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Conventional Milking management of dairy cattle

Anupam Soni[1*], Manoj Sharma[1], Divyanshu Sharma[1], Irusappan Ilayaraja[2], Ayushi Sarthe[3] and S.K.Yadav[4]

[1]Ph.D, Livestock Production Management Division, NDRI, Karnal, Haryana

[2]Ph.D, Animal Genetics and Breeding Division, NDRI, Karnal, Haryana

[3]M.V.Sc, Livestock Production Management Division, NDRI, Karnal, Haryana

[4]Ph.D, Veterinary Surgery and Radiology, IVRI, Bareilly, Uttar Pradesh

**Corresponding author: vetanupam456@gmail.com*

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ABSTRACT:

In dairy farming, milking is a crucial and time-consuming process that has a direct effect on udder health, milk quality, and farm income. For efficient management, milking must be done frequently, gently, completely, and hygienically in order to maximize yield and guarantee cow comfort. The process starts with the necessary pre-milking preparations, such as cleaning the barn thoroughly, sanitizing the udder and teats to avoid contamination, and prestripping to check for clinical mastitis. Milking can be done by machine or by hand, using the knuckling, stripping, or full hand techniques. Machine milking which extracts milk using alternating vacuum pressure, has several benefits, including reduced labor costs, faster production, more milk, and better quality. However, it necessitates a dependable power source, a significant upfront investment, and stringent cleaning procedures to prevent mastitis. Inducing milk ejection is a major challenge, particularly in buffaloes with a low proportion of cisternal milk. The calf's presence during milking, feeding concentrates, and manual udder stimulation are all effective techniques that encourage the release of oxytocin for a smooth milk letdown. In order to ensure optimal production and animal welfare, effective milking management ultimately depends on a structured routine that incorporates appropriate hygiene, suitable milking techniques, and practices that stimulate milk ejection.

Key words: Dairy Management, Machine Milking, Milk Ejection, Milking Techniques, Udder Health

INTRODUCTION:

Milking is the key operation on a dairy farm having direct effect on the income from enterprise. It is art requiring experience & skills. It should conducted regular interval, quickly and gently cleanly and completely. Cow remaining comfortable yield more milk. Complete milking should be practiced with least residual milk. Milking is labour intensive operation requiring 50 – 60 % of total man hours on dairy farm. One milker may be milking of 12- 15 cow. Machine milking and automated udder

washing equipment have reduced time. Milking management has always been regarded as an important factor in achieving high milk production, efficient milking, excellent milk quality, and good teat and udder health. History has shown that while many farmers recognize the importance of milking management, they often try to minimize the manual work of milking as much as possible.

The objecting of milking is to obtain maximum quantity of water with in shortest period without causing injury to udder. If milking is incomplete the tendency for the cow to dry off too soon. Milking is done in hygiene barns. Milking completed within 5-7 minutes.

Pre milking preparation: Preparation of milking the milking barn should be thoroughly washed and scrubbed after each milking so that barn will be clean and dry before next milking. The use of sprinklings with water from the floors can only be recommended if teats are dried afterwards. Premilking teat preparation for dairy cows consists of prestripping and some sort of cleaning of the teats. Prestripping is mainly done to detect clinical mastitis as several countries legislate that abnormal milk must be withheld from delivery. Failure to prestrip may seriously affect bulk milk cell count. Prestripping and withholding of abnormal milk from delivery are the single most efficient factors to reduce bulk milk cell count of problem herds. Prestripping has only minor effects on the milk quality. Dusty feed and silage should be avoided in milking barn. The hind quarters, thigh and udder of cow should be brushed or washed before milking. If hair are more in udder should be clipped. Just before milking the udder should be wiped with a cloth dipped and squeezed in some weak antiseptic solution. The milker their hands and milking utensils should be clean. The milker should wear clean dress and cover their heads with suitable caps, lest loose hair may fall in milk. Their nails should be periodically trimmed and hands cleaned and disinfected between each milking by dipping in an antiseptic solution. External parasites like flies, lice; mosquitoes etc may have their entry in to milk. So, care should be taken to avoid these parasites from the barn by spraying fly spoors or by fly traps. Breeding places for these parasites like stagnant water, moist atmosphere etc may be avoided

Cows are generally milked from left side. There is no hard and fast order of teats while milking, the engorgement of teats due to letdown. The first few steams of milk from each teat is milked into strip cup to see clues of mastitis in the form of clots or streak of blood.

