

Evaluating Rotational Grazing in the Development of Replacement Dairy Heifers

Final Report for FNC92-019

Project Type: Farmer/Rancher

Funds awarded in 1992: \$2,300.00

Projected End Date: 12/31/1994

Matching Non-Federal Funds: \$7,740.00

Region: North Central

State: Wisconsin

Project Coordinator:

[Kevin Kirker](#)

Project Information

Summary:

OBJECTIVE

Trial and evaluation of a conversion from raising dairy replacement heifers in a confinement system with purchased feed to a system incorporating rotational grazing.

PROJECT BACKGROUND

Dairy farmers, Kevin and Lisa Kirker, milk a herd of 35 Holsteins on their 150 acre family farm near Merrill, Wisconsin. They raise corn for grain and silage in addition to red clover hay. The farming operation did not include sustainable agriculture practices previous to this grant.

The local extension agent, technical college agriculture instructor, feed nutritionist, and local businesses provided assistance with the project and field day. The agent and instructor provided technical information for the project, planning for the field day, and field day presentations. The feed nutritionist balanced feed rations and helped analyze nutritional content of feed mix ingredients. Local agriculture businesses donated prizes that were distributed to field day participants.

PROJECT DESCRIPTION AND RESULTS

We wanted to get all of our non-milking cattle out of the barn to reduce pen cleaning and hauling of manure. Hauling feed in and hauling manure out of the barn is a lot of unnecessary work when the heifers can do it themselves if they were out on pasture.

If we were going to put the animals out on pasture, we wanted to make sure we could still get adequate weight gain and still get the animals bred for 24 month calving intervals.

In studying different methods of pasturing, intensive rotational grazing offered solutions to these problems.

To test our theory, we applied for a research grant from the North Central Region SARE Program. We were fortunate to receive a grant. With our limited economic

resources the grant enabled us to conduct the research.

We had 20 acres of pasture which we divided into three paddocks approximately 6.5 acres each. Each paddock was subdivided into one acre plots using portable electric fence.

Barriers to implementing a sustainable agriculture practice were the following:

- Breeding heifers on pasture without using a bull
- Keeping labor to a one man operation
- Technical knowledge and experience raising replacement heifers
- Financial constraints of researching a new sustainable agriculture program
- Financial constraints of fully converting to a proven cost effective program.

Goals of the sustainable agriculture project were the following:

1. To transition to a sustainable agriculture system.
2. To use farm grown feeds in a balanced ration that is cost effective.
3. To gain technical assistance and resources.
4. To gain knowledge and experience in sustainable agriculture.
5. To learn about rotational grazing.
6. To raise dairy replacement heifers economically.
7. To raise forage with a minimum of input from off the farm.
8. To use more farm resources to reduce the cost of replacement dairy heifers without investing in expensive machinery and equipment.

The primary objective was to establish a rotational grazing system and meet related requirements to raise replacement dairy heifers. The installation of portable fencing and a waterline to the grazing area permitted management of pasture growth so that more cows could be fed for a longer season. A portable headlock feeder provided for feeding supplements and performing artificial insemination in the paddocks.

The installation of portable fencing to divide a pasture that was fenced last year provided for management of forage growth through rotational grazing. Subdividing the pasture into paddocks and rotating the heifers through the paddocks increased the grazing capacity over the previous grazing season.

The previous owner of the farmland established the pasture forage during 1986-1987. The land was not tended until 1990 when the forage was cut and baled for hay. Cows grazed the pasture in 1991 following the installation of a perimeter fence. The forage vegetation was mixed grasses with about five percent red clover.

Installation of approximately 1800 feet of one-inch PVC pipe provided water in a location central to the pasture paddocks. Hoses carried water from the pipeline to the portable tanks. Heifers could obtain water from portable watering tanks in each of the paddocks.

Test results from pasture forage samples indicated that the pasture did provide energy for a balanced ration. A grain mix included minerals that were mixed with farm raised corn. The grain and pasture forage provided a sufficient energy level. An appropriate feeding arrangement for grain also provided a system for breeding the heifers by artificial insemination in the pasture. Grain was fed in a feeder wagon with headlocks in the pasture. At feeding time it was possible to lock the cattle into the wagon, check heifers, or perform artificial insemination.

Controlling the grazing provided quality forage. The test samples indicated that the relative feed value and protein was high. The pasture forage provided high quality feed compared with the hay test samples taken from the hay that heifers would have received in confinement. Pasture forage test averaged 16.45 percent protein versus 11 percent for the hay harvested on the same field in 1990. The charts and graphs display data results for heifer weight gain and pasture forage nutrients.

[Editor's Note: To see copies of the charts and graphs, please contact NCR-SARE at ncrsare@umn.edu or 1-800-529-1342.]

