

EFFECTS OF ENERGY SUPPLEMENTATION FREQUENCY AND FORAGE QUALITY ON PERFORMANCE, REPRODUCTIVE, AND PHYSIOLOGICAL RESPONSES OF REPLACEMENT BEEF HEIFERS

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Background

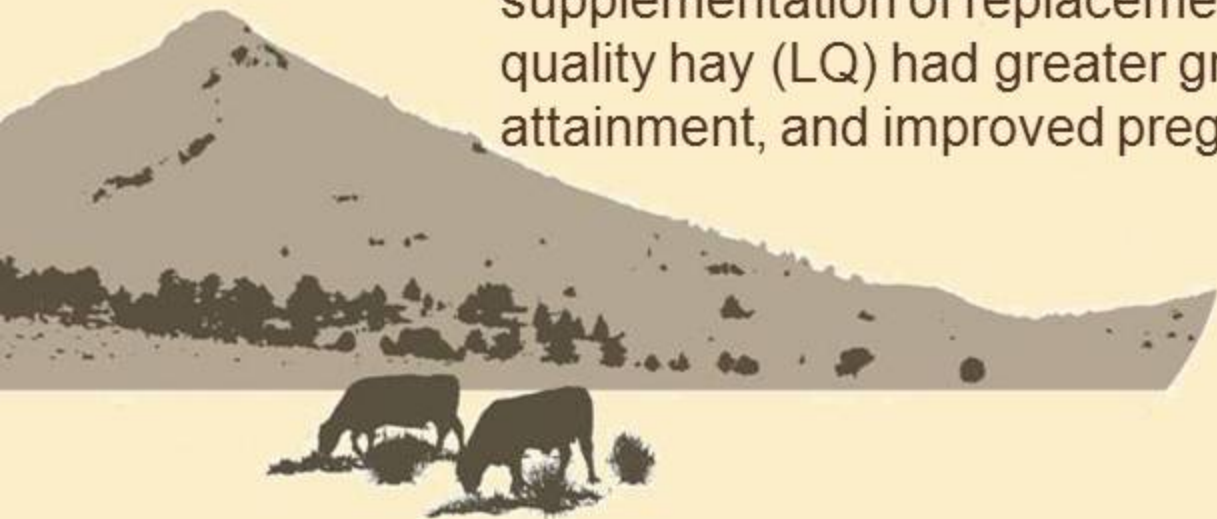
Energy intake is the primary nutritional consideration for reproductive development of beef heifers.

Energy supplementation is often required, especially for production systems that utilize low quality forages.

One way to cut costs is to reduce the frequency of supplementation (3 times per week instead of daily, for instance).

Stocker cattle consuming medium quality hay (MQ) supplemented 3 times a week had similar growth rates to those receiving daily supplement.

However, previous research has shown that daily supplementation of replacement heifers consuming low quality hay (LQ) had greater growth rates, hastened puberty attainment, and improved pregnancy rates.



Objective

Compare growth and reproductive performance of beef heifers consuming forages differing in nutritional quality and offered a low-starch energy-based supplement at 2 different frequencies.