Milking system

Milking system is two types

1) Hand milking

2) Machine milking

1) Hand milking has 3 types

a) Full hand milking

b) Stripping

c) Knuckling

a) Full hand milking In full hand milking teat is closed at the base between the thumbs and index finger and milk trapped in the teat sinus is forced out by pressing with other finger on the teats.

This process is repeated in quick succession. By maintaining a quick succession of alternate compressions and relaxations, the alternate streams of milk from two teats sound like one continuous stream. Cow with large teats and she buffalo are milked by full hand method. This method is superior than stripping as it faster and stimulates natural suckling by calf. This method is mostly used.

Full hand milking

b) Stripping: it is done in small teats. Stripping milking has fat containing milk. It is also done by after full hand milking.

c) Knuckling: Many milkers during milking tend to bend their thumb against the teat it is not used because injury to udder.

2) Machine milking: milking machine popularly used now days in most of the western & industrializes countries use alternating negative & atmospheric pressure with the help of a double chambered teat – cup assembly. A continuous partial vacuum is maintained inside an inflatable rubber tube, the teat-cup liner, into which the teat is inserted. A partial vacuum & normal atmospheric pressure are alternated in the space between rubber liner & the metal shell of the teat cup by means a device known as pulsator. When the negative pressure is applied between liner & Shell milk flow from the teat. When atmospheric pressure enter the chambers, the rubber liner collapse with result that the teat is compressed & massaged. This force the lymph and blood to flow out of the teat. A continuous vacuum alone would have caused congestion and irritation of the teats. Milking machine varies widely in their pulsation rate as high as 120 or low as 40 cycle / minutes

Ideal practice in machine milking

- Get cow ready by wiping and massaging the udder and teats for 1 minute. Use cloth dipped and squeezed out of warm mild antiseptic lotion.
- Use the strip cup and draw out of fore milk into it from each quarter.
- Put on the teat cup promptly. It is good practice to use a timer to avoid overuse of the machine. Remove teat cup promptly breaking vacuum first.

- Strip by machine for a few seconds.
- At the end of the timed period pull down on the teat cup with one hands and massage the udder with the other.
- Apply teat dips.
- Record the milk weights. Screen window and doors to avoid flies. After every milking, milking machine should be properly cleaned.
- The manufactures direction may be followed to maintain, operate and service the milking machine.

Advantages of milking machines

- Saving of labour expenses.
- Reduction of dependency on skilled farm workers.
- Enables rearing of larger herd strength.
- 3-4 times faster than hand milking.
- Increase in the milk yield.
- Increase in the quality of milk.
- Reduces stress throughout the lactation by creating good milking routines.

Limitations:-

- Some of the older cows which are accustomed to hand milking may not adjust to machine milking.
- Standby power supply is essential.
- High initial investment and training of staff.
- Negligence in following the strict cleaning procedures would lead to severe contamination and higher incidence of mastitis.

- Greater water requirement for cleaning of equipment.
- Prompt service and availability of spares is essential.

Methods to induce milk ejection

Buffaloes have a low proportion of cisternal milk and in order to harvest milk stored in the alveoli compartment the premilking stimulation is of extreme importance for milk ejection removal in buffaloes and milking units should only be attached after the initiation of the milk ejection response. In general it has been observed in dairy cows that different kinds of stimulation such as the presence of the calf, suckling, manual prestimulation and feeding during milking improve the milking-related release of oxytocin and result in shorter milking time.

