

Short-term winter wheat (*Triticum aestivum* L.) cover crop grazing impacts beef calf growth, wheat grain yield, and post harvest soil properties.

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RATIONALE

Grazing on winter wheat (*Triticum aestivum* L.) cover crop by beef cow-calf and stockering operations has shown immediate economic benefits through increased body weight gains. Grazing winter wheat until joint stage benefits crop production by increased wheat grain yield as compared to non-grazed wheat crop (Redmon et al., 1995). Short-term grazing window of winter wheat crop can permit agriculture producers better option to integrate beef production with crop production and to use resources more efficiently.

OBJECTIVES

Evaluate beef calf performance (body weight gains) on short-term winter wheat grazing and stockpiled tall fescue (*Festuca arundinacea* L.) grazing.

Evaluate effects of winter wheat short term grazing on wheat grain yield and post harvest soil properties.

PROCEDURE

Three fields, each with 3.6 ha were used in this experiment.

Two fields were planted with winter wheat crop in fall 2016 and third field was stockpiled with tall fescue grass.

In spring 2017, one winter wheat field (to joint stage) and stockpiled tall fescue field were grazed for four weeks by nine cow-calf pairs in each.

Both sets of cow-calf were supplemented with minerals and cracked corn mixture, while grazing.

Soils of all three fields were sampled before animal inclusion and after 1 month grazing. Tall fescue, ungrazed wheat, and grazed wheat fields were sampled 12, 11, and 12 locations, respectively.

During 4 week grazing period, body weights of cows and calves were measured weekly.

Before and after grazing forage samples were collected from grazed winter wheat and tall fescue fields.

SOIL/ FORAGE SAMPLE ANALYSIS & ANIMAL WEIGHTS

Forage samples were analyzed using NIR spectroscopy

Soil nutrient analysis was performed by ICP with Mehlich 3 (Mehlich, A. 1984) extraction method.

Live animal weights during grazing period were measured using a weigh bridge.

REFERENCES

Redmon, L. A., G. W. Horn, E. G. Krenzer, Jr., and D. J. Bernardo. 1995. A review of livestock grazing and wheat grain yield: Boom or bust?. *Agronomy Journal*. 87:137-147.

Mehlich, A. 1984. Mehlich 3 soil test extractant: A modification of Mehlich 2 extractant. *Commun. Soil Sci. Plant Anal.* 15:1409–1416.

