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Do You Practice Good Milking Procedures?

This NebGuide outlines good milking procedures to follow to assure high quality milk production while minimizing mastitis and other health problems.

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Milking, or harvesting the milk crop, is a critical step between planting crops, building facilities, and paying bills on a dairy farm. While highly productive cows and a properly functioning milking system are essential, how the cows are handled and the milking system is used are equally important. Proper milking procedures are necessary to assure a bountiful harvest of high quality milk.

The nature of milk-secreting tissue and the anatomy of the udder make harvesting the milk crop

impossible without the cow's cooperation. Stimulating the cow so she releases the "let-down" hormone oxytocin is critical. The effects of oxytocin last about 5 to 7 minutes. Milking should be done within this amount of time to be most effective. Remember--a milking system does *not* pull or squeeze milk out of the udder. Rather, it simply sets up the conditions (low pressure or vacuum) to allow a difference in pressure between the udder and milking system to force milk out through the teat orifice. In this respect, milking is much like letting air escape from a tire through the valve stem--if there is no difference in pressure between the inside and outside, there is no flow of air (or milk).

There are many details that can be included under the general heading of milking procedures. This NebGuide addresses some of the more routine ones.

Check Milking System

Check all hoses at every milking and anytime a unit is dropped or kicked off. Holes in the air lines cause vacuum fluctuations and poor milking. Check the vacuum gauge to see if it registers "0" when the system is turned off and the preset level when the system is turned on. Check while milking to see that variations are 0.5 inches Hg or less. Conduct a drop-off test at least monthly.

Keep Your Mind on Milking

There is no job on a dairy farm more important than milking. Concentrate on what you're doing. Avoid disturbing noises such as those produced by *loud* radios. High noise levels prevent you from hearing indicators of poor system function such as squawking. Limit conversations to those related to milking.

Use Only the Number of Units You Can Manage Properly

Very few people can efficiently use more than three or four manually removed units. Four to six units with automatic detachers will keep most people busy. Make sure all detachers are working properly.

Handle Cows Gently

Make milking a pleasant experience for the cow. Doing so helps assure good cow flow through the milking area and promotes the cow calmness necessary for the release of the hormone oxytocin, which is required to achieve milk "let-down." Avoid loud noises. Do not use dogs, "hot" sticks, whips, sticks, ball bats, or other similar devices to move cows.

Keep Hands and Clothes Clean

Dirty hands and clothes increase the risk of spreading pathogens (disease-causing organisms) between cows and from the environment to the cows. Since a variety of mastitis-causing pathogens are always present in the cow's environment, your challenge is to keep them from gaining access to the teat and udder.

Milk Cows in Proper Order

Since infected cows are a major source of infections, reduce the risk of cross-contamination between cows by milking first-calf heifers and known clean cows first. Recuperating cows should be milked next. Milk infected and treated cows last. This is necessary to minimize the rate of new infections. Milking treated cows last also reduces the risk of contaminating the bulk tank with milk containing antibiotics.

Clean Teats Thoroughly

Both harvesting high quality milk and controlling udder infections require clean cows. Wash only as high on the udder as necessary to assure clean teats. Pay special attention to teat ends to assure they are clean. Use a sanitizer in the wash water as an aid in controlling bacteria. Handling the teat and udder during cleaning--if done gently--helps stimulate the cow and promotes complete milk let-down. Keep udders and the rear quarters of the cows clipped to enhance cleaning of the cow in preparation for milking.

Avoid Use of Cloths and Sponges

Such devices are essentially impossible to sanitize under on- farm conditions, and are a good way to spread pathogens between cows. Using your hand and a low pressure water dispenser hose is preferred. If necessary to use a bucket and water, use individual, single-use paper towels. Never dip a towel in the bucket after it has been in contact with a cow.

Dry Teats and Udder Completely

Milking cows while they are wet violates State and Federal milk laws, contributes to squawking or liner slips, provides for bacterial movement that may cause new infections, and lowers milk quality. Exercise care in wetting cows with pre-wash stalls or hoses. Use single-service paper towels to assure the udder is dry to prevent dirty water from draining down onto the teats and into the teat cups. It's impossible to prevent this when too much of the cow is wetted. Using multiple towels per cow to assure clean, dry milking is much less expensive than treating mastitis.

Check Foremilk

The first milk removed from a quarter is always low in quality and high in bacteria. Stripping this small quantity of milk helps stimulate the cow to promote milk let-down, and provides an opportunity to examine the milk for abnormalities. Do not attempt to strip and wash the udder simultaneously as doing so makes detection of some indications of abnormality difficult. Use a cow- side test, such as the CMT, to check questionable cows for subclinical (nonvisible) infections. Collect clean (aseptic) samples from all new quarter infections and submit them to the University of Nebraska Veterinary Diagnostic Laboratory for culturing.