Grazing replaced purchased hay that would have been used in confinement. The replacement reduced the cost of purchased feed during grazing season, the cost of cutting and baling hay from the pasture acres, and the labor involved in haying and feeding the animals.

The original plan for the season included mowing excess forage to use when the heifers were returned to the confinement system for winter. The weather conditions prevented excess growth and the possibility of harvesting any forage. To supplement the shortage of feed due to the weather, additional cows were pastured with the heifers. The over grazing by the additional animals prevented harvesting forage but helped overcome the problem created by a shortage of feed.

The heifers that reached a suitable weight for breeding, settled quickly indicating that the nutrition afforded by the system and management practices were adequate for raising replacement heifers. The continued use of the piloted program should maintain the herd size, improve herd genetics, improve herd production, and maintain the quality of the farmland.

The pasture is set up and ready for use next season which increases the cost effectiveness of the program as it continues over future years. Heifers will require very little time, labor, or off the farm expense during future grazing seasons. The 1993 grazing of replacement dairy heifers provided the farm with the first step in implementing a successful transition to a sustainable grazing system.

OUTREACH

The major outreach activity was a field day held in conjunction with the Land Conservation Department and the Soil and Water Conservation Department Grazing System Workshop presented by the Lincoln County Extension Service.

The grazing system workshop participants met in educational sessions in the morning and participated in the field day during the afternoon. The afternoon activities included farmers and business representatives too. The afternoon program provided a description of the project, its management, and the grant supporting the project. Kevin Kirker, the project farmer, provided the descriptions. The pasture walk included presentations on the installation and use of the watering system, the head lock feeder wagon, the rotational grazing paddocks, and the least cost sustainable system. Andy Anderson, dairy management instructor for the Wisconsin Technical College in Wausau, discussed the nutritional concerns, growth rate, and forage results. Tom Cadwallader, Lincoln County Extension Agent, presented workshop information on grazing management, suitability of various types of pasture forage, and pasture species control through the maintenance of appropriate plant growth height.

A summary of introductory remarks and an outline of the information presented gives a detailed listing of the field day topics. These items are in the appendix with other documents related to the project and field day. [Editor's Note: To see copies of the materials mentioned in this report, please contact NCR-SARE at ncrsare@umn.edu or 1-800-529-1342.]

Attendance included the grazing system workshop participants, local agriculture businessmen, farmers, and the general public. Attendance and a mailing list for distribution of the final project summary were recorded through registration for attendance prizes. The prizes were donated by five agricultural businesses. The businesses were Marathon Implement Company, Beatrice Cheese, Zastrow Trucking, Knispel and Latzig, Inc. (John Deere dealership), and Dave's Dairy Supply, Inc. (Universal Milking Equipment dealer). A large sign displayed the names of the

contributors and they were given credit for sponsoring the prizes during the presentations.

The field day demonstration was publicized through press releases sent to WDEZ radio, Agri-View farm newspaper, Hoard's Dairyman, Country Today newspaper, and Channel 9 TV. Brochures were mailed to Northcentral Technical College dairy program students, local farmers and distributed through extension offices, plus local businesses. Fliers were posted and displayed on counters in offices and at businesses making fliers available for customers to take home.

The final project report and bibliography will be distributed to extension offices, field day participants, Wisconsin Grazing Organizations, and Agricultural publications. The project description and results will be incorporated with information distribution during the 1994 project activities.

PROGRAM EVALUATION

The assistance that I received through the producer grant program of the North Central Region - Sustainable Agriculture Research and Education Program made it possible for me to transition one group of my dairy herd to rotational grazing. This step in converting a portion of my conventional herd management system to sustainable agriculture practices has already produced a saving in feed and labor. I did not have the resources for the initial investment required by this conversion, but the grant made it possible for me to institute the change earlier than would have been possible without the help of grant funding. The grant increased the interest of local resource people in helping me attain my goals which were also grant project goals.

The project demonstrated the importance of rotational grazing so that I feel justified in taking the risk of the changes involved in converting the milking herd to rotational grazing.

The project demonstrated how the savings that were made will enable me to make the initial investment required to convert the entire animal operation to a rotational grazing system.

Research

Participation Summary

Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture or SARE.



Sustainable Agriculture
Research & Education [US Department of Agriculture](#)



This site is maintained by SARE Outreach for the SARE program and is based upon work supported by the National Institute of Food and Agriculture, U.S. Department of Agriculture, under award No. 2019-38640-29881. SARE Outreach operates under cooperative agreements with the University of Maryland to develop and disseminate information about sustainable agriculture. [USDA is an equal opportunity provider and employer.](#)