The Benefits of Increasing Grazing Height on Weed Suppression in Management-Intensive Rotational Grazing Systems in Wisconsin

WISCONSIN GRAZING LANDS CONSERVATION INITIATIVE GRANT PROGRAM

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The objectives of this study were to evaluate whether increasing the grazing height from the fall through the following summer would decrease emergence and survival of burdock, plumeless thistle, and Canada thistle seedlings. Since this new management strategy could affect forage yield and quality, an additional objective was to determine whether these variables differed between treatments.

Burdock and plumeless thistles are biennial species for which fall is a critical time of emergence and early growth. Canada thistle is a perennial that spreads by perennial roots.

Field experiments were conducted from the fall of 2008 through the summer of 2010 at six sites in Wisconsin. All sites were dominated by cool season grasses. Five simulated grazing treatments were established at each site in October of 2008 and 2009 and maintained throughout 2009 and 2010. The grazing treatments consisted of clipping grass to one of two treatment heights (4 inches or 6 to 8 inches), and then allowing the stand to re-grow during the rest period until the next simulated grazing event. The simulated grazing was conducted as close as possible to actual grazing timing for rotationally grazed pastures in study sites' region, and the length of rest period varied throughout the season based on plant growth.

To ensure adequate weed pressure, 56 pure live seeds/ft^2 of burdock, Canada thistle and plumeless thistle were broadcast into the plots in November 2008 and 2009 at three sites.

Forage biomass was measured at each grazing event. Forages were harvested to each treatment height, collected, dried, and weighed to determine yield and forage quality for various treatments and timings.

Retaining 6-8 inch of residual height in the fall through the following grazing season can decrease burdock establishment by 66% and Canada thistle by 72% compared to typical residual heights (4 inch). Plumeless thistle establishment did not differ. Survival of established weeds, while reduced over time, did not differ among treatments. Increased light interception, particularly in the early spring (April), appears to be one mechanism for the suppression of burdock and Canada thistle seedlings. Although increasing grazing height to 8 inches did reduce overall forage quantity by 35%, this was only observed in the fall (87% reduction) and at the first spring grazing event (53% reduction). Forage quality may be reduced with 6-8 inch residuals in the late summer, but quality was still within the same threshold for a cow calf pair (RFQ 120-150) for all treatments. No differences in forage quality were detected among grazing events. Others have observed that typical pasture species have the ability to outcompete weed species, specifically in years of good pasture growth, but this is the first study to document this effect and one possible mechanism.

The Grazing Lands Conservation Initiative Grant Program is a partnership between the private sector GLCI Steering Committee, the USDA Natural Resources Conservation Service and the WI Department of Agriculture, Trade, and Consumer Protection. This series of research briefs summarizes projects funded by this program. Our mission is to expand the use of profitable, grazing-based livestock production systems that foster environmental stewardship. This is accomplished through high quality technical assistance to owners and operators of private land, university and producer coordinated research, and educational programs. For more information on the program or on the research in this Brief, contact: Laura Paine, Grazing and Organic Agriculture Specialist, WI Department of Agriculture, Trade, and Consumer Protection, (608) 224-5120, laura.paine@wi.gov; or Rhonda Gildersleeve, Extension Grazing Specialist, University of Wisconsin-Extension, (608) 723-6243, rhonda.gildersleeve@ces.uwex.edu. This summary was written by Ken Barnett with University of Wisconsin-Extension.