Dairy farmers can fight growing disease threat with chlorine and stainless steel

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Two good tips for preventing Johne's disease on dairy farms: Use stainless steel water troughs and add chlorine to the water. That's according to Kim Cook, an Agricultural Research Service (ARS) microbiologist at the agency's Animal Waste Management Research Unit in Bowling Green, Ky. Cook did the research with Carl Bolster, a hydrologist at Bowling Green, and other colleagues.

Stainless steel troughs are expensive, but not as expensive as Johne's disease. Caused by the bacterium Mycobacterium paratuberculosis, this disease can cause losses of as much as $200,000 per year in a herd of 1,000 dairy cows. The losses are mostly from a drop in milk production and the need to cull infected animals. A continued increase in the number of cases of Johne's disease among dairy cattle suggests that there may be unknown sources of contamination on farms.

Cook thought that water troughs would provide a perfect home for bacteria, so she counted the Mycobacteria in the slimy layers in water on the sides of the most commonly used troughs: concrete, plastic, stainless steel, and galvanized steel.

She wanted to see if there were differences in the ability of the bacteria to adhere to and survive on the surfaces of the different materials.

Cook found high concentrations of the bacteria on all troughs within three days of inoculating the water with the bacteria, and they survived for more than 149 days. But the bacterial survival rate was lowest on the

stainless steel.

When she added 3 tablespoons of chlorine bleach per 100 gallons of trough water weekly, she found that, by the end of the third week, less than 1 percent of the bacteria remained on stainless and galvanized steel troughs. On the other hand, 20 percent remained on plastic and 34 percent remained on the concrete troughs.

The chlorine's disinfectant effects may have been weakened by the higher pH of concrete and by the tendency of plastic to absorb chlorine.

Based on these results, using stainless steel water troughs with chlorinated water should be one of the recommended practices included in any Johne's control plan, according to Cook.

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