

Choosing the right teat sanitisation system

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Alongside the plethora of teat dip chemicals available on the market today, there is also an assortment of teat sanitisation systems available to apply these diverse chemical products.

Whilst careful attention is generally devoted to selecting the most appropriate teat dip chemical for the farm, the issue of identifying the right chemical application system is all too often just an afterthought.

Consequently, there is frequently a mismatch between chemical and application system, which can often result in unnecessary exposure of animals to mastitis pathogens, reduced teat hygiene, inferior teat condition, unnecessary chemical consumption, poor labour utilisation and inferior productivity, all of which can add up to reduced profits for the farmer!

Choosing the right chemical delivery and application system should form an integral

part, therefore, of a coordinated teat sanitisation system selection process.

Chemical application systems fall into three broad categories – teat dipping, teat spraying and foam application. Each has some distinct characteristics and advantages which make them more or less suitable for different scenarios.

Variables to be considered in choosing the most appropriate system include such factors as type of chemical, chemical consumption, capital cost, maintenance costs, speed of application, labour requirement, level of operator skill available and degree of automation required.

Teat dipping

Teat dipping has the dual advantages of generally achieving good teat coverage, across a wide labour skill range, at comparatively low levels of chemical consumption.

Teat dipping typically consumes 8-10ml of chemical per cow per milking compared with 10-15ml for teat spraying. It also lends itself for use with a wider range of chemicals, such as the increasingly popular high viscosity 'barrier type' or film forming teat dip chemicals, which do not lend themselves to being sprayed and generally will not generate effective foam.

Teat dipping is also the most reliable

method of teat sanitisation to adopt in those instances where only semi-skilled or even unskilled labour is involved.

The downside to teat dipping is that it is usually slower than teat spraying and therefore more labour intensive.

The requirement to frequently re-fill dip cup bottles adds a further laborious process to the dipping routine which adds to the overall time and cost of teat dipping, although semi-automated dipping systems and dip cup filling stations are now available to help automate this process.

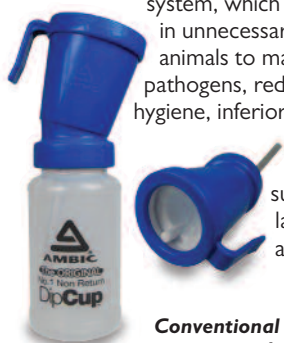
A range of dip cup models is available which have features designed to suit a variety of chemicals. These include dip cups suitable for dispensing high viscosity teat dips without incurring the risk of RSI injuries which arise from using a dip cup designed for conventional dips.

Models are also available to suit different types of milking system, such as dip cups, which minimise the bending down required when dipping in stanchion barn systems, for example.

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Twin tube dip cup with non-return valve for thick barrier dips.



Conventional non-return dip cup.

Manual dipping using a dip cup.



Semi-automated dipping system.



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More recently, automated in-line dipping systems have come onto the market which automatically coat the teat in chemical as the cluster is removed from the cow.

Teat spraying

Teat spraying has the distinct advantage of being quicker than teat dipping which means it is often favoured for treating larger herds where cow throughput and milking time are major considerations. Chemical consumption is generally higher than for teat dipping, consumption, typically being in the range of 10-15ml per cow per milking.

The effectiveness of teat spraying is very much dependent upon the skill and diligence of the operator to ensure good teat coverage by adopting an effective circular spray motion such that all the surfaces of the teat are well covered without spraying for too long and thereby wasting chemical.

Thicker barrier type dips do not generally lend themselves to being sprayed as a result of their thixotropic characteristics which hamper the atomisation



process.

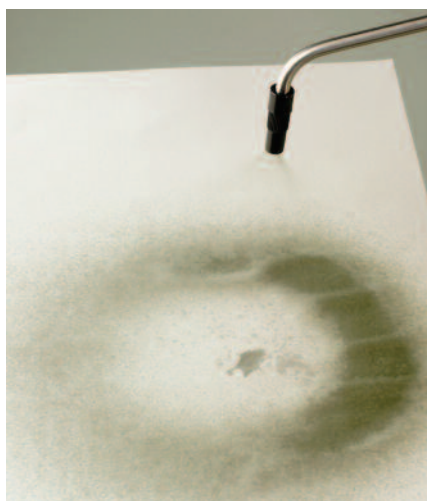
Spray nozzle design has evolved in recent years to achieve a more even spray pattern and

Dip cup suitable for RTS and stanchion barn settings.

appropriate droplet size, which helps with adhesion of the chemical to the animal's teat.

Research has demonstrated that a coarser spray (200µm) from a fixed nozzle gives higher deposition rates than the finer sprays generated from variable geometry nozzles. Droplets less than 100µm should be avoided to safeguard operator health.

Since there is not one single polymer which is capable of resisting all the various teat dip chemicals on the market, adapted teat sprayer systems with specially formu-



Hollow cone nozzle spray pattern.

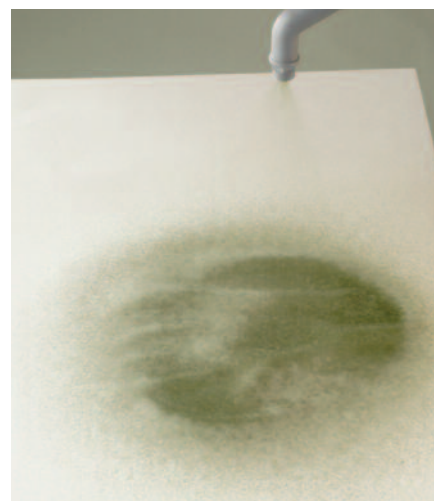
lated components, such as seals and diaphragms, are now available for use in conjunction with some of the newer chemicals that are chlorine dioxide or lactic acid based.

Various attempts have been made to automate the teat spraying process in order to reduce the labour requirement. Exit race sprayers have generally proven to be fairly ineffective because of the challenge for the spray nozzle(s) to hit a moving target and the tendency for chemical consumption to be unacceptably high.

Foam application

The growth in the practice of pre-dipping, driven primarily by the desire to address the challenge of environmental mastitis, has seen the emergence onto the market of a number of foaming teat dip chemicals which are applied as part of the overall prepping routine. A number of foaming chemicals are also available as post milking treatments.

In order to be effective as a teat preparation routine it is important to create the right structure of foam with the foaming teat dip chemical.



Solid cone spray pattern.

The foam generation and foam application system is required to combine chemical and air in the correct ratio and create the correct bubble structure such that the correct amount of chemical is deposited on the teat. It has to be sufficient to clean or sanitise the teat, but should not be more than can be removed with a single wipe of a paper towel or cleaning cloth, for example, in order to avoid potential contamination of milk entering the bulk tank. The bubble structure is also important to create agitation on the surface of the teat to help lift dirt and debris from the teat surface.

Chemical consumption is lower than for dipping or spraying and typically amounts to 5-8ml per cow per milking.

Foam generation and foam application systems vary from manual foaming dip cups to fully automated foaming systems which provide a steady supply of foam from a remote chemical supply.

These automated systems are favoured for larger herds since the use of foaming dip cups can become laborious, the squeezing of the dip cup being necessary both to dispense chemical and generate foam.

Therefore, the larger the herd the greater the potential risk of RSI. ■

Teat spraying using vacuum operated teat sprayer.



Automated foam system used for pre-dipping.

