

Public Abstract

First Name: Bryan

Middle Name: C.

Last Name: Sather

Adviser's First Name: Kevin

Adviser's Last Name: Bradley

Co-Adviser's First Name:

Co-Adviser's Last Name:

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Title: Influence of Herbicides Applications on Weed and Tall Fescue Management and Grazing Distribution in Missouri Pastures

Approximately 26% of the land area in the United States is used for grazing purposes. The primary animals that use these areas are cattle. Missouri contains about 4.15 million head of cattle, and ranks 6th in the country in this category. The majority of grazing and haying fields in Missouri utilize tall fescue (*Lolium arundinacea* Shreb.) as the predominant forage species. If these pastures are not managed properly, they can become unproductive due to an increase in weed growth which can reduce forage productivity and quality, and reduce carrying capacity. One increasingly problematic weed encountered in a number of Missouri pastures and hay fields is Northern dewberry (*Rubus flagellaris* Willd.). This weed produces small spines that can injure people and grazing animals. The results from our research on the control of Northern dewberry indicates that fall applications of herbicides that contain the active ingredient metsulfuron will provide up to 50% control of this weed by the season after treatment, however a follow up application will be required to achieve higher levels of control where dense infestations exist. Metsulfuron-containing herbicides can also be utilized as a tool to reduce the total number of tall fescue seedheads in pasture and hay field settings. By reducing tall fescue seedhead production, the consumption of ergovaline is reduced, which can cause detrimental effects to the animals' health. The results from our experiments indicate that substantial reductions in tall fescue seedheads can occur when applied at the boot compared to the vegetative stage of tall fescue growth. The grazing distribution of cattle in many pastures is uneven, leading to overgrazed areas that most often contain higher weed populations. In pastures infested with various weed populations, the use of herbicides can change the distribution of cattle even when the elimination of desirable legumes occurs. The results from our research revealed that cattle grazing distribution increased from 1.5 to 4.9 times more in herbicide-treated compared to non-treated portions of pastures, even with the removal of desirable legume species.