



# Feasibility of Dairy Pasture Irrigation on Wisconsin's Central Sands Region



WISCONSIN GRAZING LANDS CONSERVATION INITIATIVE GRANT PROGRAM

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## Research Brief

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The central sands region of Wisconsin is a large area of land located in the center of the state that was a massive glacial lake many centuries ago. As a result, the soils in the region contain a higher percentage of sand than most of the soil in the rest of the state and don't hold water as efficiently. Thus, most crops grown in the region require frequent irrigation during the dry summer months to maintain production at a high level. While most farmers in the region grow things like potatoes and cranberries, they also graze. The main objective of this project was to determine the financial feasibility of irrigating pastures on well-drained soils.

A K- line irrigation system was chosen because of the lower capital investment, easy assembly and installation, adaptability for livestock grazing systems and varied of terrain, and the efficient application of water. During the project, two research paddocks were established. Each paddock consisted of two non-irrigated control strips and four irrigated strips. Three of the irrigated strips were irrigated according to the farmer's discretion. One irrigated strip was irrigated according to the soil moisture monitor's recommendation. When soil moisture monitors would reach 30-40 centibars of soil tension, then irrigation would begin.

Following an extremely dry season in 2009 (July 1-September 30) when 7.25 inches of rain was received, and an extremely wet season in 2010 (July 1-September 30) when 22 inches of rain was received, a cost analysis was conducted to determine the financial feasibility of this irrigation technology under these circumstances. In 2009, irrigation on the Onan Farm produced 1.5 tons more dry matter forage than non-irrigated areas of the farm. The 2010 season where an abundance of rain fell resulted in very little irrigation inputs to the study. There were no significant differences of production averages between irrigated and non-irrigated forage yield.

The approximate total cost of operating the system in 2009 was \$135 per acre, but returned 1.5 tons dry matter of dairy quality forage valued at \$258.75 (1.725 as fed tons times \$150/ton) for \$123 in net returns. In 2010 the approximate cost of owning and limited operations of the pod-line system was \$67, representing a loss from no gains in production. The cumulative benefit of pod-line irrigation 2 years into operation is approximately \$68 per acre. The potential for no annual return is the greatest risk for operators choosing irrigation. An analysis of 3 Wisconsin farms employing podline irrigation showed a lifetime fixed cost of \$31-\$59 per acre year, predominantly made up of ownership costs of the well and pod-line irrigation system. The wide range of costs reflected the level of investment farmers had in their wells.

It will take several years to determine whether the irrigation of pastures with this technology will consistently return a net benefit to the producer. However, even with extreme data sets, the results from this project will allow farmers to estimate installation costs and project what the feasibility of irrigation might be on their farms.

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](mailto:laura.paine@wi.gov); or Rhonda Gildersleeve, Extension Grazing Specialist, University of Wisconsin-Extension, (608) 723-6243, [rhonda.gildersleeve@ces.uwex.edu](mailto:rhonda.gildersleeve@ces.uwex.edu). This summary was written by Ken Barnett with University of Wisconsin-Extension.