

Effect of Manure Treatment Methods in Cowsheds on Udder Health and Milk Quality

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One of the major conditions for maintaining udder health in pack barns is keeping the pack as dry as possible. Use of bedding materials is both costly and requires constant manure removal from the barn (environmental protection).

Purpose of the study: To evaluate and compare two pack treatment methods and their effect on udder health.

Course of the study: The observation was conducted over the course of one year in a commercial dairy farm, where the cows are milked three times a day with an average production of 39 liters/cow/day.

Treatments: In one barn, the pack was treated by harrowing the surface to a depth of up to 5 cm; in the second barn – deep cultivation was applied (30-50 cm). Neither method involved the addition of bedding material throughout the observation period. Cows were designated to two similar groups (73-76 cows in each group). Both groups were kept in barns of a similar structure and area per cow (22 sq.m./cow). Both packs were treated daily throughout the months of the observation. The effect of the various treatment methods were monitored by culturing of the pack for pathogens, dry matter content, total cell count, differential cell count and the incidence of udder infections.

RESULTS: A decrease was found in the total count ($p < 0.04$), *Coliform* counts ($p < 0.004$) and *Streptococcus* ($p < 0.0001$) in the "deep cultivation group" as opposed to the "harrowing group". Significant differences were found in favor of the sampling points found in the deep cultivation barn and in the total dry matter in both barns (59.8% versus 47%) throughout the year ($p < 0.001$). The cows in the "cultivation group" were found to be cleaner in comparison in the different areas inspected on the cow's body and on average in the general cleanliness index of both groups. It was found that on average, the percentage of udder-healthy cows in the "cultivation group" was higher in most of the months compared to the "harrowing group" (70.6% versus 65.4%). Borderline significant differences were found ($p > 0.067$) in the incidence of clinical infections.

SUMMARY: this study found for the first time, in a controlled manner and based on lab tests, that the deep cultivation method creates drier cattle pen conditions, which affect the concentration of bacteria in the cattle pen and decrease in the percentages of sub-clinical udder infections. It is noteworthy that applying this method requires suitable environmental conditions - more than 20 sq.m/cow - equipment and technical capabilities (proper deep cultivation) and, above all, the environmental treatment must be carried out in a fixed daily routine in order to obtain the optimal effect, as described in this study.

Key words|: Deep cultivation, bedding material, harrowing, udder health.

This study was funded by the Israel Dairy Board Research Fund

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