, preconditioned beef steers sired by a high or moderate growth Angus bull

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Item	High Growth	Moderate Growth	SEM	<i>P-</i> value
BW, lb				
Weaning	515	485	37	0.01
Day 60	630	590	31	< 0.01
Harvest	1515	1428	20	< 0.01
ADG, lb/d				
Preconditioning	1.93	1.75	0.20	0.14
Wean to Harvest	4.24	3.86	0.11	< 0.01
Feedlot	3.70	3.40	0.18	< 0.01

The Bottom Line: Selecting animals for high growth can be profitable with improved body weights and rate of gains if sold at weaning, after preconditioning, or retained until the end of the feeding period. Moderate growth genetics grade Prime at a higher rate, but high growth steer carcasses generated more revenue. Based on operation objectives, growth traits can be profitable or more sustainable.



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Evaluation of Ground Grain Sorghum vs Dry-Rolled Corn for Finishing Beef Steer Diets

Harleigh Johnson

Objective: The aim of this study is to evaluate ground grain sorghum as an alternative to dry-rolled corn.

Study Description: Beef steers (n=300; 764 lb initial body weight) in 30 feedlot pens (10 animals/pen; 15 replicates) were fed finishing diets containing ground sorghum or dry-rolled corn for 182 days. Diets were balanced to contain similar crude protein and starch and were fed once daily. Cattle were shipped to an abattoir where carcass measurements were recorded. Average daily gain, dry matter intake, feed efficiency, carcass traits, and digestibility of diet components are reported.

Results:

Table 1. Performance and carcass traits of steers fed diets containing dry-rolled corn or ground grain sorghum throughout a 182-day finishing period.

Item	Corn	Sorghum	SEM ¹	P-value
Average daily gain, lb	3.57	3.21	0.07	< 0.01
Feed intake, lb/day	24.14	25.25	0.36	< 0.01
Feed:gain	6.77	7.87	0.002	< 0.01
Metabolizable energy of grain (calculated),				
Mcal/lb	1.42	1.39	-	-
Hot carcass weight, lb	877.8	845.5	7.11	< 0.01
Prime, %	5.33	0.67	2.25	0.057
Premium Choice, %	47.63	29.33	5.49	< 0.01
Low Choice, %	47.33	35.55	5.79	0.061
Select, %	21.33	11.48	4.19	0.034
USDA Yield Grade	2.96	2.87	0.065	0.349
Total carcass value, \$	2491.55	2379.11	22.11	< 0.01

¹Standard error of the mean.

The Bottom Line: Energy value of ground sorghum grain was approximately 94% that of dry-rolled corn resulting in a \$112 difference in carcass value. Future efforts should focus on development of superior sorghum hybrids and processing methods that enhance nutritional value of sorghum when fed to finishing cattle.



Effects of Stocker Steer Performance While Consuming Essential Oil or Ionophore Mineral

Tatiana Jones

Objective: To determine if essential oils offer the same performance for stocker steers as consuming an ionophore.

Study Description: Steers (n = 281 head; $(641 \pm 10.3 \text{ lb})$ were assigned to one of two mineral treatments and grazed tallgrass native range on 8 pastures. Treatments consisted of the "positive" control of ionophore (lasalocid at 1,633 g/ton) and essential oil (garlic oil at 3 lb/ton and essential oil blend at 18 lb/ton) in free-choice mineral. Steers were weighed at the beginning and end of the grazing period (92 days). Pasture biomass production and mineral intake were monitored weekly.

Results: Steers consuming essential oil mineral or essential oil mineral had the same gains and average daily gains during a 90 day grazing period on tallgrass native range. Mineral consumption was the same for the two mineral types. The two mineral types had no impact on forage intake, nor affected the behavior of the steers.

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Effects of mineral types on growth performance, average daily gain, average daily mineral intake, and pasture biomass

Item	Ionophore ¹	Essential Oil ²	SEM ³	P-value
Initial weight, lb	629	653	10	0.16
Final weight, lb	833	856	9	0.12
Total gain, lb	204	203	8.8	0.92
Average daily gain, lb/d	2.15	2.13	0.09	0.92
Pasture biomass, lb DM/acre	1180	1229	79	0.67
Average mineral intake, oz/head/day	5.18	5.63	0.54	0.58

Inoophore: ionophore mineral (Bovatec 91 included at 18 pounds per ton to provide 1,633 g/ton lasalocid; Zoetis, Kalamazoo, MI).

²Essential oil: essential oil mineral (3 pound per ton garlic oil and 6 pounds per ton of Solace; Wildcat Feeds LLC, Topeka, KS).

³SEM: standard error of means.

