



SCC DIAGNOSTICS TOOL BOX



R-EF-7: Comparison of Bacteria Populations in Clean and Recycled Sand Used for Bedding in Dairy Facilities

M.A. Kristula¹, W. Rogers², J.S. Hogan³, and M. Sabo⁴

¹University of Pennsylvania, School of Veterinary Medicine, Kennett Square

²AET Consulting, Inc., Lititz, PA

³OARDC, The Ohio State University, Wooster

⁴Unionville, PA

J. Dairy Sci. Vol. 88, Issue 12, Pages 4317-4325, December 2005

Copyright© 2005 American Dairy Science Association. Published by Elsevier Inc. All rights reserved.

Abstract

Bedding samples were collected twice from commercial dairy free-stall facilities that used recycled sand and clean sand in both the summer and winter. Collection began on the day sand was taken from the pile (d 0) and placed in the free stalls, and continued for 5 to 7 additional days. The number of colonies per gram of bedding of gram-negative bacteria, coliforms, *Streptococcus* spp., and *Klebsiella* spp. were estimated for each sand sample as well as amounts of dry and organic matter. Clean sand (CS) and recycled sand (RS) had the same bacterial counts when compared at any sampling time. The mean counts of bacterial populations did vary over the course of the study in both CS and RS. There was a significant increase in bacterial counts from d 0 to d 1 for gram-negative bacteria, coliforms, and *Streptococcus* spp. in both winter and summer. Counts of gram-negative bacteria, coliforms, *Klebsiella* spp., and *Streptococcus* spp. did not differ from d 1 to 7 in the winter. Total counts of gram-negative bacteria did not differ from d 1 to 7 in the summer. On d 1 in the summer, coliform counts were lower than at d 5 to 7, and *Klebsiella* spp. counts were lower than on d 3 to 7. *Streptococcus* spp. counts were high on d 1 and were constant through d 7 in both winter and summer trials. The number of coliform and *Klebsiella* spp. in both CS and RS was below the threshold thought to cause mastitis during the sampling times. The number of *Streptococcus* spp. was high in both CS and RS during the sampling periods. Other management factors need to be identified to decrease the number of *Streptococcus* spp. in bedding. Recycled sand had a higher organic matter and lower dry matter compared with CS in winter and summer. The results for this study were obtained from multiple herd comparisons, and herd was a significant effect suggesting that different management systems influence the number and types of bacteria in both CS and RS.

Key words: sand, recycled, bedding, dairy

Abbreviation key: CS, clean sand, RS, recycled sand

