

New Trends in the Use of Recycled Manure Solids in a Dairy Housing System with Free Stalls

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ABSTRACT

Bedding provides comfort to dairy cows spending most of their time in stables. A variety of materials are used to ensure their welfare and create a suitable environment in the bedded cubicles. The aim of the study was to compare improved bedding composition with conventional straw bedding under farm conditions, regarding its effects on the indicator microorganisms influencing hygiene level. Dairy cows were housed in newly built stall divided into two parts each with four subsections and bedded cubicles arranged in three rows. From the stall were selected 5 subsections for the study and from each 9 bedded cubicles were monitored according to the time intervals of bedding treatment into cubicles. In the first subsection (control) the cows were housed in the bedded cubicles layered with straw up to a height of 20 cm. The sections 2-5 with improved bedding (IB) IB-fresh, IB after 1 month (M), IB after 2M and IB after 3M were bedded one-day old (fresh) and 1-3 months before the actual observation period, respectively. The alternative bedding per one cubicle consisting of ground limestone (100 kg), recycled manure solids (RMS; 15 kg), straw (25 kg) and from the addition of water (80 l) which formed a past consistency with other components. After laying, the bedding was treated with a concrete selector to provide strength and sufficient resistance. A total of 180 bedding samples for microbiological determination were taken simultaneously from all 5 monitored subsections. Comparing classical straw bedding with the improved recipe bedding showed a stabilizing effect by keeping the bedding thickness up to the floor barrier level, which has a beneficial effect by reducing the level of fecal contamination in the rear of the cubicle. The fecal coliforms and fecal streptococci in one-day old laid bedding as well as after the first, second and third months its laying was found to be reduced.

Keywords: Dairy cows, Hygiene, Bedded cubicles, Recycled manure solids, Microorganisms

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