TALL FESCUE GRAZING FIELD



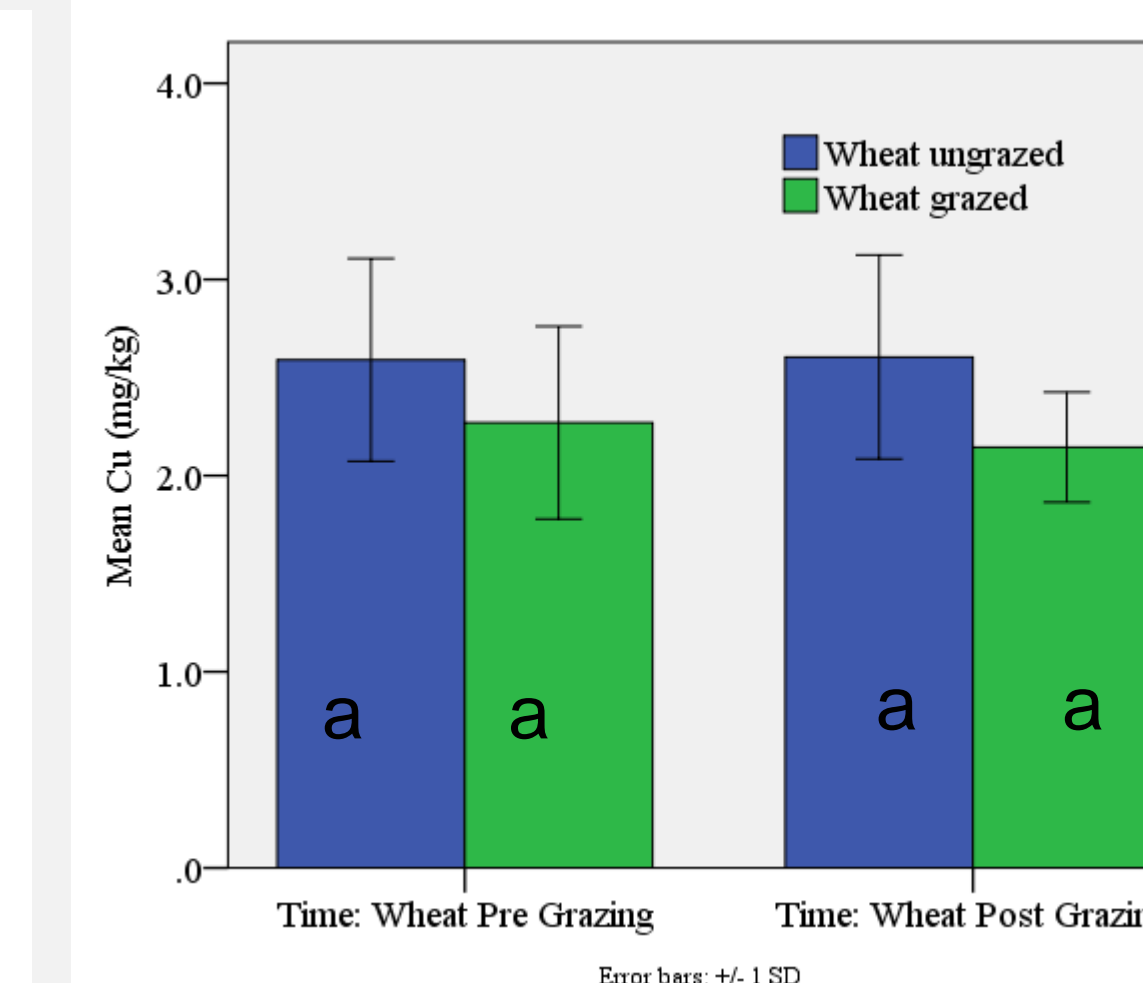
