

The impact of dairy cows' bedding material and its microbial content on the quality and safety of milk – a cross-sectional study of UK farms

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ABSTRACT

The introduction of bedding dairy cows on recycled manure solids (RMS) in the UK led to concern by competent authorities that there could be an increased, unacceptable risk to animal and human health. A cross-sectional study was designed to evaluate the microbial content of different bedding materials, when used by dairy cows, and its impact on the microbial content of milk. Data were collected from farms bedding lactating cows on sand (n=41), sawdust (n=44) and RMS (n=40). The mean duration of RMS use prior to sampling was 13 months. Total bacterial count, and counts of *Streptococcus* / *Enterococcus* spp., *Staphylococcus* spp., *Bacillus cereus*, thermophilic, thermophilic and psychrotrophic bacteria were determined in used bedding and milk. Samples were evaluated for the presence/absence of *Listeria monocytogenes*, *Salmonella* spp. and *Yersinia enterocolitica*. Data on milking practices were collected to investigate their potential to reduce microbial transfer from bedding to milk. There were substantial differences in bacterial counts both within and between bedding materials. However, there were no significant differences between bedding groups in counts in milk for any of the organisms studied, and no significant correlations between bacterial load in used bedding and milk. Fore-milking was associated with a reduced total bacterial count in milk. Dipping teats with disinfectant and drying, prior to milking, was associated with lower numbers of *Streptococcus* / *Enterococcus* spp. in milk. Disinfecting clusters between milking different cows was associated with a reduction in thermophilic and psychrotrophic counts in milk. This study did not provide evidence that use of RMS bedding increased the risk of presence of *Y. enterocolitica*, *Salmonella* spp. or *L. monocytogenes* in milk. However, the strength of this conclusion should be tempered by the relatively small number of farms on which *Y. enterocolitica* and *Salmonella* spp. were isolated. It is concluded that, despite the higher bacterial load of RMS, its use as bedding for lactating dairy cows need not be associated with a higher bacterial load in milk than the use of sand or sawdust. However, this finding must be interpreted in the light of the relatively recent introduction of RMS as a bedding material on the farms studied. Teat preparation provides a control point for the potential transfer of microorganisms from bedding to milk. The detection of zoonotic pathogens in a small proportion of milk samples, independent of bedding type, indicates that pasteurisation of milk prior to human consumption remains an important control measure.