SUMMARY

Comparison between traditional and alternative housing system: Microbial ecology and mastitis in dairy cows.

Key words: udder pathogens, compost barns, *Mycob. paratuberculosis*

Among the various animal by-products (SOAs), the compost barn is a new type of litter, consist of a large bedded area derived from the dried solid part of animal manure, after exploitation by anaerobic phase digestion from the plants for the production of biogas in the farm. This animal housing practice is well established in Italy, in the same way of livestock farms in Israel, USA and Netherlands. This breeding technique allows to obtain economic advantages for the breeders, such as improving well-being, fertility, longevity and diminishing laminitis, on contrary increases the risk of mastitis and enteritis. During the compost barn production process, the temperatures to which the faeces are subjected in the system (54-65°C) and the anaerobic-aerobic fermentation, does not guarantee the complete sterilization and reduction of certain harmful bacteria. The study started in 5 companies then focused on a dairy farm in the province of Rome, equipped with two biogas systems, officially free from brucellosis, tuberculosis, leucosis, and controlled for *Mycobacterium avium* subsp. *paratuberculosis* (MAP) since as many as 10 years with ELISA method, obtaining at present a prevalence of 0.59% with a level of PT2 certification. Were performed two annual sampling from 14 boxes and from one another were collected 5 samples. The samples were tested for mastitogenic agents and each of them was tested for culture isolation on Herrold's solid medium and on VersaTREK® system, specific Real Time PCR specific for MAP. The results obtained in this study show that the use of the separated (digestate) in the preparation of bedding according to the compost-barn technique did not negatively influence the health status of the udder compared to traditional housing, resulting in a valid substitute to conventional litter, even for the positive balance with regard to direct and indirect business costs. With regard to the MAP research, we highlight the difficulty of detecting its presence from the matrices object of the study and the importance of using both cultivation methods and biomolecular methods.