

**SARE Grant 2006 Interim Report:  
Will More Precise Study Research Tools Lead to Reduced Use of Antibiotics to Prevent  
Cases of Mammary Infection During a Dry Period? FNE06-571**

Contact: Meghan Hauser, Table Rock Farm, 5554 De Golyer Road, Castile, NY 14427  
Telephone 585 493 5770 e-mail: meghan@insitearch.com

## **1. Project Goals**

Our 2006 study is a refinement of SARE-funded research originally carried out in 2004. In 2004, we studied whether the practice of treating every lactating animal with high dose intramammary antibiotic at dry off can be eliminated in lower risk cows by employing a teat sealant product. We identified 150 qualified study animals and randomly assigned them to one of three groups during weekly dry-off sessions: either Orbeseal only, Traditional dry off treatment (Quartermaster) only, or both treatments. Analysis of our finding indicated that each treatment method was equally effective, given the parameters for somatic cell count (SCC) and previous animal history of infection that we established for the study.

Project results were met with interest by farmers and agri-professionals, but study findings had to be applied with qualifications due to project constraints. To measure SCC and therefore sub-clinical infection for our study subjects, we relied on the monthly visit of our Dairy One technician. Testing was performed without regard to study participants' freshening dates, so SCC data on individual animals ranged from 30±15 days in milk (DIM). This range of test days, while the best we could do at the time of study, allowed for too large a margin of error. This testing method also initially exposed study animals to a greater health risk. Dairy One performed a baseline SCC on study animals up to a month before dry off. This window allowed ample time for an existing pre-treatment infection to be established.

In 2005, a commercial individual Somatic cell counter was introduced for farm use. We realized use of this tool could reduce the margin of uncertainty created in the first study as well as make study findings more practical for use on a greater number of dairies.

For this work we proposed replicating the 2004 study format, while employing the technological improvement of the on-farm cell counter unit. This unit allowed us to measure SCC at dry off and in each postpartum animal within a desired and more precise time range. More timely measurement of SCC at dry off and after calving enabled us to pinpoint if and when infections occurred. This study also held less health risk for participating animals. Therefore, our goal for the 2006 study is to present more precise data and detailed study findings that are more readily usable for the farmer in the field.

## **2. Farm Profile**

Table Rock Farm is a 1,040 cow, fourth generation dairy with 25 full and part-time employees. The farm's mission is to produce quality milk for the public need, and to be competitive with any area in the world in order to provide a good lifestyle for owners, employees and their families. About 1550 acres of hay and corn are cropped each year to feed cattle, and in 2005, the farm shipped almost 1.35 million pounds of milk per full-time employee equivalent. Up to 4,000 pounds of quality milk are harvested per hour, and we pride ourselves on our milk bacteria count below 3,000 and somatic cell count between 140,000-180,000.



### **3. Participants**

The grant Project Leader is Willard De Golyer, owner of Table Rock Farm. In addition to grant management, he coordinated collaborators and continues to monitor overall grant results and progress.

Catherine Book, Herdsperson at Table Rock Farm, designed the study protocol and record-keeping system. She was responsible for data collection and accuracy. Herd Manager Michael Lanpher, Herdsperson Thomas Nickerson and Ms. Book worked together to carry out the study protocols, including animal treatment, sampling and observation.

Leslie Scott De Groff, DVM, is the herd veterinarian. He is on farm premises weekly. Dr. De Groff helped shape the study protocol and has monitored study progress as well as overall animal health.

Francis Welcome, DVM, is a Senior Extension Associate with Quality Milk Production Services in Ithaca, NY. He advised on grant design and has secured statistical analysis of study data. He will also interpret study findings.

Bradley Rauch is Manager of Contract Research at Quality Milk Production Services in Ithaca, NY. He will perform statistical analysis for this grant, as he did for our 2004 study.

Meghan Hauser, owner of Table Rock Farm, acts as grant administrator and will carry out the Outreach portion of this grant.

### **4. Project Activities**

#### **Experiment Structure and Process**

Our study commenced in March 2006. During our weekly dry-off session, each cow to be dried off was tested for individual SCC level using the DeLaval cell counter. This allowed us to immediately know which animals were qualified for study inclusion, based on a SCC result under 200,000 and no clinical mammary infection during their current lactation. Eligible cows were randomly assigned to one of three groups at dry off:

1. Traditional dry off treatment with a commercially-prepared dose of one million units of penicillin and 1 gram of dihydrostreptomycin (Quartermaster®). (43 cows)
2. Administration of Orbeseal® only (45 cows)
3. Traditional dry off treatment, followed by administration of Orbeseal® .(43 cows)

All other aspects of the dry off process were identical for each study group. Following dry-off dry cows were housed separately from the lactating herd, first in a free stall pen and eventually in a special bedded-pack facility until they freshened (gave birth) and returned to the milking herd. After giving birth, study participants return to freestall facilities.

At freshening, animals were tested for signs of mastitis with a California Mastitis Test (CMT). This test mixes an individual milk sample with a reagent to estimate the number of white blood cells present (an indicator of infection). An individual SCC test was also performed in the milking parlor on each study animal postpartum day 6±3 during the normal milking schedule. We waited a minimum of three days before taking a milk sample for SCC as colostrum of a recently fresh animal normally has elevated SCC levels.

Any milk sample that showed a positive CMT result or that registered a SCC count greater than 250,000 was cultured in our on-farm milk lab to further identify the infection causing agent. These results have not yet been added to our Excel data sheet.

Any animal in any test group that got a mammary gland infection was be treated according to our standard protocol.

## **Data Collection**

Study variables were collected in written form at various treatment locations around the farm, including the dry off area, the calving pen, and the milking parlor. Records were then transcribed into an Excel format which will be submitted for statistical analysis.

Other data gathered, but not expressly used for study findings include:

1. Daily records of individual milk production via the Afikim system.
2. Records of the course of known infection and treatment in study animals
3. Calving experience (calving ease, size, condition)
4. Expenses.

At the time of this report, we are still waiting for some study animals to calve. We anticipate having all data complete and ready to submit for analysis by the end of 2006.

Our farm veterinarian had access to all study records during his weekly herd checks, and Dr. Francis Welcome was available for consultation throughout the study via e-mail.

## **5. Results**

Within a few weeks, all study cows should have freshened and all appropriate data collected. Study data will then be submitted to Quality Milk Production Services for statistical analysis. Brad Rauch, Manager of Contract Research will perform the analysis and his methods and findings will be fully described in the final report.

## **6. Conditions**

The study began with the dry off of initial study cows in late March 2006 and final study participants should freshen in late November to early December 2006. This study took place in Western New York.

## **7. Economics**

During the study, Orbeseal cost \$6.50 per single animal treatment. A single treatment with Quartermaster cost \$6.26. A treatment with both Orbeseal and Quartermaster cost \$12.76. Interestingly, during our 2004 study, Orbeseal cost \$7.60 per animal treatment and Quartermaster cost \$5.55 for a total cost of \$13.15 for treatment with both products.

## **8. Assessment**

We have been quite pleased and encouraged with the overall low SCC counts of the herd, and we eagerly await the start of the statistical analysis of our data.

## **9. Outreach**

No formal outreach of results has occurred yet. Local Cooperative Extension agents and the PRO-Dairy team are aware that we are participating in the study.

Plans for outreach include creation of a press release for dissemination to nine local, regional and national media outlets. Information will also be shared with the local Cooperative Extension, New York State's PRO-DAIRY Extension team, and the Northeast Dairy Producers Association. We were very excited by press coverage of our 2004 study and hope to replicate that success with this year's findings.