



“Assessing mycorrhizal colonization to enhance breeding of forage legumes”

DETERMINING THE IMPACT OF MYCORRHIZAL FUNGI

PROJECT NO.: FRG.08.20

LEAD RESEARCHER: Jonathan Bennett (University of Saskatchewan)

COLLABORATORS: Bill Biliget (University of Saskatchewan), Sean Asselin (Agriculture and Agri-Food Canada, Swift Current); J.C. Cahill (University of Alberta)

Background: Mycorrhizal fungi provide a symbiotic relationship with plants. When mycorrhizal fungi colonize a plant’s root tissues they can provide additional nutrients, such as phosphorus, to the plant. There is wide variation in the impact that this relationship between mycorrhizal fungi species and plant species has on plant growth and stress tolerances, suggesting that there may be an opportunity to select for mycorrhizal colonization as part of the breeding process.

Objectives: The objectives of this study are to:

1. Determine whether mycorrhizal fungi colonization can be used as a trait that can be quickly assessed to improve breeding of alfalfa and sainfoin for forage production and stress tolerance
2. Quantify the relationship between mycorrhizal fungi colonization, forage production, and forage quality

3. Determine whether mycorrhizal fungi colonization is a heritable trait in alfalfa and sainfoin
4. Compare how individuals from each legume species that vary in mycorrhizal fungi colonization rates respond to nutrient limitation and drought

Implications of the Research: This project will explore whether mycorrhizal colonization can predict growth rate, stress tolerance, and forage quality differences, and the impact that mycorrhizal colonization has on these traits in alfalfa and sainfoin.



www.albertabeef.org