Max Facts -
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Cleaning Calf Feeding Equipment

Cleanliness is Next to...

The old saying is "Cleanliness is next to Godliness," but the reality in most calf facilities is that cleanliness is next to impossible! Twice per day, calf growers feed milk replacer to their calves. But, what else is being fed along with the milk? Bacteria! Molds! Toxins! By following effective cleaning and sanitizing procedures, calf growers can derive the following benefits:

- Reduce the risk of contamination to the calf
- Reduce the use of antibiotics
- Reduce the risk of respiratory problems
- Reduce digestive problems
- Reduce the risk of enterotoxemia

This paper was created to help calf growers do a more effective job of cleaning feeding equipment to help prevent bacterial contamination, improve calf performance, and increase profitability.

Mixing and Feeding Milk Replacer

It should go without saying that calf growers should follow the manufacturer's directions for mixing and feeding milk replacer. The optimum mixing temperature and mixing time depends on the type of milk replacer, fat and protein levels, fat composition, and the type of system used to dry the fat used in the milk replacer. If the milk replacer is not properly mixed, excessive amounts of fat and protein may accumulate throughout the feeding equipment which may pose heath problems for the calves when bacteria grow on these deposits. By using precise mixing and feeding procedures, growers can prevent these problems.

The Rinse - Clean - Sanitize - Dry Concept

The most important concept of cleaning milk replacer mixing and feeding equipment is that we must rinse milk residue first with lukewarm water (80-110^{o} F) before we wash with hot water. If we start by using hot water (>110^{o} F), the fat and protein in the residue will adhere to the surface of the equipment and provide a place for bacteria to grow. So, it is important to: 1) rinse with warm water; 2) wash with hot water; 3) sanitize with hot water; and 4) dry thoroughly. Observe how modern dairies clean milking equipment and follow their lead because they have the same challenges for harvesting milk as we have with feeding milk.

Rinse

First, rinse all equipment with warm water (80-110^{o} F) to remove manure, dirt, and all milk residues. Rinsing with lukewarm water allows milk residues to rinse off of the mixing and feeding equipment without becoming permanently attached. Use a thermometer to adjust rinse temperature every time you rinse to 80-110^{o} F.

Clean

Using a mixture of chlorinated alkaline soap and hot water (165^{o} F), wash the mixing and feeding equipment. Chlorine dissolves proteins and alkaline soap dissolves fat. Wear gloves and scrub all surfaces to remove protein, fat, and foreign materials that adhere to surfaces. Special brushes may be needed to clean nipples, bottles, esophageal feeders, floating nipples, feed buckets, etc. At the end of the washing cycle, final temperature should be above 130^{o} F. Use a thermometer to adjust wash temperature to 165^{o} F every time you wash. Chlorine solutions must be at least 150 parts per million (ppm) to effectively kill bacteria. Liquid chlorine products generally have shelf-lives in the range of a few weeks, and should be purchased in small quantities frequently, rather than large quantities infrequently. Also, suspended milk solids will re-deposit on equipment if the temperature of the wash water falls below 120^{o} F. For this reason, the temperature of the final wash water must be above 130^{o} F. Rinse with cool water after cleaning. Once per week, clean with acid cleaner per manufacturer's directions.

Sanitize

Finally, rinse with an acid-sanitizing solution in warm water (70^{o} F) per manufacturer's directions. Acid final rinses reduce surface pH to less than 4 for up to 12 hours which reduces the growth of bacteria.

Dry

Allow equipment to dry completely, if possible, between uses. Dry surfaces also inhibit the rate of bacterial growth.

Safety Warning!

Wear gloves and maintain adequate ventilation - avoid skin, eye, and oral contact with all soaps, bleaches, and acid-sanitizers. Never mix chlorinated soap and acid concentrates together - toxic chlorine gas could be released! Never store soaps, bleaches, or acid sanitizers in any other container than the original containers.

Cleaning Calf Feeding Equipment

Rinse

Rinse all equipment with warm water (80-110° F). Use a thermometer to adjust rinse temperature every time you rinse to 80-110° F.

Clean

Using a mixture of chlorinated alkaline soap and hot water (165° F), wash mixing and feeding equipment. Wear gloves and scrub all surfaces to remove protein, fat, and foreign materials that adhere to surfaces. At the end of the wash cycle, final temperature should be above 130° F. Use a thermometer to adjust wash temperature to 165° F every time you wash. The temperature of the final wash water must be above 130° F. Once per week, clean with acid cleaner per manufacturer's directions. Rinse with cool water after cleaning.

Sanitize

Rinse with an acid-sanitizing solution in warm water (70° F) per manufacturers' directions.

Dry

Allow equipment to dry completely between uses.

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