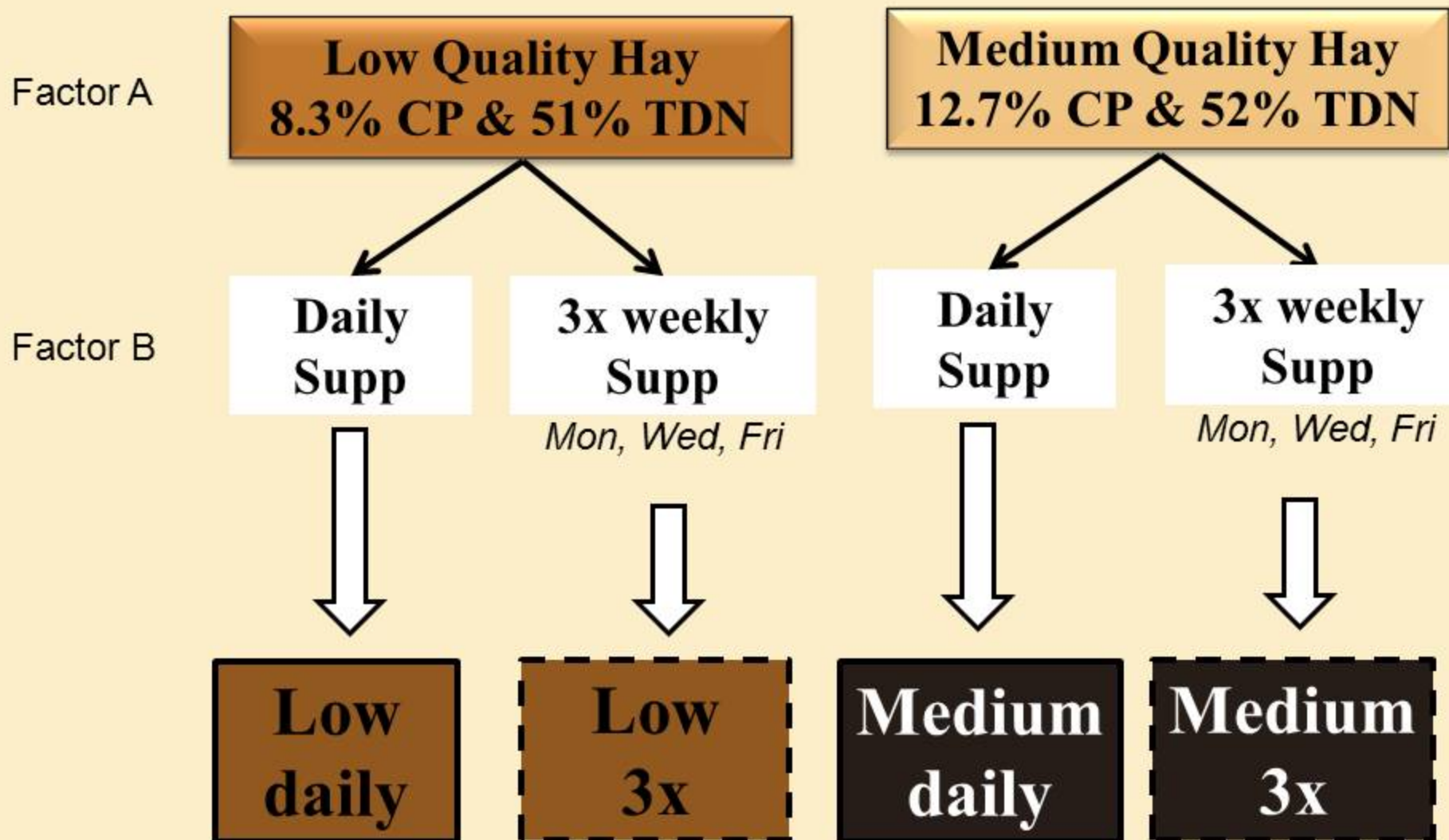


Materials and Methods

- 48 Brahman x Angus heifers
 - Initial BW = 531 ± 22 lb
 - Age = 294 ± 16 days
- Stratified by BW and age
 - Randomly assigned
 - 1 of 16 pens (3 heads/pen)
- Treatments randomly assigned to pens
- Forage and total DMI were evaluated daily, and blood samples were also collected.



2 x 2 Factorial Design



Concentrate Supplementation

- **Low quality Hay**

- Concentrate supp. at 1% of BW
- 38.6 lb/week

- **Medium Quality Hay**

- Concentrate supp. at 0.5% of BW
- 19.3 lb/week

	% of DM
Soybean hulls	49.0
Wheat Middlings	30.3
Dried Dist Grains	12.2
Molasses	4.5
Calcium Carbon	0.8
Canola Pellets	3.2
TDN, %	72.0
CP, %	15.0

Experimental Phases

- **Feedlot**
 - **Adaptation phase**
 - Day 0 to 12
 - **Sampling phase**
 - Day 13 to 58
- **Bahiagrass pastures**
 - **Breeding phase**
 - Day 59 to 121
 - 1 pasture/treatment
 - 1 bull/pasture



Results

- Heifers receiving daily supplement had similar ADG compared with S3 heifers.
 - Heifers receiving daily supplement had less daily variation in hay DMI and plasma concentrations of glucose, NEFA, and IFG-I compared with S3 heifers.
 - Daily supplemented heifers consuming either hay type (LQ or MQ) had less variation in total DMI, energy and protein intake, and plasma concentrations of PUN compared with S3 heifers.
 - Attainment of puberty and pregnancy were hastened in S7 heifers compared with S3 heifers.
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Conclusion

Reproductive development of beef replacement heifers consuming diets based on low or medium quality forages are enhanced when a low-starch energy supplement is offered daily instead of 3 times weekly.



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