Presence of the calf during milking

The presence of the suckling calf enhances the maternal secretion of oxytocin and this leads to an efficient milk ejection from the udder. In buffalo species, the technique based on the presence of the calf is usually adopted in those countries where the animals are hand milked. These situations are frequent in some developing countries, such as India and Pakistan, where more than 120 millions of buffaloes are bred. It is common practice to allow buffalo calves to suckle for a limited time before each milking to initiate milk ejection .the presence of buffalo calves with their dams lowers the milk yield of the latter. Prolactin is necessary for initiation and maintenance of milk synthesis and secretion,

Feeding during milking

The combined stimulation of feeding during milking and manual prestimulation resulted in a faster and more pronounced release of oxytocin, prolactin and cortisol compared with milking with only manual prestimulation and no prestimulation. These observations have recently been confirmed also for Murrah buffaloes where milk ejection occurred significantly earlier in the combined treatment of feeding and manual prestimulation, than milking with prestimulation and in parlour feeding, milking with prestimulation but without in-parlour feeding, and milking without prestimulation or feeding rapid uterine involution (1 week) compared to non-suckled buffaloes. It has been proposed that an oxytocin mediated increase in the frequency and magnitude of uterine contractions may explain this phenomenon. Changes in the milking routines, such as not feeding during prestimulation or reduced concentrate feeding during milking, had an immediate influence on oxytocin release, milk ejection, and complete removal of milk and this was reflected in the fat percentage in strip milk.

Manual udder stimulation

To make the best use of the manual stimulation the first contact with the cow should include application of pre-dip, manipulation of the teats in order to remove debris, and fore- stripping to detect abnormal milk. In our opinion, a correct udder prestimulation is fundamental for milk letdown, particularly in buffalo species. Independently of the adopted stimulation technique, it is important that coordination of milk letdown with milking unit attachment is correctly performed. It has been reported that 10 to 20 seconds of tactile stimulation is sufficient to elicit Oxytocin secretion in high producing cows . The lag time from start of tactile teat stimulation until full milk ejection in cattle ranges from 60 to 120 seconds and depends on the degree of udder filling, which, in turn, depends on the interval between milking and the stage of

lactation. This lag between oxytocin release and milk ejection is accounted for by the time required to transport the hormone from the brain to the udder and for the alveoli to fully contract.

Use of oxytocin ejection

Recent intensification of buffalo rearing techniques has exposed these animals to a rapidly changing environment that imposes physical and psychological stressors so far unknown to this species. Machine milking presents both physical (poor maintenance of the machine) and psychological components (negative behaviour of the stock person and calf separation) which may interfere with the milk ejection.

CONCLUSIONS:

A key component of dairy farming success is efficient milking management, which has a direct impact on output, animal health, and financial gains. In order to prevent contamination and mastitis, the procedure necessitates a strict routine that places a high priority on hygiene. This is accomplished by carefully preparing the udder, teats, and equipment before milking. The decision between machine milking and hand milking—ideally the full-hand method—is crucial. Although machine milking has many benefits in terms of speed, labor efficiency, and possible yield increases, it also necessitates a large financial outlay, close attention to maintenance guidelines, and dependable resources to prevent udder health problems.

A significant physiological obstacle is making sure that all milk is ejected, especially in buffaloes. Success depends on efficient ways to stimulate the release of oxytocin, which is required for milk let-down, such as the presence of the calf, feeding during milking, or manual udder massage. Incomplete milking and lower yields occur when this stimulation is not coordinated with the attachment of the milking unit. In the end, attaining the best possible milk production requires a complex interaction between appropriate technology, skilled practice, and animal welfare. Maximizing yield, guaranteeing milk quality, and preserving long-term udder health require a comprehensive approach that incorporates perfect hygiene, gentle and thorough milking methods, and practices that support the cow's natural milk ejection reflex.

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