

# Improving Milk Quality on Pennsylvania Dairy Farms Through Individual Farm Assessments to Increase Profitability

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**PennState Extension**

## Needs Statement:

According to the 2022 US Census of Agriculture, there are 4,027 dairy farms in Pennsylvania. Mastitis, or an infection of the mammary gland, is one of the costliest diseases in the dairy industry as it results in a drop in milk, and increase in labor, and treatment costs. A Somatic Cell Count (SCC) of 200,000 or greater indicates mastitis. Many cooperatives, where dairy farms sell their milk have SCC thresholds. An SCC below a certain threshold can receive a premium on their milk price. A SCC above a certain level could receive a deduction on their milk price. If a high SCC is sustained for too long, farms could lose their milk market altogether.

## Objectives:

- Assess common milk quality problems and misconceptions on PA dairy farms.
- Assist farmers in improving SCC to increase profitability on their farms.
- Utilize data from this project to provide milk quality workshops for other producers in the dairy community to increase knowledge regarding milk quality.

## Educational Methods:

The Penn State Extension Dairy Team received a Farmer Partnership Grant from Northeast Sustainable Agriculture Research and Education (SARE) in the amount of \$25,083 to fund this project which runs from Aug 2024 to Nov 2026. This funding has allowed team members to complete individual milking evaluation farm visits to help farmers improve their milk quality so they can receive a milk quality premium if that is offered by their cooperative. 6-month follow-up visits are currently being conducted. During visits, educators assess milking procedures and other factors that affect milk quality. Educators also use Vadia units to assess milk letdown and overmilking (Figures 1 and 2). Knowledge gained throughout this project has been used to deliver 3 Milk Matters: Practical Steps to Better Milk Quality Workshops, with 2 more currently planned across the state.

## Results:

- 36 farms in 19 counties with 4728 cows have been enrolled on the project.
- 43 people have attended 3 Milk Matters: Practical Steps to Better Milk Quality workshops throughout the state. 2 more are planned in March 2026.

## Impacts:

Milk Matters: Practical Steps to Better Milk Quality Survey Results (n=34)

- Likelihood of implementing a management change based on this program:
  - Very likely: 18%
  - Moderately likely: 48%
  - Somewhat likely: 27%
  - Doesn't apply: 6%
- Knowledge level as a result of attending this program:
  - Increased substantially: 9%
  - Moderately increased: 47%
  - Somewhat increased: 44%

Financial impact for this project is still being assessed with the 6-month follow up visit data. Since 2023, on average, milking evaluations completed by our team has resulted in an average SCC drop of 153,650 (n=20) and an additional profit of \$8,500. This was calculated using the Mastecon spreadsheet created by the University of Minnesota and accounts for milk loss, premium loss, labor, treatments, etc.

## Conclusions:

Overall, Penn State Extension's Milk Quality Program has helped farms increase knowledge regarding milk quality, decrease SCC, improve milk quality, and increase profitability, which will increase the viability of these farming operations.

