



Dairy Pipeline

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Educational Workshops About Automatic Milking Systems

Authored by Gonzalo Ferreira, Ph.D., Dairy Management Extension Specialist, Department of Dairy Science, Virginia Tech; gonf@vt.edu



Figure 1. Automatic milking system in use.

In the last few decades, the use of automatic milking systems has increased rapidly. According to a survey performed in the Midwest (Salfer et al., 2017), most operations using automatic milking systems are farms that rely mainly on family labor for milking. The motivation for using automated milking systems are improvement of lifestyle, labor flexibility and efficiency, desire to minimize hired labor, and expansion possibilities without hiring labor. Although the literature suggests that increases in profitability are unlikely, reductions in labor costs or increases in milk production should be expected when migrating to automatic milking systems. All this information may sound confusing and conflicting when evaluating the use of automatic milking systems. Therefore, an

instance of learning and discussion about automatic milking systems is warranted.

Deciding on the use of an automatic milking system is neither easy nor trivial. In this regard a collaborative extension team including Virginia Tech, Clemson University, University of Idaho, and University of Kentucky obtained funding from USDA-NIFA through the Southern Extension Risk Management Education Program to develop and deliver educational workshops about automatic milking systems. Currently, we are developing the program and soon, likely during the spring, we will deliver the workshops in Virginia and South Carolina. Stay tuned for more news. It is important to mention, however, that the delivery of these workshops may be reformatted based on the evolution of the COVID-19 pandemic.

As an advance, the program will cover at least three specific modules. The first module will discuss automatic systems in general terms, including goals, key performance indicators, and key variables for success when designing facilities. The second module will discuss feeding practices for automatic milking systems, including partial mixed-ration (PMR) and pellet formulation, use of different forage to concentrate ratios, and feeding management practices in grazing systems. The third module will show the process to perform the capital budgeting and investment analysis. For this, we will discuss expectations and assumptions first, and then we will go through some hands-on activities. Our goal is that the audience will go through a capital investment analysis to have a feeling of the whole decision-making process.

In regard to the audience, these workshops are developed considering farmers as the main target. At the end, they will be the ones going through the decision process. However, nutritionists, consultants, lenders, and other dairy clientele are welcome to come and participate in these workshops.



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The Prevention and Treatment of Navel Ill in Dairy Calves

Authored by Mark Ellett, Jr., Ph.D. Student with Dr. Kristy Daniels, Department of Dairy Science, Virginia Tech; danielsk@vt.edu

Sick calves, including those that recover from an early life navel infection, grow slower than healthy calves. In the United States about 20% of dairy calves develop navel infections and 2% of calf deaths are related to navel infections. The implementation of appropriate protocols for prevention and treatment of navel infections should be a high calf management priority. The purpose of this article is to discuss contemporary methods and products available to prevent and treat navel infections in dairy calves.

During pregnancy, the umbilical cord carries nutrients and oxygen from the placenta to the growing fetus. When the calf is born, the umbilical cord stretches and snaps, creating a hollow tube. If not kept clean, the newly severed umbilical cord provides pathogens with easy access to the calf's abdominal cavity, blood stream, liver, and other organs. Arguably the first step in safeguarding against development of a navel infection is to maintain a clean and dry maternity area.

For the past several decades, application of a 7% iodine-alcohol tinctures have been the most

used navel antiseptic in the dairy industry. Although they are an effective option, these tinctures have become difficult to obtain due to illicit use in the production of narcotics. Because of this, the United States Drug Enforcement Agency increased regulations on any product containing more than 2.2% iodine. Today only vendors that are licensed to handle controlled substances can sell 7% iodine tinctures. Partly because of this, newer commercial products such as 0.1% chlorine solutions, 4% chlorhexidine tinctures, nisin based dry dips, weak sodium hydroxide solutions, and 10% trisodium citrate dips (e.g., ZuraLac) have emerged. In controlled research studies these newer products have been found to be as effective as 7% iodine-alcohol tinctures in disinfecting and drying the umbilical stump when applied within thirty minutes of birth in dry conditions. In contrast, teat dips are less effective at drying the umbilical stump when compared to navel dips and are not recommended for this use. Teat dips contain lower concentrations of antiseptics and drying agents.

Preventative measures are not always effective at inhibiting navel infections. Treatment of navel infections requires consultation with a veterinarian and can be costly. Anti-inflammatories and analgesics, such as flunixin meglumine (e.g., Banamine), and antibiotics, such as ceftiofur hydrochloride (e.g., Excenel) or florfenicol (e.g., Nuflor), are commonly prescribed to prevent pain and cure infection, respectively. If left untreated, a navel infection can quickly lead to mortality. Navel infections can be tricky to treat. *Mycoplasma* spp. are common pathogens implicated in navel infections; these pathogens tend to migrate from the umbilical region and sequester in joints of long bones and the lungs. This is why calves with navel infections often also have joint problems, lameness, and pneumonia. Antibiotic delivery to joints is difficult to achieve due to reduced blood flow in joints. Further complicating treatment and prevention of navel infections is the fact that once calves are

infected with pneumonia caused by *Mycoplasma* spp., the pathogen can then be transmitted to other calves through coughing and by direct physical contact with the infected calf.

Producers should prioritize efforts to reduce pathogen loads present in maternity and calf housing areas on all dairy farms. Keeping the calving environment clean and timely and proper application of navel dips are currently the most effective ways to prevent navel infections in dairy calves. Generally, preventative costs are less than treatment costs for cases of navel infections. Calves that recover from a navel infection and those that ultimately die due to complications from a navel infection can both negatively impact whole farm profitability.

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Upcoming Events

Farm Advisory Teams

Contact cmartel@vt.edu or jdaubert@vt.edu to develop a farm advisory team.

Private Pesticide Training TBD

Jan 2021
Franklin County
Contact cmartel@vt.edu

Dicamba Training TBD

March/April 2021

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**Dr. Christina Petersson-Wolfe,
Dairy Extension Coordinator &
Extension Dairy Scientist,
Milk Quality & Milking Management**

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