

**SEASONAL AND DIETARY HEAT FLUX OF BISON (BISON BISON) IN THE NORTHERN GREAT PLAINS**

*Researchers.*

Dr. Jeff Martin, South Dakota State University

Dr. Amanda Blair, South Dakota State University

Dr. Tom Bragg, Turner Institute of Ecoagriculture

Dr. Carter Kruse, Turner Institute of Ecoagriculture



*Graduate Student.*

To be determined.

*Rationale.* Thermal heat flux is an indicator of metabolic activity for mammals, including bison and beef cattle. Bison exhibit wide seasonal differences in metabolic rates resulting in body mass decline of approximately 10-15% through the winter season (i.e., 'winter slump'), yet cattle maintain a higher metabolic rate through winter with minimal body mass change.

Moreover, it remains unclear whether dietary treatments also produce thermal differentials due to varying levels of fiber, protein, or energy consumed by bison. Here, we will use remotely sensed thermal imagery of bison to resolve heat flux differentials generated from seasonal adaptations and from dietary treatment differences. The following two objectives will contribute to resolving the environmental cues (i.e., seasonal and dietary) for metabolic up- or down-regulation and help optimize economic finishing strategies for bison through the winter. We propose to evaluate metabolic heat flux with increasing rates of grain inclusion in a bison diet and evaluate year-long seasonal metabolic heat fluxes of adult bison and adult beef cattle.

Species: bison  
Topic: diet, metabolism, physiology, health  
Researcher: Blair, Bragg, Kruse, Martin  
University: South Dakota State  
Year Completed: Ongoing