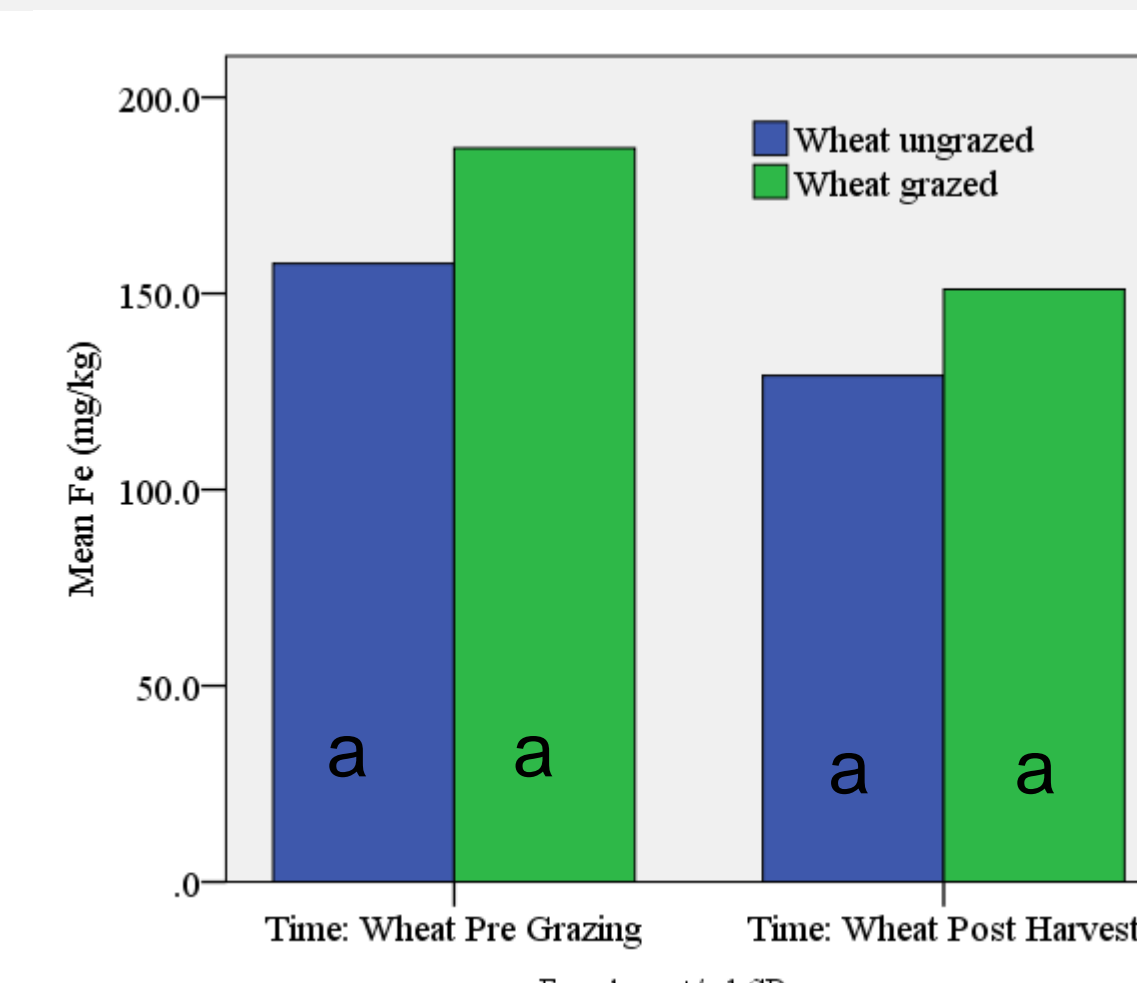
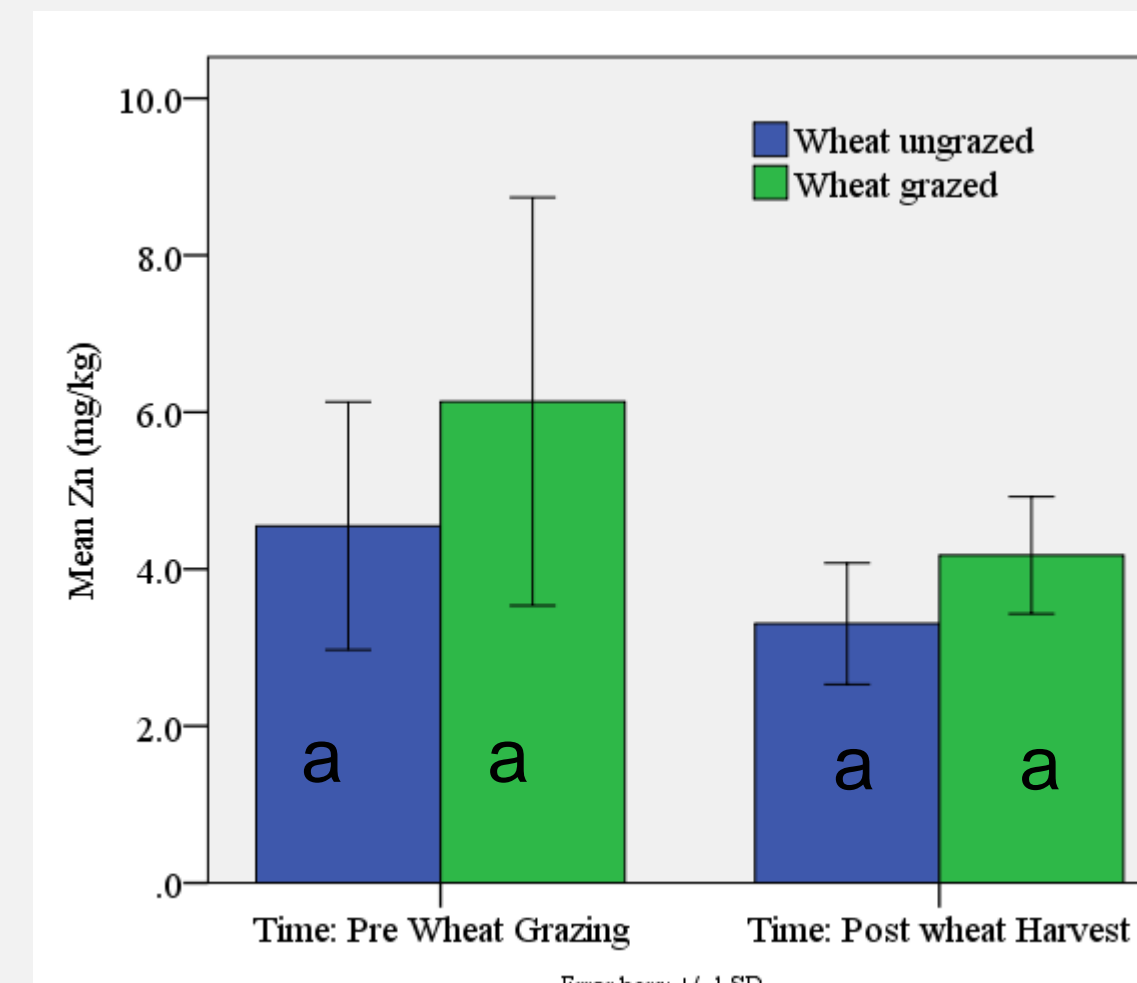
WHEAT GRAZING FIELD



