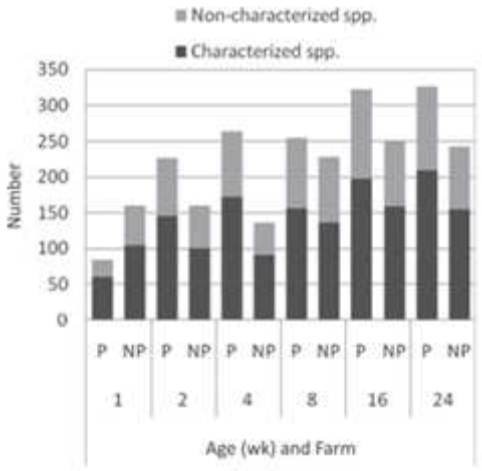
Pasteurized waste milk and gut bacteria

Dairy Herd Network | Updated: September 10, 2012



While research has documented conclusively that pasteurizing waste milk significantly reduces bacterial levels in the liquid calf feed source, USDA researchers have taken an interesting look at how the feeding practice affects long-term gut flora in the animals.

Researcher Tom Edrington and his colleagues at the USDA Food and Feed Safety Research Unit, Southern Plains Agricultural Research Center near College Station, Texas, conducted the 180-calf study. Calves were raised with similar practices on two different farms; the main difference being that one group was fed a diet of non-pasteurized waste milk, while the other group received pasteurized waste milk. Both farm sites were large, commercial dairies with more than 3,000 cows.

Fecal samples were taken on both farms from 15 calves in each of six age groups — 1, 2, 4, 8, 16 and 24 weeks of age. Samples were evaluated for bacterial presence using DNA testing. Among the findings were:

- Bacteria numbers were lower in the pasteurized group at only one evaluation point – the first week of life. After that, the populations were higher in the pasteurized group, and grew steadily with age in both groups. The figure above shows this progression, with "P" representing the pasteurized group and "NP" representing the non-pasteurized group. The researchers speculate that this surprising result may have been due to recolonization of pasteurized waste milk between pasteurization and feeding.
- *Treponema,* an important, beneficial bacterium in cattle rumen, was more prevalent in the pasteurized group, and became higher in the older animals from this group. This finding allayed the researchers' concerns that pasteurization might have a negative effect on the establishment of "good" bacteria in the digestive tract.
- *Salmonella,* a harmful, scours-causing bacterium, was found at significant levels only in the non-pasteurized group at week 1. After that, it was not significant in either group. The researchers conclude that this finding coincides with clinical findings on dairy farms — that *Salmonella* is of greatest consequence in very young calves, and is of less consequence as calves age. They also suggest that the overall results suggest that milk-borne transmission of *Salmonella* is not as

significant as fecal transfer, and, in this case, the presence of higher *Salmonella* numbers in young calves may have been due to fecal exposure on the dairy.

"The somewhat surprising results of this study suggest that the recontamination of waste milk following pasteurization may provide a better source of bacteria for gut establishment," concludes Edrington. He adds that in future research, two additional factors would help deliver more conclusive results:

- Using animals that all are raised on the same farm.
- Testing pasteurized milk for bacterial levels just prior to feeding.
