**The Health Effects of Grazing vs. Confinement on First Lactation Performance of Dairy Replacements**

SARE project ONE05—033


**Summary**

A comparison of raising pregnant dairy replacements in confinement vs Management Intensive Grazing (MIG), showed that the animals raised in MIG had far fewer post partum problems then their counter parts. This study was set up to compliment prior studies completed by the University of Minnesota from 2000 through 2002. Those studies showed the same advantages in health but were completed on the universities' farm. This study was conducted with animals from two separate commercial herds.


**Background**

The goal of this project was conceived during a pasture walk on a farm in Schuyler Co, NY in the summer of 2003. The group was viewing a grazing system belonging to a retired military man. He contract grazed replacements for a neighboring dairy. Some of the participants had similar operations and all participants agreed that grazing dairy replacements produced a healthier and stronger animal than comparable animals raised in confinement. The conversation was that there was significant opportunity to graze more replacements, especially with the dairies of more than 400 milking animals. The graziers felt that the barrier was that they only had antidotal evidence when proposing the health advantages of grazing to dairyman who were raising their replacements in confinement. The PI of this project was asked by this group to find information that would help them increase their opportunity to graze dairy replacements.

A check of prior research was completed looking for studies that dealt with comparing the health of grazed dairy replacements vs confined replacements. A study from the University of Minnasota was identified. The study was completed by Laura Torbert, a Graduate Student of Professor Hugh Chester-Jones. She looked at health indicators of the animals in the two systems. Torbert's study had shown significant differences in the postpartum health of the animals kept in grazing regimes and those kept in confinement. Here is the table from her study that highlighted these differences:

**Parturient Disorders**

| | Continuously Grazed Paddocks | Rotationally Grazed | Feedlot or Confined |
|---|---|---|---|
| # of animals | 20 | 21 | 21 |
| DA's | 3 | 2 | 7 |
| Difficult calving | 2 | 3 | 5 |
| Metritis | 0 | 0 | 1 |
| Ketosis | 2 | 0 | 3 |
| Skeletal injury | 0 | 2 | 2 |

These differences between the grazed animals and the confinement animals were what attracted the PI to duplicating the study. In this SARE study there were only two groups: MIG and Confined.

**Performance Targets and Objectives**

The objective was to duplicate the study using large commercial dairies which would allow the comparing of information gathered from herd mates. If the SARE study showed similar results as the Minn. study this information would aid other large dairies to see the benefit of raising heifers on pasture and adopt the practice. Increasing the number of animals grazing in NY would have many advantages:

1. Decreasing the amount of manure that feeds into a large farm's CAFO plan.
2. Creating opportunities for contract graziers
3. And finally, raising replacements that are healthier and require less medical interventions at the beginning of their first lactation.

**Materials and Methods**

The study would use a larger study group; 100 animals vs. 42 animals used in the Minn. study. The other difference was that the SARE study would be conducted under actual conditions on two different dairy farms. The animals were taken from two large commercial herds which had a sufficient number of animals bred in the window required for the study. Each group of heifers came back to be housed and managed together on the home farm. In April of 2005 the animals were selected from two farms: Farm 2 in Cayuga Co. and Farm 1 of Schuyler Co. The 50 animals from each farm were weighed and sent to their regime within two days of each other. That grazing season was a challenging one in 2005 due to the lack of rain. The Schuyler animals had to be removed from the grazing system 30 days ahead of schedule, and a portion of the Cayuga animals came off a week early due to the lack of pasture growth. The expected result of the shortening of the grazing period was that since the animals from the two regimes spent more time together under the confinement regime there would be less of a difference between them. This was not the case. After collecting the data on post-partum problems from the two farms there was a significant difference between the health care requirements of the animals under the two regimes on both farms. The following are the results and the discussion:

**Results and Discussion**

After the animals returned from pasture they were combined with the confinement group. The study was designed so that the animals would have between 30 and 60 days post treatment before calving.

