

Variation factors of overall health score using Welfare Quality® assessment protocol in French dairy cattle farms

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There is a growing concern about the welfare of dairy cattle, especially regarding health which is the welfare criterion the most degraded according to recent EFSA reports. Among existing tools to assess animal welfare, the Welfare Quality® assessment protocol aims at assessing each of the 5 'freedoms' of welfare based on the calculation of 4 main principles scores (ranking from 0 to 100) including a special focus on health. If specific risk factors are well documented to reduce some specific diseases (eg mastitis, lameness), there is a lack of knowledge on how to broadly improve the overall health status and not only one health disorder. The objective of the study was to highlight the factors of variation of the overall health score obtained using the Welfare Quality® assessment protocol in a stratified random sample of 131 French dairy farms. We investigated several causal factors reflecting either: (1) the diversity of dairy systems in France: location area, milking system, type of housing in loose-housing barns, herd size, breed; or (2) putative herd risk factors: mean parity, percentage of primiparous cows, mean stage of lactation and mean milk production. Univariate analyses were performed to select potential risk factors ($P < 0.2$) before ANOVA with forward selection ($P < 0.05$) using the SAS® software. In the final model, factors that contributed mostly to the variability of the health score were in decreasing order: mean stage of lactation (better health score for mean stage of lactation ≤ 4.8 months vs. > 6.2 months (32.9 vs. 26.5)), type of housing (better health score for deep-bedded vs. cubicles (32.1 vs. 27.2)) and milking system (better health score for milking parlor vs. automatic milking system (31.8 vs. 27.6)). This study offers a starting point to rank factors associated with poor welfare in dairy herds in order to improve the health status of dairy cows.