Milking routine

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Save time, increase production and avoid udder damage by adopting a good...

MILKING ROUTINE


A 30-second stimulation of the cow’s udder before machine milking improves let-down and increases the milking rate, and leads to greater production. Over a full lactation this increase can be quite large. Your pre-milking routine should be—

1. **Wash the udder**, preferably with running water, and massage with the bare hands.

2. **Apply sanitiser solution** as a spray from a small plastic bottle, removing the excess with paper towelling. If you prefer an udder cloth and bucket, change the solution often during milking.

3. **Use the strip cup** so that you can detect early signs of mastitis. Take a quick squirt from each teat.

After udder preparation, apply the cups promptly to get the greatest benefit from the stimulated let-down.

Remove the machine from the udder as soon as milking has finished. The only stripping needed is given by bearing down on the cups for a few pulsations to counteract the effect of “crawling” cups.

It is well known that the condition of the milking machine is important for efficient and hygienic milking, but even with a machine in good condition good management during the milking process plays a leading part.

Many farmers believe that anything more than a brisk wiping over of the udder before milking is a waste of time. However, it has been shown that good preparation of the cow—including 30 seconds spent on udder stimulation—actually saves time at milking. Over a full lactation it also gives a noticeable increase in the production of milk and butterfat, and it may also reduce losses due to disease.

The main immediate effect of good udder preparation is on the milk ejection or “let-down” process.

**HOW MILK LET-DOWN WORKS**

When the cow is stimulated either by the calf in the suckling process, or by the hands of the milker, impulses are transmitted from the nerves of the udder to the brain.

This results in the let-down hormones, oxytocin and vasopressin, being released into the blood stream from the posterior pituitary, a small gland at the base of the brain. The hormones reach the fine blood vessels of the udder and cause the myoepithelia (muscular fibres surrounding the milk-containing sacs or alveoli) to contract. The contraction of the myoepithelia causes the milk to be squeezed out into the milk ducts and cistern and makes it available to the milker.

This let-down process is a conditioned reflex. In other words the cows become used to being prepared in the same way for milking, and this preparation brings an easy let-down. Anything unusual in the milking shed or in the method of
Massaging the cow's udder and teats with bare hands is necessary to obtain good stimulation.

Preparation will affect the nervous system and tend to upset the let-down reflex. This is why the milking shed and the milker should present to the cow the same environment at each milking.

Apart from this effect anything disturbing or frightening will cause adrenaline to be secreted from the adrenal gland. Adrenaline causes the small blood vessels of the udder to contract and reduces the amount of let-down hormone that reaches the udder. Therefore, if cows are frightened by such things as rough handling or the use of wild dogs to bring them into the shed, the let-down activity is reduced and the cows become hard to milk.

Stimulation

Under natural conditions, when a cow feeds her calf, let-down is stimulated by the bunting and suckling of the calf.

In machine milking an artificial stimulus has to be applied to get the same effect.

Work carried out by Whittlestone at Ruakura compared butterfat production and milking rate of cows given a 30-second stimulation, and cows given no stimulation before putting the cups on. The 30-second stimulation involved vigorous udder washing and taking squirts of milk from each teat into a strip cup. This system was rigidly adhered to for a full lactation using identical twin cows. Cows stimulated in this way produced 18 per cent. more butterfat over the lactation than non-stimulated cows. The extra time involved in preparing the cows was more than off-set by the faster milking rate.

A similar experiment was carried out on a larger scale by Phillips, using 12 sets of identical twins. One of each pair was washed by hosing with cold running water and rubbing with the hand, followed by massaging the teats and lower udder and taking squirts from each teat. This process lasted 30 seconds. The other twin of each pair was not stimulated in any way. This system was adhered to for the full lactation.

The cows which were stimulated for 30 seconds averaged 295 lb. butterfat and those which were not, averaged 223 lb. butterfat. This is an increase in production of 72 lb. butterfat, or 32 per cent.

The milking time for the stimulated group average 20 seconds less than for the non-stimulated group. When the milking times were calculated on the basis of the
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milk produced by the stimulated cows, the non-stimulated cows would have taken 1\frac{1}{4} minutes longer to milk.

There was a large variation in the effect for different pairs of twins. This variation ranged from an increase of 222 lb. butterfat to a decrease of 18 lb. butterfat due to 30 seconds stimulation.

Measurements were also made of the duration of let-down activity in the cows involved and generally the largest difference in production was between twins with the shorter duration or poorer let-down.

Cows which let their milk down equally with or without stimulation are comparatively rare. In large herds it is usually easier to milk all cows in a herd with the same routine rather than arranging the cows into groups and treating each group differently. In small herds it may be possible to stimulate cows according to their let-down, provided that individual cows receive the same time for stimulation at each milking.

THE MILKING ROUTINE
Washing and Sanitising
The best way to wash the udder is to use a hose and running water. This should be combined with massaging the udder with the bare hands. The hoses can be fitted with low pressure valves which save turning taps on and off between cows.

The udder should then be mopped with a cloth squeezed out from a sanitiser solution. Alternatively, after hosing and massaging the udder, sanitiser is sprayed on by means of a small plastic bottle. It is rubbed into the surface of the udder and any excess is finally wiped off with a length of paper towelling. This eliminates the use of udder cloths and can readily be fitted into the routine.

