

Mapping Canada's Rangeland and Forage Resources using Earth Observation

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Differentiating rangeland, pasture and forage crops using Earth Observation (EO) is generally difficult because of their spectral reflectance similarities and partly as a result of the variability of climate, soil type and management practices. This variability becomes increasingly problematic over larger areas. Previous efforts to create an inventory of rangeland and forage resources across the Canadian Prairies using classification of EO data have not achieved desired accuracies. The objective of this research is to determine which variables derived from remote sensing and geospatial data can be most effectively used to produce increased classification accuracy of Canada's forage resources. Field data related to land cover type and dominant species composition were collected during the 2015 growing season at study sites west of Brandon, MB and near Lethbridge, AB. Multispectral imagery at two scales (RapidEye and Landsat-8) and Radarsat-2 imagery are being integrated into Random Forest (RF) classifications to determine variable importance, to aid in selection of appropriate variables for classification and to analyze the spatial distribution of classification quality for rangeland and seeded forage classes. Variables include standard reflectance/backscatter as well as vegetation phenology and image texture variables. Results to-date will be presented.