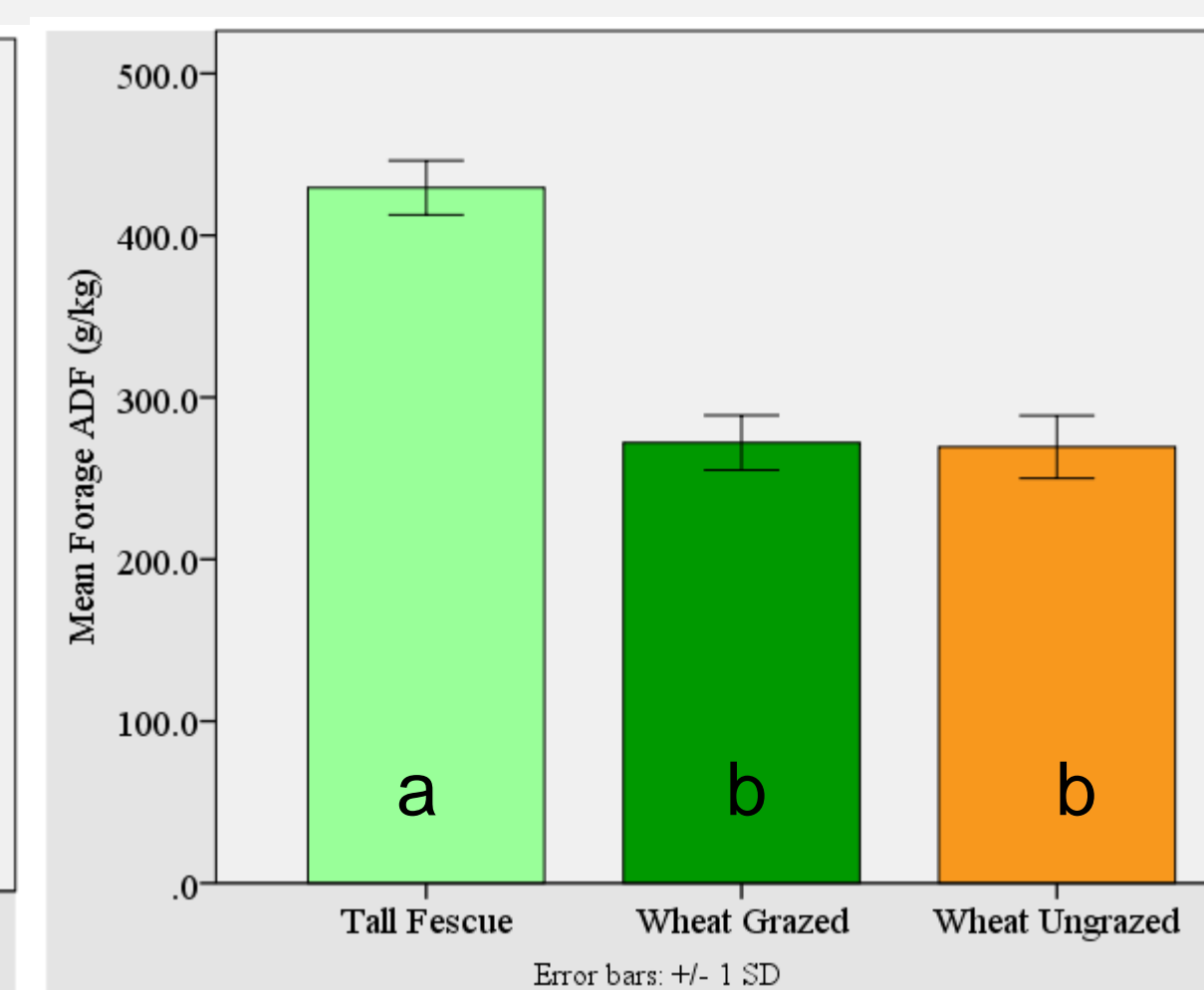
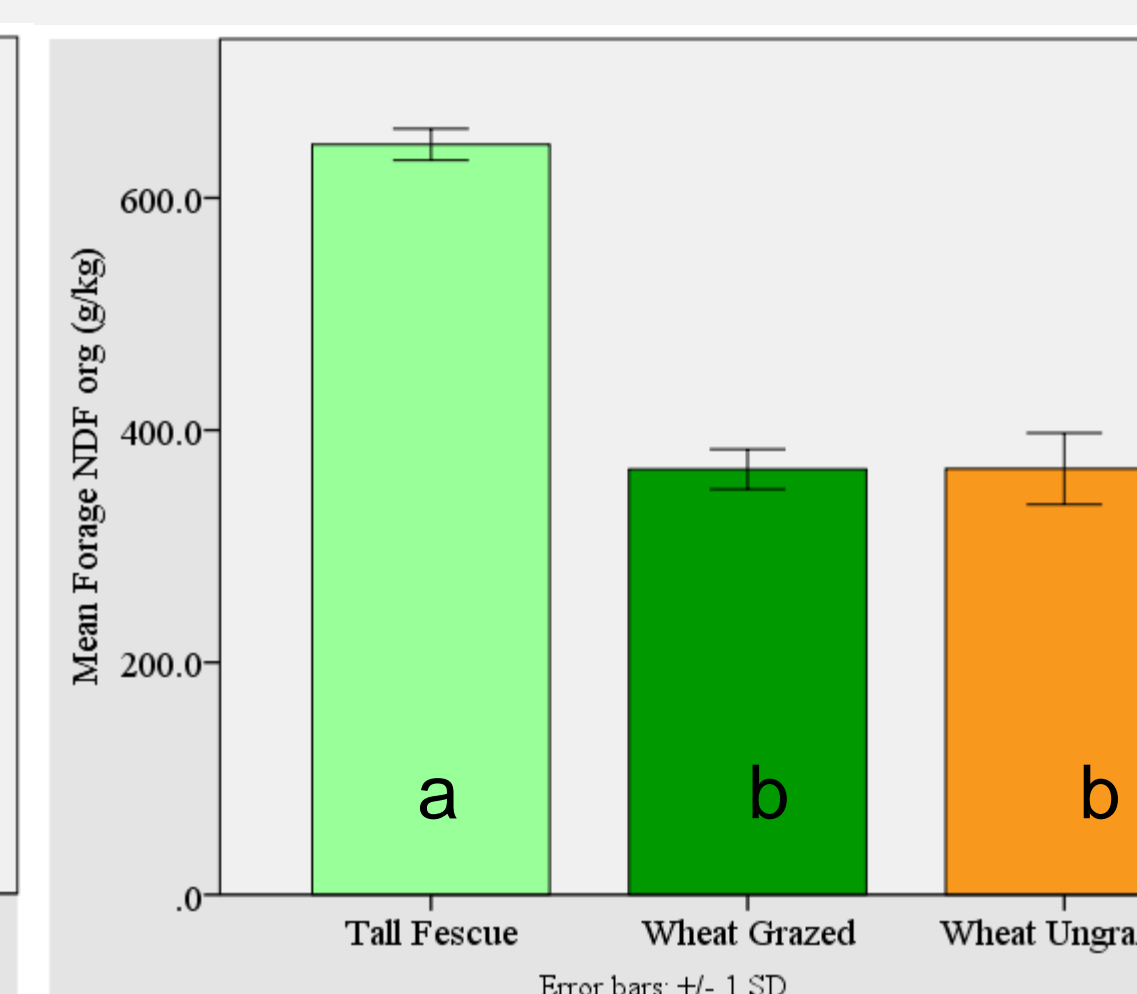
