Response of Bird’s-foot Trefoil Cultivars to Producer’s Field

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Introduction
Bird’s-foot trefoil has been used as an alternative to alfalfa in the U.S. as a forage legume to increase the quality and productivity of livestock. Bird’s-foot trefoil is non-bloating in nature and highly persistent. It has shown to increase meat and milk quality as well as protein use efficiency in ruminants. The degrees of effect of bird’s-foot trefoil on ruminants’ performance hinge greatly on cultivars and the presence and amount of condensed tannins (naturally occurring non-bloating agent). Cultivar performance depends on climate variations, environmental conditions, and agronomic practices. To validate the results from small-plot trials at experiment stations, it is important to conduct the study at a producer’s farm under that farm’s management system.

Objectives
The objective of this study was to evaluate the performance of three bird’s-foot trefoil cultivars in a producer’s field.

Materials and Methods
This study was conducted at the Forrest farm in south-east Wyoming near Torrington. Scott Forrest is a forage crop grower and has experience in cultivation of bird’s-foot trefoil. He is an organic grower and does not use any sort of agrochemicals in his fields. Ten acres of his crop field was used for this study. Three cultivars were selected: ‘Norcen’, ‘Leo’, and ‘Bruce’. Norcen is a North American cultivar known for its high-yielding ability and good quality. Leo is an old European cultivar and is promising due to its better physiological characteristics including both vigor and semi-prostrate nature (branches close to the ground and not upright). Bruce, a new cultivar developed in Canada, is an erect-type variety, making it suitable to cut for hay; it is winter hardy and can be slightly higher yielding than Leo.

The plot was divided into three strips of about three-plus acres each, one for each cultivar. Each strip was divided into three equal plots for replication. The tillage, seedbed preparation, seeding (this took place in June 2015), irrigation, and mowing were done by the producer.

Data collection included plant height, crop canopy coverage, and weed coverage. All plots were mowed twice (once in August and again in October) to help control weeds and enhance establishment of bird’s-foot trefoil. Dry matter (DM) yield was estimated at the end of the growing season by clipping each plot. Forage quality was also determined using the clipped samples. After being dried and ground, samples were analyzed for forage quality using near-infrared spectroscopy (NIRS) in the University of Wyoming forage agronomy laboratory.

Results and Discussion
All three cultivars established well. Plant height and crop coverage were highest in Norcen throughout the growing period, followed by Bruce and Leo. Norcen had the highest DM yield and relative feed value followed by Bruce and then Leo (Figures 1 and 2). The DM yields were comparatively low, which was not unexpected in the establishment year. Growth and quality data is again being measured in 2016. Information obtained should be very useful for producers in the region in deciding whether to use bird’s-foot trefoil as a potential forage crop.

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Figure 1. Dry matter (DM) yield of different bird’s-foot trefoil cultivars in a producer’s field near Torrington.

Figure 2. Relative feed value of different bird’s-foot trefoil cultivars in producer’s field near Torrington.

*Relative feed value (RFV) ranks forages relative to the digestible dry matter intake at full-bloom alfalfa.