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## **Nutrient and Sediment Losses from Overwintering Areas in Grazing Systems in Wisconsin**

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### Abstract Text:

In recent years, interest and involvement in Managed Intensive Rotational Grazing (MIRG) systems has increased significantly in Wisconsin. Currently, cattle are pastured to some extent on 25% of the state's 14,250 dairy farms; and of those farms approximately 60% employ MIRG systems. Grazing is often considered to have minimal impact on surface or groundwater, but as herd sizes increase we see an increase in the numbers of animals overwintered on relatively small land areas. In addition to high stocking densities we often find that these areas are located on land that provides easy access to food and water. The UW – Discovery Farms Program has been monitoring surface water runoff from overwintering areas on two MIRG farms and a research station in Wisconsin. These farms include both coarse and fine-textured soils and have been equipped with monitoring stations to collect water quality and quantity data to quantify nutrient and sediment losses. Data show that soil texture in the overwintering areas is important as it influences the amount of runoff that occurs and the sediment and nutrient loads exported. Annual losses of phosphorus from overwintered paddocks are consistent with data coming from other farming systems that apply manure on frozen and snow covered ground with about 80% of the phosphorus loss in the dissolved form. Nitrogen losses are also similar with about 45% of the nitrogen being in the ammonium form. Animal densities as well as the amount of time that the animals spend in the overwintering areas are important contributing factors to nutrient and sediment loadings. Recommendations based on soil textures, stocking densities, and time within a paddock have been developed for grazers; designed to minimize the potential adverse environmental impacts of overland runoff from overwintering areas.

### Impact Statement:

The losses from these grazing operations are higher than often reported, probably because of the intensive monitoring of losses from overwintered paddocks. The information generated from this farm is being used to develop education and training programs that demonstrate what environmental issues grazing operations need to consider in order to protect water quality in environmentally sensitive areas. This farm has also provided critical information on nutrient and sediment loading from overwintered areas in the northern climate of the United States.