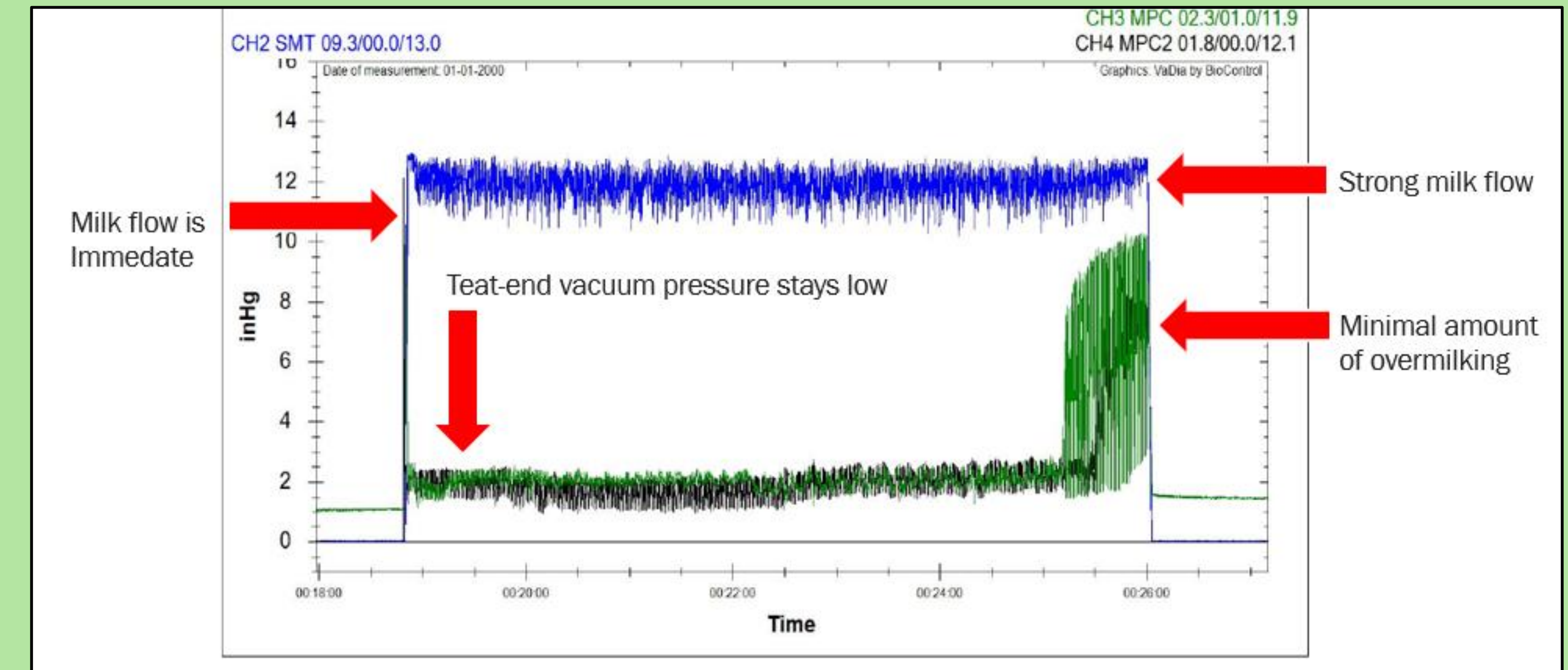


Figure 1: This graph is an example of a Vadia graph with good milk letdown. The green and black lines represent the vacuum at the front and back teat ends and the blue line represent milk flow.

