

Effect of an Improved Grazing Management System on Dairy Heifer Performance

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Results indicate a slight growth disadvantage for heifers in the grazing system; however, heifer performance was still good and expenses for this system may be reduced compared to a conventionally managed system

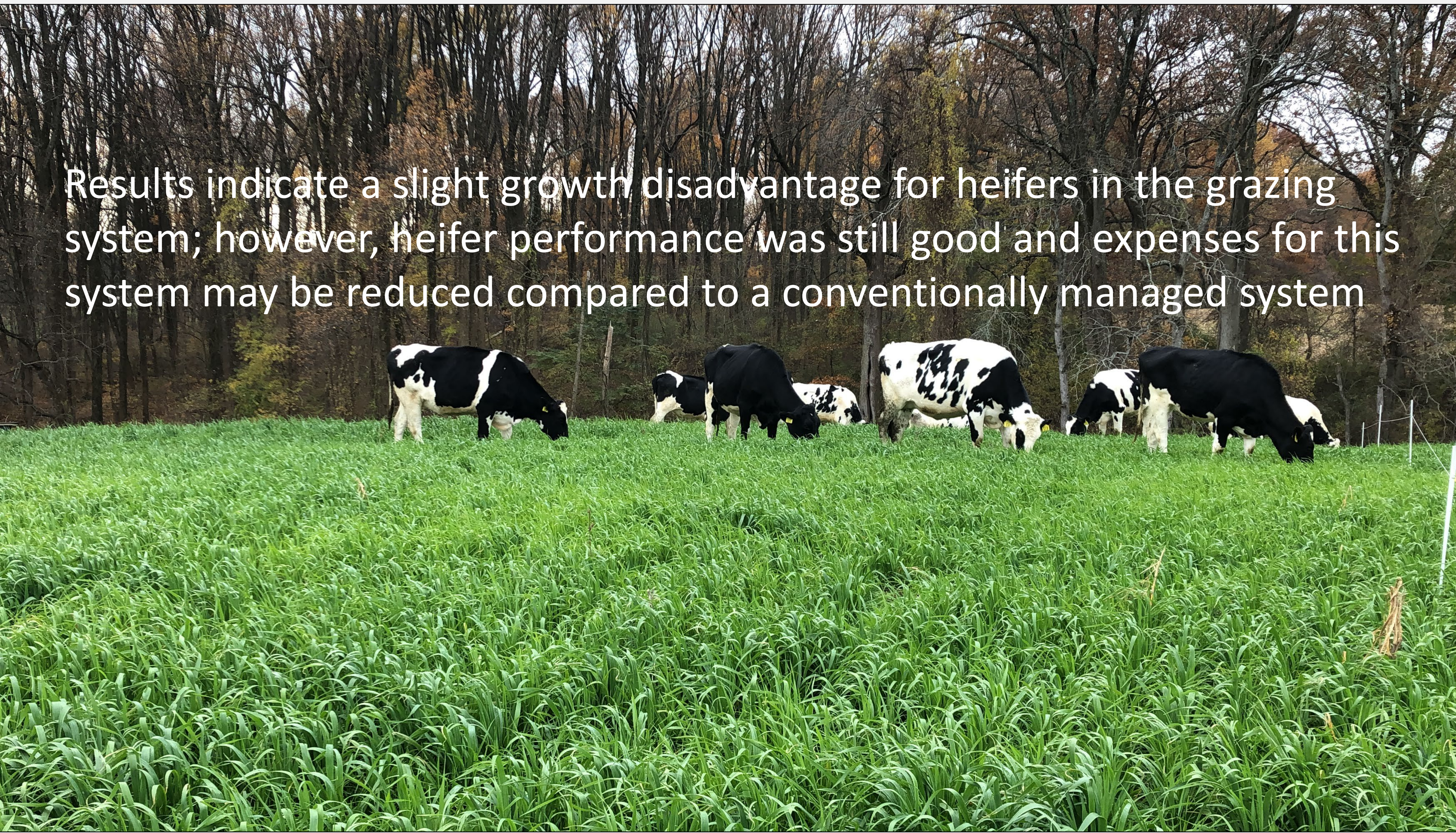


Figure 1. Heifers in control group receiving daily TMR



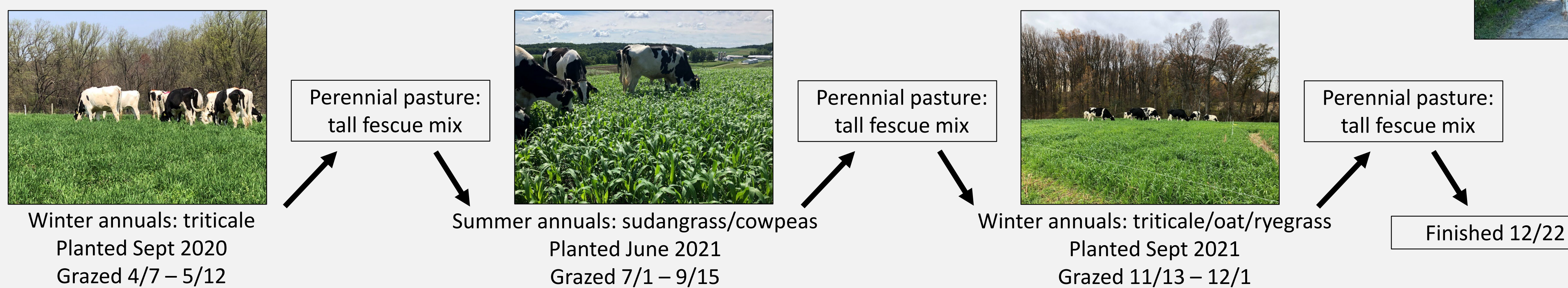
Figure 2. Heifers in grazing group grazing and receiving mineral mix



Figure 3. Biweekly weighing and measuring all heifers



Figure 4. Timeline of seasonal grazing rotation across forages for heifers in the grazing treatment group in 2021



Introduction

- The replacement heifer program is typically the second or third largest expense for dairies, with estimated rearing costs ranging from \$1300 to \$2400 per animal from birth to first calving
- Pasture is often an under-utilized resource and many farms are likely not utilizing pastures to their fullest potential
- Improving pasture management practices can increase forage utilization, forage quality, and forage yield, leading to greater productivity within the same land base and a potential reduction in heifer feed costs

Objective/Hypothesis

Objective: to examine the effects of an improved pasture management system on bred heifer performance and assess potential economic advantages relative to a conventional management system

Hypothesis: raising heifers in an improved grazing system will result in similar heifer performance but will be economically advantageous

Materials and Methods

