Title: Bacteria in alternative system of cow farming

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Abstract

Compost barn (CB) is an alternative system of confinement of cow, often with sawdust beds. In this system, bacteria have important environmental functions, but it is necessary monitor this community for the prevention of diseases. The objective was to verify the viability of cells of bacterial community in CB at different stages of development of compounds in two farms in south region in Minas Gerais. Each system is separated into four different lots according to dairy production phases of cows: in lactation period; at high milk production; pre-parturition; heifer. Samples of the sawdust were individually collected in each lot of these farms and placed in sterile flasks to determine bacterial density and stain identification. In laboratory, 0.9% saline was added to each sample and sonicated, and then samples were spread in TSA. After 24 hours at 35º C, colony forming units (CFU) were counted and identified morphologically. Different colonies were isolated and identified by Gram methodology. Samples from the farm with CB most recent presented a higher number of bacteria (636 CFU) than another farm (112 CFU). Most frequently isolated were gram-positive cocci, gram-negative cocci and gram-positive rods. Stain identification suggested the possibility of the occurrence of mastitis pathogens, due to be found bacteria with characteristics of *Staphylococcus* and *Streptococcus*, which are the main causes of mastitis. The lower density of *Streptococcus* in comparison to other bacterial groups may be related to greater nutritional requirement of this group. Comparing the different lots in the farm with newer CB, larger amount of bacteria was found, respectively, in the lots of pre-parturition, lactation, high production and heifers. In the farm with older CB, the highest densities were found, respectively, in lots lactation, high production, pre-parturition and heifers. Some cows release streams of milk even before being milked, it may be that this phenomenon occurs in this case and it is responsible for the increase in bacterial density in the lots with older cows, due to there is greater quantity of lactating cows and high production in newer CB. In the case of the heifers, bacterial density was lower in both farms. It is important due to not have contamination of animals since young. Then, the amounts of active bacterial cells were related with stages of development of compounds of systems, with the density of cows and with dairy production phases of cows.

Keywords: compost barn, mastitis, cattle

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