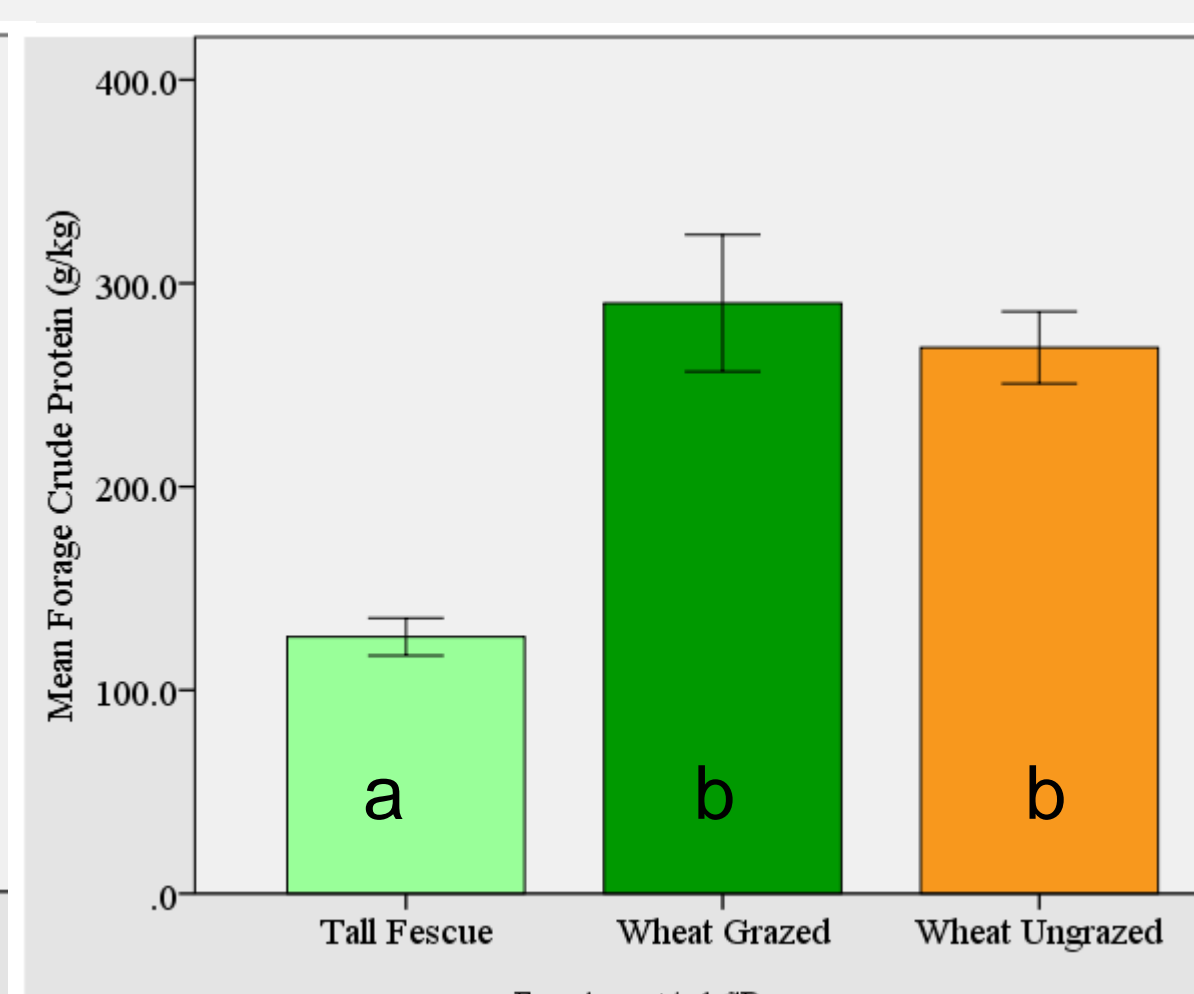