- Holstein heifers at the UMD Dairy were enrolled on a rolling basis when confirmed pregnant (30-40 days) and removed 3 weeks prior to calving
- Two treatment groups: control (CON) and grazing (ROT)
 - CON: continuous access to perennial pasture + TMR once daily
 - ROT: rotational grazing on perennial and annual pastures subdivided into 0.5-acre paddocks (1-2 d rotation) + mineral mix (1 lb/hd/d)
- Group sizes varied (15 to 22 per group) but were kept consistent between treatments
- Study ran annually from early April through late December (2021-2023)
- Biweekly data collection included
 - Heifer BW, BCS, hip height
 - Heifer fecal samples
 - Forage yield and quality from CON and ROT pastures
- Data was analyzed using mixed model analysis (significance $P \leq 0.05$)



Figure 5. Pasture layout overview

Results (2021)

Heifer Performance:

- Initial BW, BCS, and hip height were similar between treatment groups
- Final BW and hip height were similar between treatment groups
- Final BCS was greater for CON heifers compared to ROT heifers
- ADG varied considerably but was greater for CON compared to ROT

Profitability:

- Preliminary calculations indicate a potential economic advantage for the ROT system (\$1.32/lb gain) vs. the CON system (\$1.73/lb gain)
- A full economic analysis is still being completed

Table 1. Nutrient profile of forages and TMR for control and grazing treatment groups

Nutrient (% DM)	Control Treatment		Grazing Treatment		
	Fescue	TMR	Fescue	Sudangrass	Triticale
DM	23.4	40.2	21.4	19.1	17.0
NDF	52.9	46.0	53.1	46.9	44.7
CP	18.8	15.2	18.4	19.6	19.3
TDN	64.0	65.2	64.8	68.3	69.8
Starch	1.7	11.0	1.9	4.1	3.0
Sugar	8.3	5.1	7.4	7.0	13.8

