

**Effects of Grazing Alfalfa and Birdsfoot Trefoil on
Yearling Steer Performance in Southwestern North Dakota
(ABSTRACT)**

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Since the cattle industry is ever changing, producers need to be open to new strategies concerning beef production. With this in mind our objective was to measure the difference in production when rotationally grazing yearling beef steers on alfalfa (*Medicago sativa*; ALF) versus birdsfoot trefoil (*Lotus corniculatus*; BFT). Twenty-four steers (body weight= 707 ± 49 lbs; body condition= 6.4 ±.5) were randomly allotted into one of six groups (4 steers/group). Groups were then randomly assigned to one of two forage treatments (3groups/treatment) The ALF system consisted of a newly seeded ALF field with a wheat (*Triticum aestivum*) intercrop and a 2nd year ALF field: the BFT system consisted of a 2nd year BFT field and permanent grass stand. The grazing plan involved grazing 2-yr stands for 3 weeks and the other field for 2 weeks and then repeating the sequence (10 week total grazing period). Steers were weighed and condition scored weekly. The steers then grazed standing corn (*Zea mays*) for 12 weeks. During this time the steers were weighed and ultrasounded three times. Ultrasound data was used to estimate rump fat thickness, back fat thickness, ribeye area, and intramuscular fat concentration. Steers grazing BFT were heavier at weeks 5 (P=.04) and 10 (P=.07) compared to those grazing ALF and were numerically heavier at all weeks. Body condition (P<.1) increased during the summer but did not differ (P>.18) between forage treatment. The numerical weight advantage of the steers that had grazed BFT was maintained through the corn grazing phase. Sonographic estimates of carcass measurements did not differ between treatments with the exception that a larger ribeye area (P=.04) was found in steers (late in the corn grazing phase) that had grazed ALF before going onto the corn treatment. Steers grazing BFT tended to be heavier than those grazing ALF. However, the steers grazing BFT did not appear to have an improved carcass through a corn grazing phase compared to steers previously grazing ALF. The steers grazing ALF had a larger ribeye area than those grazing BFT. Both grazing systems are effective for increasing the amount of forage used to grow steers before sending them to a feedlot for finishing. This should lessen the amount of conventional harvested feed needed to grow a steer to finish.