Competitive and Complementary Forage Dynamics of Weed Control in Established Pastures Containing Mixed Swards

Erin M. McLeod, Edward W. Bork, Jane R. King and Linda M. Hall; University of Alberta; Contact Author Email: emmcloed@ualberta.ca

Noxious weed invasions into established pastures can result in significant losses in forage production and availability to livestock. Control of noxious weeds with the use of herbicides often results in the loss of non-target legumes that increase overall forage quality within mixed swards. We used 2 study sites containing a minimum of 30% legume (*Medicago sativa or Trifolium spp.)* in the Parkland region of Alberta to evaluate forage yield losses due to the presence of Canada thistle (*Cirsium arvense*) and the subsequent sward dynamics with simultaneous removal of weeds and legumes. Yield and quality data from a five-year period were used to quantify relationships between legumes, Canada thistle and the remaining (largely graminoid) forage component, and determine the competitive and/or compensatory responses within these mixed forage swards. Although initially both sites displayed significantly competitive relationships between legumes and non-legume forage, the moisture and nutrient rich *Trifolium* spp. site displayed a greater competitive relationship that impacted the overall forage biomass produced in the stands. Results from this study will be used to attempt to clarify the competitive and compensatory relationships between legumes, Canada thistle and non-legume forage in mixed pasture swards and the opportunity costs associated with the control of noxious weeds.

2009. 62nd Society for Range Management Annual Meeting. Paper No. 70-6.