Attach Units Promptly

Let-down will usually occur within 45 to 60 seconds after beginning stimulation. Units should be applied as soon as the teats become "flushed," indicating they are full of milk and let-down has occurred. Delays beyond one minute increase the risk of incomplete milkout due to oxytocin duration limitations. Avoid washing a cow until a unit is available to be attached when stimulation is completed.

Minimize Air Admission

Allowing excessive air admission during unit attachment causes extreme vacuum fluctuations in the claw and at the teats to which the milker has already been attached. These fluctuations increase teat tissue stress, the risk of teat damage, and the risk of new infections due to "reverse droplet impacts." Keep the inflation stem or tailpiece bent in a slight "S-shaped" curve against the claw ferrule until the teat cup is in an upright position ready to slide onto the teat.

Adjust Units

Use hose or claw support devices to position the claws squarely beneath the udder and parallel to the base of the udder. Make sure hoses are supported high enough to prevent excess downward pull on front quarters.

Control Squawking

Squawking or liner slips cause extreme vacuum fluctuations and increase the risk of new infections. Respond promptly to correct and stop the squawking. An incidence of squawking greater than one squawk per two cows milked (1:2) is unacceptable. A ratio of 1:4-6 is acceptable. A ratio of 1:8-10 is desirable, and can be achieved with care and properly selected inflations. Keep noise (including radios) in the parlor low enough so you can hear squawks when they occur. There is no cow in the herd more important than the one in the process of being milked at any given time. Respond immediately to any indications of improper milking system performance.

Minimize Machine Stripping

To a great extent, we teach cows to milk the way they do or the way we want them to. Because of problems or injuries some cows require special attention. Limit machine stripping to special cases. Your goal should be to machine strip a maximum of one cow per 20 or 25 milked, and take only 15 or 20 seconds per cow. Never ignore other cows that are being milked when stripping problem cows.

Do Not Squeeze Inflation Stems

Squeezing the inflation stem or tail piece to sense milkflow causes severe vacuum fluctuations at the teat. These can lead to new infections. Observe milk flow through transparent sections of the claw and hoses to determine when to remove the units.

Assure Complete Milkout

Even the best milking procedures will result in up to 7 percent of the cow's milk being retained in the secretory glands of the udder. Incomplete milking above this level reduces milk yield. In infected quarters, incomplete milkout can increase the duration of infection by allowing more pathogens to remain in the udder to reproduce or multiply between milkings, and by diluting intramammary medications.

Prevent Overmilking

Milk production is a continual process. You cannot extract all of the milk from the udder. Remove units promptly when milkflow decreases to a minimal rate. There are no data to support overmilking as a good or acceptable practice.

Minimize Individual Teat Cup Removal

Cows with significantly different levels of production between quarters should be culled. In those cases where an individual teat cup must be removed, use both hands. Use one hand to shut off the vacuum by pressing the inflation tailpiece (short milk tube) against the claw ferrule. At the same time, use the other hand to release the teat cup assembly. Extreme care is required in all cases. Remember--the reason the quarter is "light" is probably because it was previously severely infected. Thus, it is probably a source of

pathogens to infect other quarters through reverse droplet impacts that occur during erratic vacuum fluctuations. As a rule, no more than one teat cup should be removed on an individual basis per 10 cows milked.

Turn Off The Vacuum

NEVER remove the units without first turning off the vacuum. Removing units while the vacuum is still being applied causes extreme stress on the teat and extreme vacuum fluctuations, which increase the risk of new infections. Turn off the vacuum and wait three to five seconds while the vacuum in the claw is relieved through the vent. The unit will then "fall" off into your hand.

Dip Teats

Immediately after unit removal, apply a commercially prepared teat dip with known effective antibacterial ingredients. Dipping is preferred over spraying because it requires less dip and because coating of the entire teat (at least one-half inch from end of the teat) is assured. Dump residual teat dip and wash the teat dip applicator after every milking to reduce the risk of spreading pathogens.

Other Practices

Depending on individual circumstances, other practices might also be part of the milking routine. Among these are:

- Hosing down the parlor after each group of cows to reduce the risk of spreading pathogens.
- Infusion of intramammary medications either as lactating or dry cow therapy. Use sterile and gentle procedures at all time.
- Checking for and treating injured or sore teats to promote rapid healing. Any injury to teat tissue increases the risk of udder infections.
- Drying teats to reduce the risk of freezing during adverse weather. A little extra time taken to assure dry teats before turning cows out of doors is a small price to pay for reduced udder injuries.

Tasks such as breeding cows, removing retained placentas, and other veterinary procedures should generally not be performed in the milking area at any time.

In summary, practicing good procedures will reduce stress on the cows, make milking a pleasant experience for cows and people alike, and control costs by helping to control mastitis. Take time now to evaluate your procedures; your reward will be improved milk quality and increased milk yields.

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