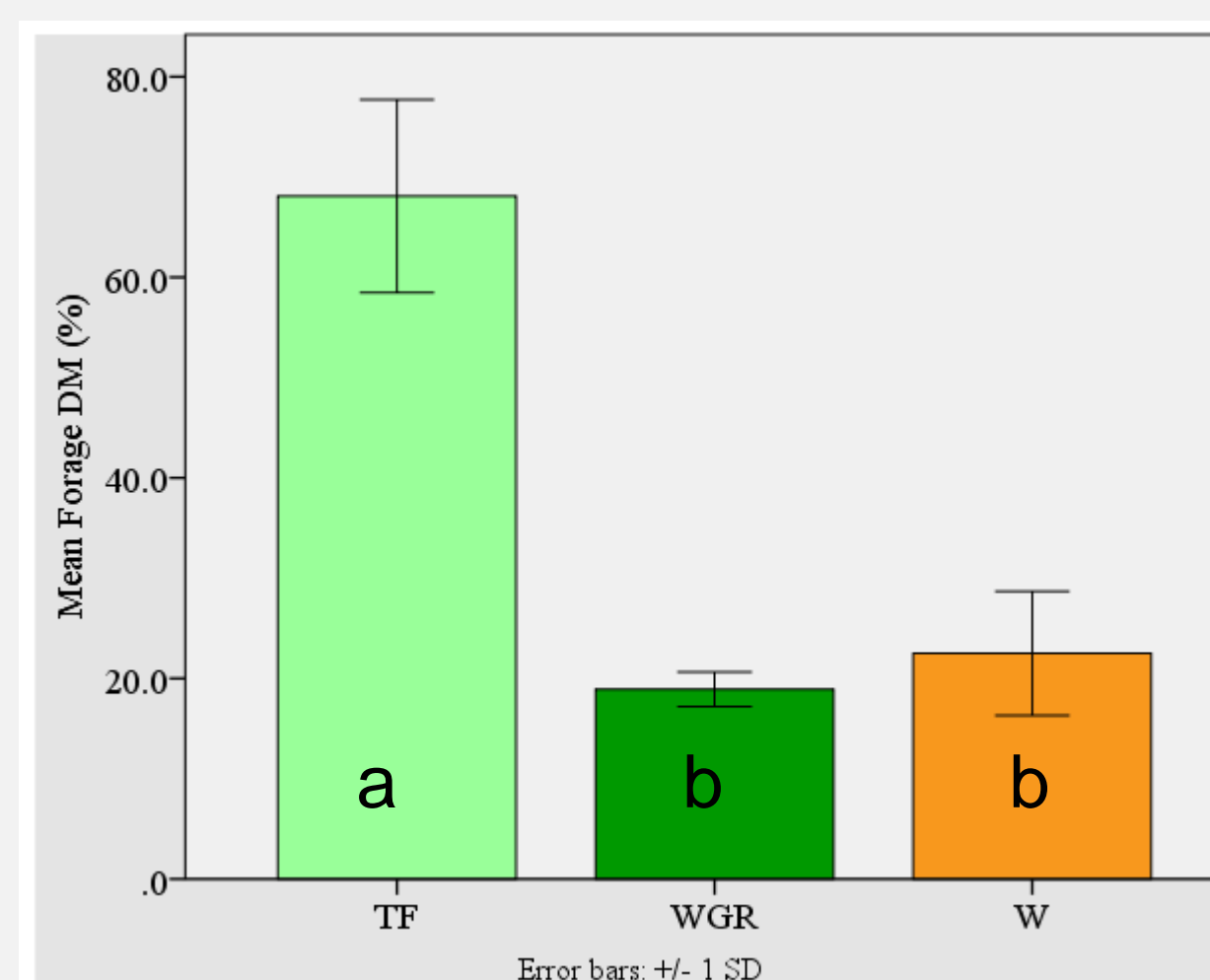
GRAZED vs. UNGRAZED WHEAT FIELDS