In the more common method of washing and sanitising in the one process with an udder cloth and bucket, the solution used quickly becomes contaminated and ineffective. It should be changed regularly during milking, no more than 15 cows being washed with the one solution.

It is also necessary to have a bucket for each bail, as the cloth should be allowed to stand in sanitiser for a few minutes before each use if it is to be at all effective.

Alternatively several cloths of different colours can be used in rotation.

Use the Strip Cup
After washing, squirts should always be taken from each teat into a strip cup before the milking machine cups are
placed on the cow. This forms part of the stimulation process, discards the most heavily infected milk and gives the milker an early indication of mastitis. The presence of clots or flakes in the milk indicates some udder disturbance.

The regular use of the strip cup is a means of detecting mastitis in the early stages.

Early detection means early treatment and this can be very important in controlling an outbreak. If the first cows to have the disease are known they can be treated and at future milkings kept until last. Extra caution can then be taken so that the chance of spreading the infection is reduced.

Taking squirts from each teat on to the floor or the gum boot is better than nothing, but this is not recommended as it can help spread infection.

Apply Cups Promptly After Stimulation

After a let-down response has been obtained, the cups should be applied promptly. In the experiment carried out by Phillips, the length of the let-down varied from two to 30 minutes in different cows, but the average was about 8½ minutes. The let-down process itself takes about 40 seconds, so that the cups should be applied within one minute of the start of stimulation.

If cows are prepared for milking then made to wait before being milked the let-down activity will be reduced. When the machine is applied the milk that has passed into the cistern during the stimulation will be readily available but the milking rate will fall sharply when this milk has been withdrawn. A second let-down will eventually take place and most of the milk will finally be obtained but the milking time will be increased because of the time wasted before this second let-down.

Remove Cups Promptly

When milking has finished the cups should be removed promptly.

The application of vacuum to the teats when milking is finished causes irritation. This can cause definite physical damage to the teats which in turn makes it easier for micro-organisms, such as those causing mastitis, to infect the quarters. Several recent outbreaks of mastitis and general udder disturbances are believed to have resulted largely from leaving the machine on the cows after milking has finished.

The "jelly jar" type of indicator used on most machines is not very satisfactory as milk is still seen after milking has been completed.
It is generally accepted that the cups should be removed when the milk flow rate has fallen to $\frac{1}{2}$ lb. per minute. There are now on the market three types of milk flow indicators which give a definite indication when the milk flow has fallen to this rate. These are the Ruakura, Dairy-master and Flynn types and it is strongly advised that one of these be installed.

**Hand Stripping Unnecessary**

Many people still believe in the old practice of hand stripping, but with correctly adjusted machines most cows can be trained to give practically all their milk without hand stripping.

All that should be needed is the bearing down on the cups for a few pulsations at the end of milking. This is necessary if the cups have crawled up the teats and blocked the milk cistern.

Regular hand stripping of all cows wastes much time, and creates a tendency for them to always need hand stripping.

A short time spent on adequate stimulation at the beginning of milking is much more productive than a longer time spent on hand stripping at the end.

It is not true that small amounts of milk left after machine milking will affect the future yield. But if a good milking technique is used the cow will be trained to give all her milk with the machine.

The more a cow is hand stripped the more she will need it.

**IMPORTANCE OF GOOD TRAINING**

A well-trained cow is easy to handle and patience given to the heifer at the beginning of her first lactation will pay dividends over the years.

Once trained, a cow becomes accustomed to the routine and it is as well to milk her under the same conditions at each milking. The reason for this, and the need to avoid frightening, have already been explained. Rough handling must always be avoided.

Keeping this in mind, it is better to train a cow to go into any bail when her turn comes for milking. She will not then expect to go into a particular bail, which at times may be inconvenient.

**Special Attention to Fresh Cows**

When a cow comes in after calving, the way she is treated will affect her performance over the subsequent lactation. The udder at this time is swollen and painful and if the cow is treated roughly she will associate the milking shed with discomfort and will never be happy in it. She will try to hold her milk as well as being hard to handle.

After stimulation, the fresh cow should be milked gently by hand until a distinct let-down is felt. If the cups are applied at this stage the cow will associate the milking machine with the relief of pain and this will help make her easy to manage.

**Leg Ropes Unnecessary**

Leg ropes are harmful. They come into contact with the cows' bodies, helping to spread infection, and they are uncomfortable, giving cows a reason for disliking the milking shed.

If a cow is carefully trained as a young heifer she should never need leg ropes.

**THE MILKING MACHINE**

In this article only management factors associated with efficiency and hygiene have been outlined. Factors associated with the milking machine itself must also be taken into account.

Excessive vacuum, insufficient reserve air, pulsators out of adjustment and the more easily located faults such as worn rubberware and blocked air admission holes all affect the rate of milking and the likelihood of infection.

The essence of efficiency in the cowshed is to milk the cow as quickly but as efficiently as possible. There is no point in sacrificing production to obtain quick milking times.

**REFERENCES**


Whittlestone, W. G. (1961).—The Principles of Mechanical Milking (N.S.W. Milk Board Pub.).

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