Figure 6. Initial and final bodyweight (A), hip height (B), body condition score (C), and average daily gain (D) for heifers in the control and grazing treatment groups

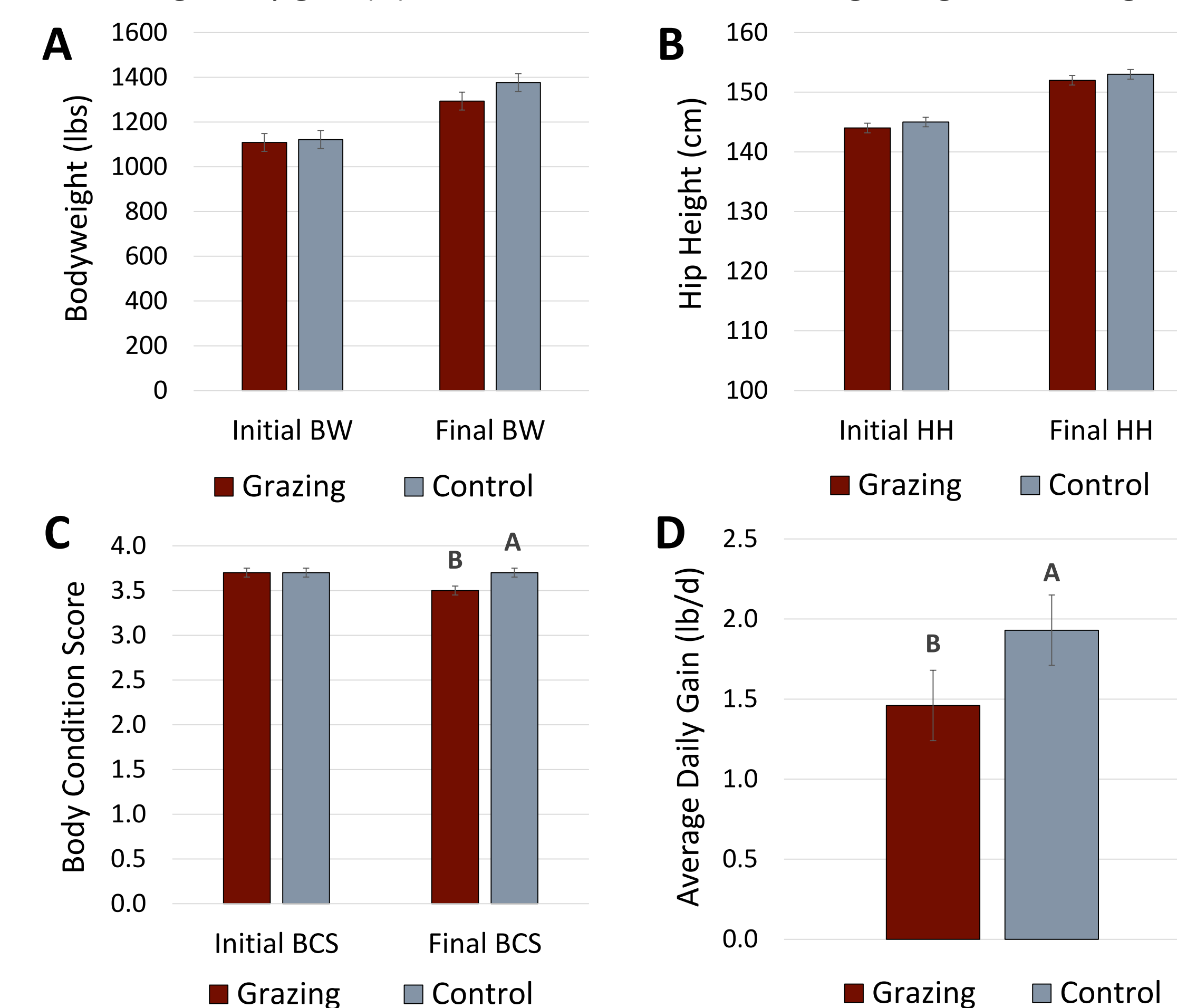


Figure 7. Heifer average daily gain across weigh periods during the 2021 grazing season for heifers in the control and grazing treatment groups; variability factors include weather, forage quality fluctuations, heifer adaptation, and heifers entering/leaving the group

