

Should farmers dip, spray or ‘wet’ the teat after milking?

by Bob Buck, GEA Farm Technologies, Inc.

To harvest milk economically the health of the animal is of paramount importance. Mastitis, lameness, and social well being among others can affect a cow’s ability to produce milk. Mastitis alone costs the global dairy industry billions of Euros in lost milk, treatment and culling costs.

Mastitis prevention requires many farm related management practices be done correctly to keep it in check. One aspect in successful mastitis prevention is making sure all steps in the parlour routine are carried out properly.

Post dip solution

Applying a post dip solution at the end of milking is one activity that has been shown to significantly reduce the incidences of new intramammary infections (IMI). At the end of milking the teat canal remains open after the cluster has been removed for up to two hours.

During this time the cow has been released from the parlour and returns to the housing unit where the open teats are exposed to insects, manure and bedding. By applying a post dipping sanitising agent to the teats before the cow leaves the parlour, bacteria is destroyed on the teat surface, existing teat canal infections are reduced

Dip is applied into the head of the liner.



Teat dipping with a cup.

and new colonisation of bacteria in the teat canal can be prevented.

In addition, teat dip reduces the incidence of new IMIs by conditioning the teat skin. The emollients presented in the teat dip reduce chapping and help the skin to stay supple. Teats with smooth skin have fewer cracks and crevices to harbour bacteria and a smoother skin surface seals the liner bore more securely, improving milking performance.

Post dip application methods

Applying the post dip is currently done in many ways, each with their own positives and negatives. One of the most popular methods is performing the process manually with a simple dip cup.

This process requires the operator to manually immerse the teat into a pool of dip after milking before the cow is released from the parlour. If managed properly and done carefully the hand dipping process can be very effective. However, being a manual

process it is labour intensive and is only as good as the person performing the dipping.

The dip cup normally consists of an open cup to immerse the teat and a connected reservoir to store the clean dip solution. The reservoir is squeezed to push fresh dip from the reservoir to the cup and maintain an adequate level in the cup to coat the teat. Care must be taken to regularly clean and refill the dip cups with fresh solution as they can become contaminated with an overload of organic material.

Manual spraying at the end of milking utilising a pressurised gun is another method that reduces the application time and maintenance of dip cups but tends to consume more dip and like manual dipping, suffers from the human condition. Manual spraying only covers where the nozzle is pointed and often areas are missed.

Automating the dip application process eliminates the need for the worker to return to the cow at the end of the milking session and perform the manual post dip procedure.

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Removing this task can significantly reduce labour costs. Manually dipping a cow takes seven to ten seconds. This does not sound like much effort but the time it takes to do it over and over again adds up quickly.

At a conservative seven seconds per cow on a dairy milking three times a day it calculates to 2.1 hours per cow per year spent applying post dip. For example, on a 600 cow dairy milking three times a day the post dipping effort adds up to 1,260 hours a year.

With an automated system, labour costs are reduced directly or the saved labour can be used to institute better milking routines or take better care of the cows.

How the saved labour is eventually

realised will depend on the parlour type and the existing parlour labour balance. Are workers waiting for cows to finish milking before they can post dip and exit? Or are the cows finished milking, waiting for the workers to return to post dip and allow them to exit?

Opportunities presented

Each scenario provides different opportunities. In the first case it might be possible to remove an operator from the pit. In the second case there could be an increase in parlour turns by eliminating the manual post dipping task. On rotaries the worker that

spends their day post dipping can usually be eliminated or allowed to focus on other tasks.

Automating the spraying process with automated end of alley sprayers, exit area of rotary sprayers or cow deck spraying systems reduce labour and remove the possibility of human error but tend to require additional dip consumption to assure that a majority of the variously located teats are covered. Some of the dip winds up on the teats but will also cover the hocks, udder, environment etc and the often single direction spray pattern can miss some of the teat surface.

New robotic teat spraying systems that utilise various sensors to pinpoint the teat and reduce dip consumption are making their way into the market. However, these types can be quite expensive and complex and are only applicable to rotary style parlours.

Applying dip through the liner

Relatively new are systems that apply the dip through the head of the liner. At the end of the milking process, while the cluster is still attached to the cow, the system automatically delivers teat dip into the head of the liner, 'wetting' the teat.

The dip is applied at the most opportune time as the teat is contained, under vacuum, stretched out and flaccid. The dip can be absorbed deep into the skin's many folds, cracks and crevices.

In addition, applying dip while the teat is still in the liner assures that it is covered before it can be exposed to outside environmental bacterial challenges.

One of the challenges of applying dip solution through the liner is to create the safeguards needed to assure that the dip and backflush solution are properly separated and cannot mix with the milk supply even if there is an operator or equipment error.

Controls and valves have to be designed to create the appropriate air breaks and fail-safe conditions to protect the milk supply.

Backflush bonus

After the dip has been delivered and the cluster is detached from the cow the applied dip will act like a sanitising agent on the liner surface or in the case of the GEA Apollo-MilkSystem the entire cluster is flushed and sanitised.

Backflushing between cow milkings with a sanitising solution has been shown to dramatically reduce contagious organisms from cow contact surfaces. Rinsing the entire cluster removes dirty milk and bacteria that could inadvertently be applied on the next cow's teats due to an air inrush caused by a vacuum disturbance during attachment or milking. Farms that are manually backflushing their clusters today would see additional labour savings by automating this process. ■

Fig. 1. The milking routine.

