Variety Plot Trials to Evaluate Yield and Stand Persistence for Livestock Harvest

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Abstract: (Limit 200-300 words)
This project is designed to help livestock producers understand the value of grazing high quality forage stands under intensive management. The project is designed to:

- Provide data to livestock producers showing the added value of each variety that grazed alfalfa can provide in yield, during the summer slump and quality of forage.
- Demonstrate how grazing alfalfa can be accomplished without metabolic disorders in livestock
- Research the benefits of mechanically harvesting initial crop for increased yield and stand persistence.

This report is abbreviated due to the aspects of the fall seeding of the alfalfa crop as well as the time it takes to establish the perennial crop.

Introduction:

Northeast Minnesota is home to a large beef cow/calf sector, several dairy farms and a respectable sheep and goat industry. Regional weather patterns provide cool spring temperatures and a relatively short growing season that are not conducive to growing row crops, therefore most of the tillable acres are used for perennial forages that are mechanically harvested. Lake effect moisture allows for good production of forage although challenging for adequate curing of hay. Alfalfa is a high protein, high quality and drought tolerant forage that can survive a wide range of conditions. The advantages of grazing alfalfa instead of grass include access in rainy conditions, reduction of summer slump and the potential increase in nutrients to the soil including nitrogen.

Alfalfa is rarely utilized for grazing for a variety of reasons. Locally, farmers do not have a clear understanding of the value of grazing legumes as high protein forage that can sustain drought, therefore approximately 85% of farmers graze grass with no legumes present. Alfalfa requires intensive management to ensure that yield, quality and stand life are maximized. Fields should be deep, well-drained soils and maintained with optimal fertilizer inputs. Additionally, animal traffic on alfalfa plants at emergence can be critical in yield and stand persistence.

This study is designed to evaluate the impacts of grazing to a varietal persistence and quality of alfalfa plants in high traffic livestock areas by providing evaluation of the forage quality and stand persistence.

Materials and Methods:

The field was established with three replicated plots and planted with 9 varieties of alfalfa and one variety of Red Clover seeded with a nurse crop of oats. Seed varieties include high traffic or grazing varieties. The plots were established August 3, 2016 at Sandy Hills Ranch in Sturgeon Lake Township, Pine County, Minnesota utilizing coarse sandy soil.

The field was soil tested in 2016 for pH, P, K, S and B. The fields were prepreg and fertilized for achieving 5 ton yield. Nitrogen was added to increase alfalfa seedling establishment and to support the oats nurse crop at 50 lbs. /acre as well as 24lbs of Sulfur. No Boron was applied until year 2 (if needed)
Three replicated plots each 20’ by 60’ were pinned and flagged with a 40’ buffer perimeter to avoid unfair traffic on specific plots.

Plots were seeded with a Brillion seeder at a rate of 15lbs of pure live alfalfa/acre and 2 bushel of oats/acre in a randomized layout within each of the three replicated plots.

The test plots were mechanically harvested October 14th to allow for root establishment before grazing. Mechanical and livestock harvest will occur at 10% bloom stage and harvested to a 3-4” stubble height 2017.

Harvesting with livestock will occur within 48 hours or less of 10% bloom stage.

Yield of the alfalfa (dry matter) will be collected on each variety within each replication at all harvests by utilizing alfalfa scissor cut sampling procedure provided on the University of Minnesota website. Persistence analyses will be performed using stem count method on each variety within each replication at all harvests.

Soil testing will be performed at the beginning of each consecutive year of the trial.

Entire plot will be offered to livestock providing a 40’ buffer around the perimeter as to avoid unfair traffic on specific plots.

Process will be repeated for 3 production years based on funding availability.

Annual input for publication in Forage Focus.

Results and Discussion:

In the summer of 2016 the plots were established in August 3rd after the field was prepped, fertilized and seeded.

To allow the alfalfa roots to establish. The nurse crop was harvest October 14th. The field was left to regrow in preparation for the first production year in 2017.

The yield on the plots of Oats averaged 1.44 tons DM/acre equivalent.

Acknowledgements: Funding for this study was provided by the Midwest Forage Research Program of the Midwest Forage Association. Other funders include North East Forage and Grassland Council and the University of MN Byproducts program, Carlton County.

References:

Keywords: Alfalfa, Variety, Livestock, Grazing, Persistence