The Bottom Line: Growth performance and ADG of essential oil mineral and ionophore mineral are statistically similar when fed to grazing stocker steers during the summer months.



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Supplementing Dried Distillers Grains (DDGS) Cubes and Tubs to Stocker Calves Grazing

Paul Vining

Objective: The objective of this study was to evaluate the effects of supplementation delivery methods on performance of growing steers grazing mixed grass native rangeland in western Oklahoma.

Study Description: Providing a nutritional supplement can help bridge nutrient gaps and enhance performance, but frequent deliveries of supplemental feed are becoming increasingly costly due to rising fuel and labor expenses. To explore a more cost-effective approach, Oklahoma State University Animal Science Researchers, evaluated two methods of providing supplemental feed to stocker calves, 1) DDGS Cube and 2) DDGS tub.

Results: There were no significant differences in body weights or average daily gains between feeding methods, though cube-fed steers gained 0.17 pounds more per day over the full trial. This slight advantage was likely due to greater supplement consumption early in the grazing period, which was later corrected.

	Treatment		
	DDGS Tub	DDGS Cube	P- Value
Body Weight, lbs.			
Initial	622	620	0.683
Middle	717	730	0.309
Final	857	879	0.192
Average Daily Gain , lbs./day			
Early to Mid Summer	1.41	1.63	0.115
Late Summer to Early Fall	1.94	2.05	0.348
Total Trial (140 days)	1.68	1.85	0.012*
Supplement Intake, lbs./day			
Early to Mid Summer	2.16	2.50	0.207
Late Summer to Early Fall	2.51	2.50	0.748
Total Trial (140 days)	2.20	2.50	0.069†

^{*}Indicates that means differ at a significance level of (P < 0.05). †Indicates that means tend to differ at a level of (P < 0.10).

The Bottom Line: While cube feeding led to slightly better weight gains, the additional delivery costs could negate these benefits. A cost analysis indicated that with feed prices at \$0.26 per pound for cubes and \$0.55 per pound for tubs, a 54-mile feeding route could justify the higher tub costs.



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Effects of Injectable Trace Mineral Timing on Calf Performance and Health Indicators

Mary Goulais

Objective: To evaluate the effects of an injectable mineral product (Multi-min) injection timing on calf performance, shrink, stress response, and health markers, including haptoglobin, antibody titers, serum minerals, and hair cortisol levels.

Study Description: A total of 124 calves were assigned to one of three treatment groups: (1) no injection (CON), (2) Injectable trace mineral administered 28 days before weaning (PW), or (3) Injectable trace mineral administered at weaning (WEAN). Calves were vaccinated against respiratory pathogens 28 d prior to weaning, and re-vaccinated at weaning. Immediately at weaning, cattle were shipped 7.2 miles to the local auction market, there they were unloaded, and allowed access to bermudagrass hay and water. The following morning, cattle were shipped 7.2 miles back to the SWRE Stocker Unit, where they were weighed, blood was collected, and they were assigned to 12 pens (based upon treatment and sex). Weights and blood samples were collected at weaning, day 1, day 7, and day 21post weaning to evaluate haptoglobin levels, antibody titers, and serum minerals. Hair cortisol samples were collected again on day 42 to assess chronic stress.

Results: Body weight measurements and gains for each treatment group are summarized in Table below. No significant differences were observed in pre-weaning weight (P = 0.96), weaning weight (P = 0.95), or Day 21 weight (P = 0.97) among treatments. No differences were noted in weight gain during this period as well (P > 0.21). Nevertheless, one interesting aspect of this study was that in general, calves lost approximately 31 lbs. from weaning (6% shrink). This would be indicative of the weight loss that a producer would encounter shipping calves directly off the cow and selling them the next day.

Item	CON^{1}	PW^2	WEAN ³	SEM	<i>P</i> -Value
Prewean, lbs	495	490.6	495.9	19.54	0.96
Weaning, lbs	524	517.4	521.5	20.15	0.95
Day 1, lbs	490.9	487.5	489.9	19.19	0.98
Day 7, lbs	503	503.8	495.5	19.86	0.9
Day 21, lbs	527.3	522.5	524	20.3	0.97
Gain PW, lbs	29.1	26.9	25.6	3.15	0.54
Gain +1, lbs	-32.9	-30	-31.6	4.48	0.8
Gain 7, lbs	-21.03	-13.7	-26.7	7.41	0.21
Gain 21, lbs	3.5	5	1.9	4.45	0.78

The Bottom Line: Results indicate that the timing of Multi-min injection did not significantly affect calf weights, shrink, or gain during the early post-weaning period. These findings suggest that Multi-min injection timing may not drastically influence performance under the current management conditions. Further analysis of haptoglobin, antibody titers, and cortisol data will provide insights into the effects on stress and immune response.