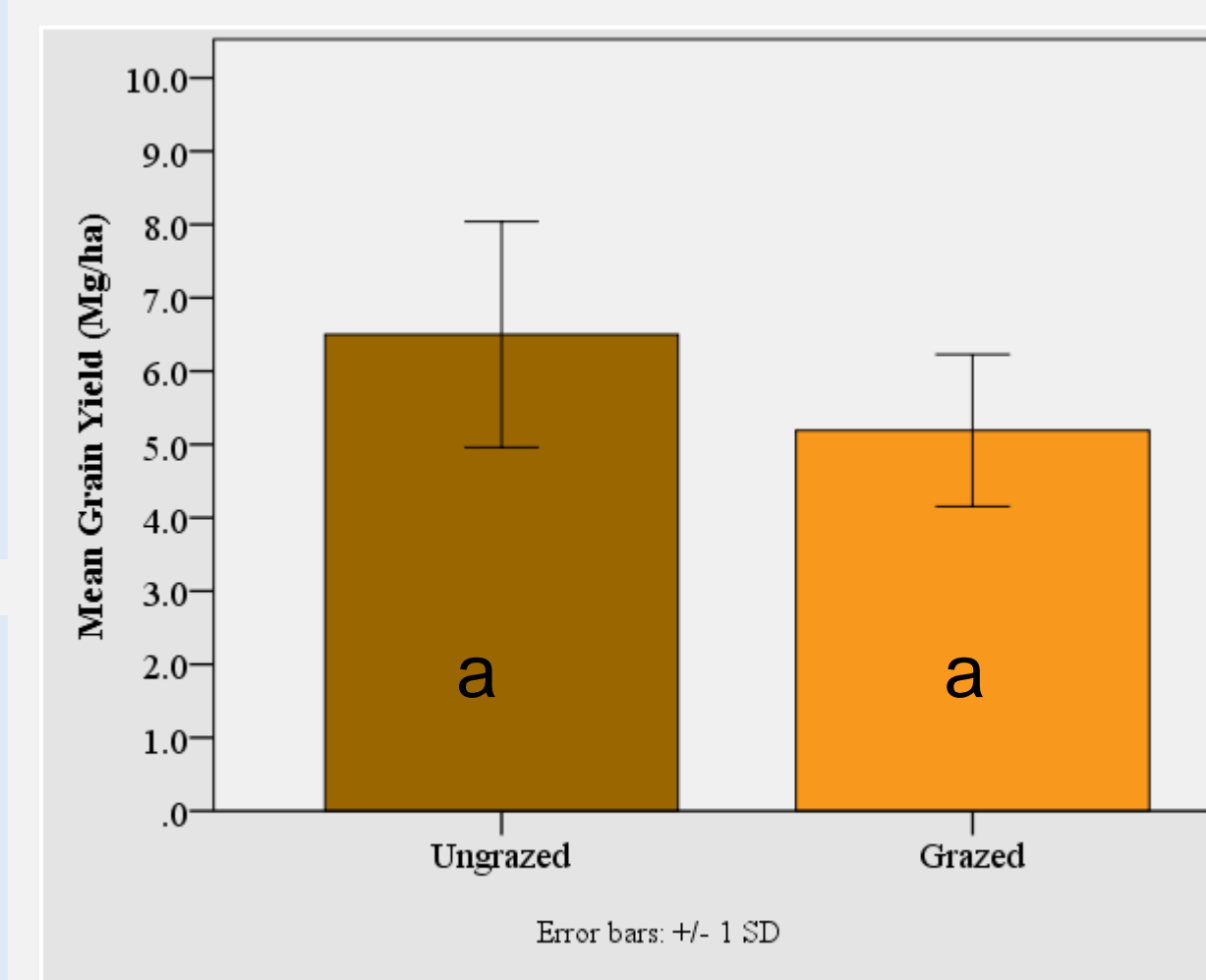
PRE /POST GRAZING SOIL CHARACTERISTICS



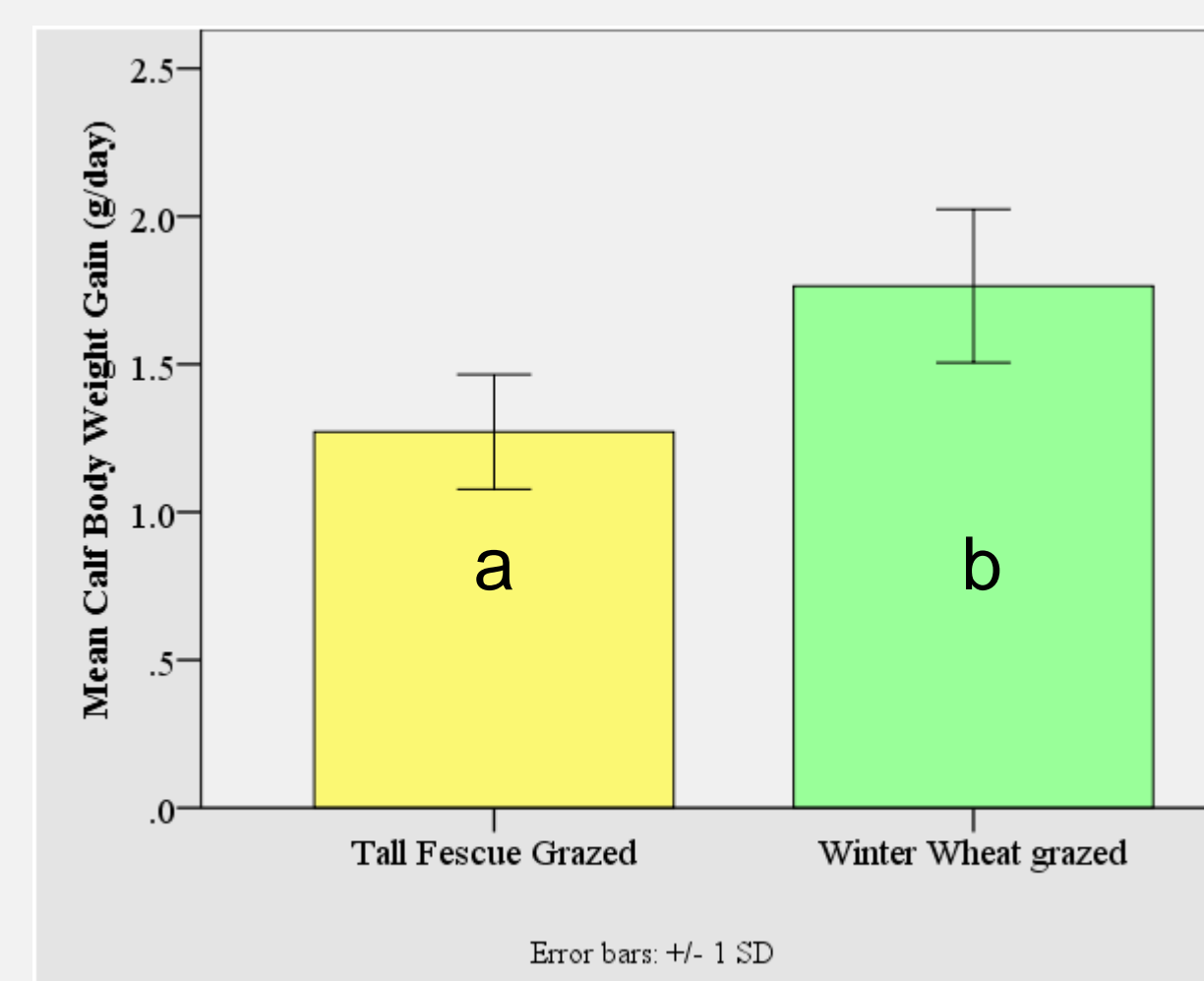
PRE GRAZING FORAGE QUALITY: DM, DCP, NDF, and ADF



WHEAT GRAIN YIELD



CALF BODY WEIGHT GAINS



KEY OBSERVATIONS

Key environmentally sensitive soil elements (P, Zn, Fe, and Cu) levels were unaffected by short term beef cattle grazing on wheat crop.

Grazing forage quality was superior in wheat forage than stockpiled tall fescue grass.

Wheat grain yield reduction by short-term grazing was not significant.

Calf body weight gain was significantly higher when grazed on winter wheat than on stockpiled tall fescue grass.

Short term beef cattle grazing on winter wheat has additional livestock production benefit without affecting grain yield and soil quality.

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