| **Farm 1** | No. of animals requiring treatment | Calving Ease |
|---|---|---|
| Grazed | 6 | 1.26 |
| Confinement | 12 | 1.6 |
| **Farm 2** | | |
| Grazed | 0 | 1.62 |

| | | |
|---|---|---|
| Confinement | 12 | 1.75 |

**Calving Ease**

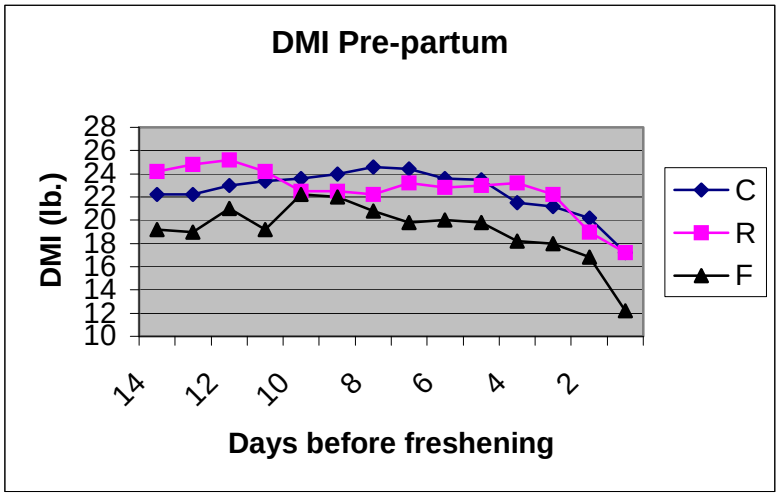
The heifers on both farms were selected to freshen in the period between November of 2005 and January of 2006. The calving ease was determined by the difficulty the heifer experienced delivering her calf. A score of 1 meant that there was no difficulty, 2 some assistance was necessary, and 3 meant there was exceptional difficulty. The difference between the two farms can be explained by the somewhat subjective nature of scoring.

**Animals requiring treatment**

Both farms had similar protocol for the monitoring of health of the newly fresh animals. On both farms there was a recent fresh group separate from the other cows. Each animal had her temperature taken every day and if there was a temperature of 102 degrees or higher for two consecutive days, an antibiotic treatment was initiated. The usual cause of an elevated temperature is metritis, which is a vaginal infection connected to calving. Bill Stone, DVM, with Cornell PRO-Dairy, and also a collaborator on this study, commented on the increased temperature. He stated that mertritis is often an indicator of sub-clinical Ketosis or an energy imbalance. The cause of the imbalance in this case can be explained by looking at the results of Torbert's study. On the research farm they were able to monitor dry matter intake (DMI) for each animal 2 weeks before they freshened.

**Using prior study to help explain SARE study**

In the chart below, Torbert showed her three regimes: Continuous grazed (C), rotationally grazed (R), and confinement (F). Note that the animals that had been in a grazing regime were consuming more throughout the two weeks prior to freshening, and 17 lbs DMI the day of calving. The Confinement animals dropped to 12 lbs DMI. This difference in consumption would explain the higher incidence of sub clinical ketosis and the resulting metritis in the confined group.



**First Lactation and Days to First Breeding**
It would be expected that lactating animals having health problems at the beginning of their lactation would show lowered milk production and longer "Days to First Breeding". The Data collected did not show this. There was no significant difference between the two groups. A possible reason for this is the protocol for checking recently fresh animals; daily monitoring of the animal's temperature and quick response with treatment was successful in preventing any long term effects of the ailment.

**Publications and Outreach**
Information on grazing dairy replacements is now available on the Graze NY website. www.grazeny.com
At the site there are fact sheets on setting up grazing systems, sample contracts for owners and grazers, tips on grazing replacements, as well as this report and others.

There were four outreach meetings held during this project on the subject.

**Areas of Further Study**
With any grazing study there needs to be multiple years of repeating since there are so many variables involved with grazing.

To really understand the reasons for the differences in the two groups an in depth study should be enacted that includes; blood test, measuring of daily DM intake.

An economic study of the fuel and energy savings of grazing dairy replacements would help increase the use of this practice.