Take a bath – not a walk

A recent study has revealed that boot baths are better than mats when it comes to controlling disease-causing organisms on dairy units. We spoke to a microbiologist to find out more.

TEXT RACHAEL PORTER

When it comes to cleaning boots, which is most effective – disinfectant baths or mats? That's a question that one disinfectant manufacturers' sales team were frequently asked by producers, so the company decided to carry out its own trial to find out.

Boot disinfection is required on all livestock units, and should form the basis of biosecurity protocols. It is an invaluable tool to prevent diseases from entering the farm and herd, as well as controlling spread through cross contamination between livestock areas on dairy units.

Both boot baths and boot mats are frequently used. The former holds disinfectant solution, allowing the boot to be fully submerged up to the ankle. The user is encouraged to remove organic debris by agitating the boot while it's submerged.

A boot mat, on the other hand, holds the disinfectant in a foam pad that is set in a tray. The user should walk slowly across the mat, and the disinfectant coats the sole and sides of the boot, depending on the depth of the foam, and, again, removes dirt and any viruses and bacteria.

But which is 'best' – what's better at cleaning boots, removing harmful disease-causing organisms and meeting biosecurity objectives?

"Commonsense says baths would be more effective at disinfecting boots, not least because they offer great coverage up to the ankle," says Evans Vanodine's Lisa Speed. "But we wanted to prove that with data and not just anecdotal evidence or guesswork."

Bacterial load

She set up a trial to assess the reduction of bacterial load on wellington boots when using boot baths compared to boot mats. "Staphylococcus aureus was used as the 'challenge' organism because this gram-positive mastitis-causing bacteria is one that's used in European Standards' test methods," she explains.

A multi-purpose iodophor disinfectant, Evans' FAM 30, was used at the recommended dilution rate of 1:100, while water was used as a control. "A contact time of 30 seconds was selected as this reflects actual use, as dairy

Lisa Speed:

"Boot baths are more effective at disinfecting footwear"

staff need a quick but effective way of disinfecting boots. The bacteria solution was applied to the soles of two pairs of Wellington boots. One pair was then submerged in a boot bath containing the disinfectant solution and the other pair was dipped in a water-only bath as the control. Both pairs were submerged, to the ankle, for the contact time and the boots were also 'agitated' in the solutions.

The same process was carried out with another two pairs of boots. The wearer walked through the disinfectant-soaked boot mat in one pair for the required contact time and, using the second pair of boots, through a water-only control test. Immediately after treatment, swabs were taken from the soles of all the boots for testing.

Test results

The reduction in the numbers of bacteria on all pairs of boots was evaluated for both the boot bath and the boot mat compared to using just water. Results showed that the boot bath was significantly more effective in reducing the numbers of bacteria present on the boot sole with a 99.999% reduction compared to the water-only control. The boot mat method had less of an impact, compared to the water control, with a reduction of just 75%.

"I expected a higher 'kill rate' for the bath, but for the difference to be much less marked," says Mrs Speed. "Our trial shows that using a bath really is much more effective at disinfecting footwear compared to using a mat system."

She believes that this is because more of the boot is covered and cleaned when using the bath, and there's also the effect of agitation.

"Producers who looking to increase the efficacy of their biosecurity protocols should consider installing boot baths, rather than mats, at entry and strategic points around their units to prevent the spread of disease."

But boot mats do have their place and can be effective at preventing the spread of disease in certain situations, such as at the entrance to agricultural events and shows, and petting farms. And they're effective in situations where the organic-matter or soiling load on footwear is considerably lower.

And, she stresses, even boot baths can be ineffective if not managed and used correctly – with an appropriate broad-spectrum disinfectant.

Strategic points

Baths should be placed at strategic points across the unit, such as the entrance to calf housing, the milking parlour and the main gate. "Many producers simply cut a 25-litre tub in half. But the container needs to be deep enough to allow the boot to be submerged up to ankle depth and be 'agitated' in the solution," she says.

"It's simply a case of putting one boot in, giving it a good shake about and then stepping out. So also place the bath on a flat surface where it's easy to access and use."

She does recommend that baths are lidded – even if it's just a makeshift piece of board. "Or position it undercover. It important that it's protected from rain, to prevent dilution, and to stop wildlife and pets from drinking it.

The solution also needs to be changed regularly. Iodophor disinfectant solutions needs to be replenished every 72 hours – or more often if there's heavy use or soiling.

"Check the label, use at the correct concentration and keep your eye on how dirty the solution is or if there is a colour change," says Mrs Speed.

"Excessive debris or muck in the boot bath will reduce its efficacy, so washing footwear with water before using the bath is the ideal, where possible. It will also extend the 'life' of the boot bath solution and can help to save on costs in high-traffic areas.

"And rinse out the boot bath before refilling it, to remove any organic matter that may have settled in the bottom. Again, this will extend the life of the solution and maximise its efficacy," she adds.

"Why go to all the trouble of setting up boot bath stations and using them if something as simple as not keeping them clean and topped up with active solution renders them in effective?

"Like so many biosecurity protocols, paying close attention to detail matters and it really does make a huge difference." |

Alternative option: mats are effective when soiling load is lower