On-Farm Performance of Bird’s-foot Trefoil Cultivars

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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 grazing lands for livestock. Bird’s-foot trefoil is non-bloating, and planting a stand of this legume can provide 5–6 years of quality forage. It has shown to increase meat and milk quality as well as protein-use efficiency in ruminants. The degree of effect of bird’s-foot trefoil on ruminants’ performance depends greatly on cultivars and the amount of condensed tannins present (tannins are naturally occurring non-bloating agents). Cultivar performance of bird’s-foot trefoil depends on soils, climatic conditions, and agronomic practices. Studies suggest that fewer harvests can be economical as the quality of bird’s-foot trefoil, like many forages, deteriorates by the end of the growing season. Also, bird’s-foot trefoil, being a slow establishing crop, is less competitive against weeds. Production information on bird’s-foot trefoil, however, is limited due to a lack of information on agronomic management and its performance on a ranch- or farm-scale.

Objectives
The objective of this on-farm study was to evaluate the performance of three bird’s-foot trefoil cultivars under three harvesting frequencies.

Materials and Methods
This study was conducted at the Scott Forrest farm in southeast Wyoming near Torrington. Mr. Forrest is a forage crop grower, follows organic practices, and has experience in the cultivation of bird’s-foot trefoil. Ten acres of his crop field were used for this study. Three cultivars were planted in June 2015: ‘Norcen’, ‘Leo’, and ‘Bruce’. The plot was divided into three strips of about three acres each, one for each cultivar. Each strip was then divided into three equal plots for replication. Each of these plots, in turn, was subdivided into three smaller plots for three harvesting frequencies: harvesting once (H1), twice (H2), and three times (H3) during the growing season. Each harvesting frequency was randomly assigned. Tillage, seed-bed preparation, seeding, irrigation, and mowing were performed by the producer. Harvesting in 2016 included: July 23 (H1); July 23 and October 7 (H2); and June 4, July 23, and October 7 (H3). Two samples were clipped from each plot and used to calculate dry matter (DM) yield by adding the yields from the entire season of each plot.

Results and Discussion
Variations in DM yield were observed among harvesting frequencies and cultivars (Figure 1). In general, total DM production increased as the number of harvests increased. On average, however, the difference between two and three harvests was minimal, indicating that harvesting twice in a season might be a viable and profitable option. Among cultivars, Bruce yielded better than Leo and Norcen. This can be attributed to the fact that Bruce is more upright growing by nature and, therefore, better equipped to outcompete weeds. Also, erect types generally have a better DM yield than prostrate types when used for hay production. The study is ongoing, and data is being collected and analyzed. Early results, however, are promising, especially in terms of harvest frequency (twice) and cultivar performance (Bruce).

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Figure 1. Dry matter (DM) yield of bird’s-foot trefoil at the Scott Forrest farm near Torrington in 2016. H1=one harvest; H2=two harvests; H3=three harvests.