Arkansas Hay Verificiation Program

Bronc Finch

Objective: The Arkansas Hay Verification Program aims to showcase the potential positive return on investment of fertilizers following scientifically based University recommendations.

For more information, contact:

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Study Description: Hay production is a vital intersection between the animal and agronomic agriculture production sectors. The cost of maintaining adequate nutrient levels to maintain high-yielding and quality hay can become overwhelming with variable fertilizer prices and the lack of a uniform price market. The Arkansas Hay Verification Program aims to showcase the potential positive return on investment of fertilizers following scientifically based University recommendations. This program is a collaborative effort between University Extension and Research personnel and hay producers to implement and verify the economic return of management recommendations provided by the University of Arkansas System Division of Agriculture (UADA).

Results: The project showcases that, while there is high variability in the specified costs, positive economic returns are possible when research-based university recommendations are followed.









The Bottom Line: The project showcases that, while there is high variability in the specified costs, positive economic returns are possible when research-based university recommendations are followed.



Stockpiling Sorghum-Sudangrass for Winter Forage

Carson Roberts

Objective: Develop drought-resistant alternatives to tall fescue for stockpiled winter forage.

Study Description: Sorghum-sudangrass hybrids were assessed for their winter stockpiling ability in Linneus, Missouri. Forage yield and quality of each hybrid was assessed during November, December, and January.

Results: Stockpiled sorghum-sudangrass can be useful as a winter forage for dry, pregnant stock. Hybrids with brachytic dwarf traits exhibited higher crude protein than other hybrids. The leaves contained higher crude protein than the stems of the plant, so hybrids with a high leaf-to-stem ratio maintained higher protein levels. Yield consistently declined throughout the winter.

For more information, contact:

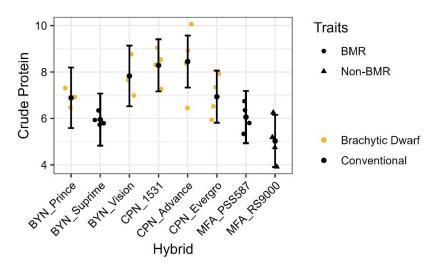
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Stockpiled Sorghum-Sudangrass Crude Protein in November



Crude protein content of standing stockpiled sorghum-sudangrass for 8 different hybrids in November 2024 near Linneus, MO



The Bottom Line: Sorghum-sudangrass has potential as a stockpiled winter forage for dry, pregnant cattle.



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The effects of fescue toxicosis and heat stress on immune function in beef cattle

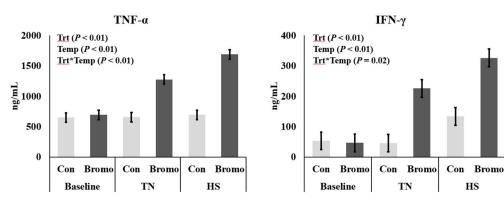
Eric Bailey, Ph.D.

Introduction: Fescue toxicosis occurs when cattle consume tall fescue grass infected with a toxic fungus. This condition is worse in hot weather and reduces performance. How fescue toxicosis affects immune function is not well known. Researchers struggle to study fescue toxicosis consistently because toxin levels vary in the grass. To solve this, we used bromocriptine, a drug that mimics the toxin's effects. Studies show it produces similar biological responses in cattle, allowing for controlled research.

Objective: The objective of this experiment was to evaluate the effects of bromocriptine mesylate injections as a model for fescue toxicosis on immune function in beef cattle exposed to varying ambient temperatures.

Study Description: Twelve steers were housed in climate-controlled chambers and fed a controlled diet. They experienced normal temperatures for 10 days, followed by two heat stress periods of ten days. Half received bromocriptine injections to mimic fescue toxicosis, while the other half received a placebo. Researchers monitored body temperature, breathing rates, and blood markers.

Results: In this experiment, bromocriptine injection decreased serum prolactin during thermoneutral conditions (P = 0.01) Rectal temperature was higher in bromocriptine-treated steers, especially during heat stress (Trt×Temp×Day, P < 0.01). Pro-inflammatory cytokines, including TNF- α (P < 0.01), IFN- α (P < 0.01), and IL-1 β (P < 0.01), were greater in bromocriptine steers during heat stress.



Conclusion: Bromocriptine effectively mimicked key physiological responses of fescue toxicosis in cattle, including reduced serum prolactin, increased respiration rate, elevated rectal temperature. These findings support the use of bromocriptine as a controlled research model for studying the effects of fescue toxicosis and heat stress on cattle health, metabolism, and immune function.