

DEPARTMENT OF AGRICULTURAL, FOOD AND NUTRITIONAL SCIENCE

MSc Thesis Seminar

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Date: **Friday, July 20, 2018**
Time: **9:00 a.m.**
Location: **318J Agriculture/Forestry Centre**
Title: **Evaluating impacts of high voltage transmission line construction
on Dry Mixedgrass prairie in Alberta**

ABSTRACT

Native grassland provides productive rangeland for livestock grazing and valuable habitat for wildlife. However, remaining Canadian prairie in southern Alberta, and its integrity, has been changed by urban-industrial development, including pipeline and electrical transmission line construction. Although not widespread in area, high voltage transmission line construction is an important disturbance within the mixed grass prairie, and necessitates the need for best management practices to maintain these grasslands despite development. Access mats are recommended as an alternative practice to soil stripping, replacement and revegetation, and thereby decrease the effects of contemporary industrial activity on soil and vegetation resources.

This study looked at the *in-situ* monitoring of high voltage transmission tower construction using two different methods, 1) high disturbance sod-stripping of soil, including stockpiling, releveling and reseeded; and 2) low disturbance practices using surface matting to protect existing soil and vegetation during construction. While sod-stripping and access matting both altered soil and vegetation, greater reductions in plant cover, particularly native vegetation and perennial grasses, were evident with sod-stripping, which also increased soil bulk density, and decreased organic matter as well as nitrogen concentrations. In contrast, smaller changes were evident in soil and vegetation with the use of matting, with recovery occurring more rapidly. The value of access mats in protecting mixedgrass prairie also appeared to be particularly high on loamy soils. Recovery in all areas, including soil stripped towers, occurred by the third year post-treatment. Results from this study suggest that different types of construction methods can alter soil and vegetation dynamics, and that low disturbance methods (using access matting) are a viable tool to reduce impacts to mixedgrass ecosystems.