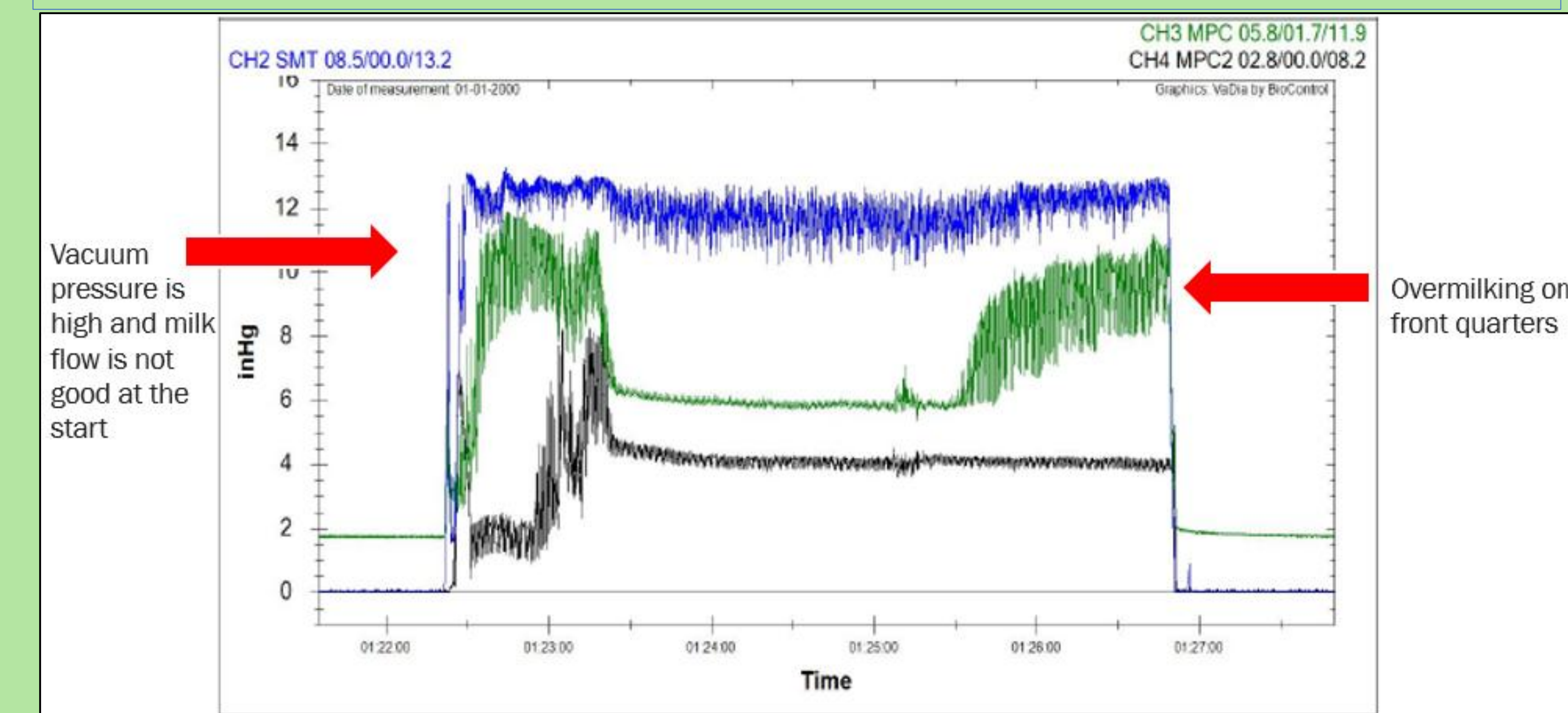


Figure 2: This graph is an example of a Vadia graph with bimodal milking. This means the cow was not ready to let down when the milking unit was placed on and the unit had to restimulate her. This is why the vacuum is high at first. This can lead to hyperkeratosis, or teat end damage.

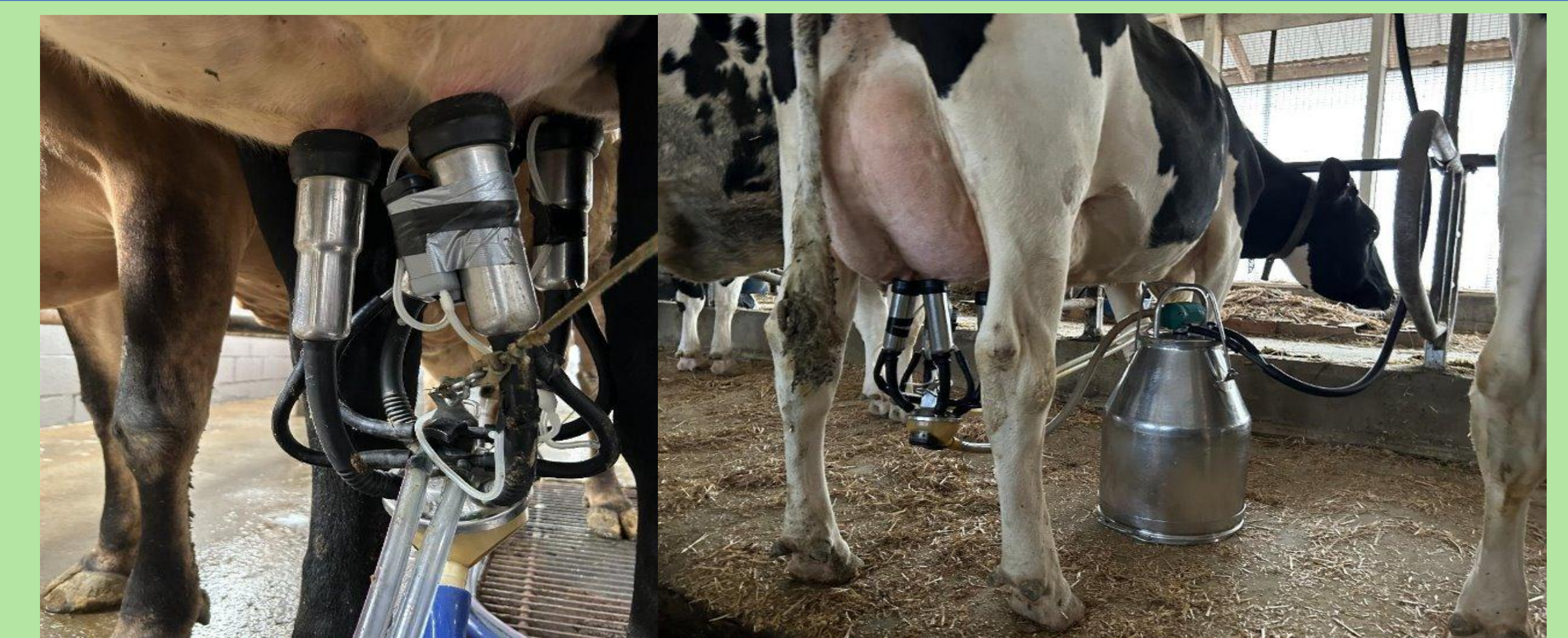


Figure 3: Examples of Vadia units on milking claws to assess equipment.

Table 1: Descriptive Statistics of Farm-Level Practices that Impact Milk Quality on Enrolled Farms

Average Cow #	Average SCC	Cultures conducted on individual quarters	Use of hydrated lime	Fore-stripping	Pre-dip	Post-dip	Gloves during milking	Use of CMT paddles	Dry treating
131	284,000	54%	35%	92%	97%	89%	61% always	60%	74%

