Agricultural and Food Science - abstract

Vol. 14 (2005), No. 2, p. 134-142

RUUNANIEMI, JUKKA, HAUTALA, MIKKO, AHOKAS, JUKKA,
Physical properties of synthetic bedding materials for free-stall dairy cow

Keywords cows, synthetic bed, mats, bedding materials, physical properties,

Abstract

Rest is a prerequisite for the well-being of cows and they spend 40–50% of the time lying down. In this study the basic physical properties, the friction coefficient, heat flux as a function of time and softness of the bedding materials were measured. The heat flux to the bedding was shown to be large enough to affect the cow's heat balance. The friction coefficients of most of the tested materials were not within the recommended 0.3–0.5. However, the friction values are only indicative, as the material and the shape of the arti- ficial hoof were not identical to natural hooves. There were also differences of almost an order of magnitude in the softness (Young's modulus) of the mats. Demands for softness vary according to the type of building and cow's physical condition, for instance a cow with an injured leg needs softer bedding. The properties of mats and beds varied considerably and the various properties did not correlate with each other. More information is needed concerning these values to animal welfare and health in order to be able to make recommendations of different physical material characteristics in different climate and housing conditions.

Contact jukka.ahokas@helsinki.fi

[Full text] (PDF 265 kt)

Update 28.10.2005.

Source: MTT's Publications database Afsf