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Ranking experts' preferences regarding measures and methods of assessment of welfare in dairy herds using Adaptive Conjoint Analysis

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Abstract

Welfare in dairy herds can be addressed using different concepts. The difficulty is to extract which measures are the most important to practically address welfare at the herd level and the methods to assess traits considered most important. Therefore, the preferences of 24 acknowledged European welfare experts were ranked regarding 70 measures suitable to assess dairy cattle welfare at herd level using the Adaptive Conjoint Analysis (ACA; Sawtooth Software, Inc., Sequim, WA) technique. The experts were selected on the basis of 3 criteria: at least 5 yr experience in animal welfare research; recent scientific publications in

the field of animal welfare; and, at the most, 3 animal species including dairy cattle as their field of expertise. The 70 traits were ranked by using the median ACA questionnaire utility scores and the range between the answers of the 24 experts. A high utility score with a low range between the answers of the experts was considered as suitable to assess welfare at farm level. Measures meeting these criteria were prevalence of lameness cases (107.3 ± 11.7), competition for feed and water (96.4 ± 13.9), and number of freestalls per 10 cows (84.8 ± 13.3). Based on the utility score alone, these former measures were replaced by stereotypic behavior (111.7 ± 17.1), prevalence of lameness cases (107.3 ± 11.7), body condition score (108.0 ± 18.9), and hock lesions (104.7 ± 16.1). Subsequently, to demonstrate that the ACA technique can be used to rank either well-known or inconclusive methods of assessment, the methods for the traits lameness cases and the hygiene of the calving pen were ranked using another 2 ACA questionnaires. The results are based on the opinions of selected, internationally acknowledged dairy cattle welfare experts within the European Union. In the future, other parties like dairy farmers and farmers' organization should be included to achieve consensus about the most suitable traits applicable in practice. The currently investigated traits do not always apply to all dairy husbandry systems across the world, but are based on a system that includes indoor housing during winter. It is concluded that ACA is a useful technique to rank the different scientific opinions of experts regarding suitable traits and methods of assessment of dairy cattle at the herd level.

Key words

dairy herd; welfare; assessment; adaptive conjointanalysis

Figures and tables from this article:

Table 1. Selection criteria for the remaining experts in the first ($n = 24$), second ($n = 12$), and third ($n = 9$) Adaptive Conjoint Analysis (ACA; Sawtooth Software Inc., Sequim, WA) questionnaire

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Table 2. Ranking of the welfare measures in the high utility score (US) category (≥ 70)

sorted by their small, medium, or large range of US among the experts

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Table 3. Ranking of the welfare measures in the medium utility score (US) category (35 to 70) sorted by their small, medium, or large range of US among the experts

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Table 5. The measures from Adaptive Conjoint Analysis (ACA; Sawtooth Software Inc., Sequim, WA) questionnaire 2 to assess lameness cases [ranked by the median utility score (US) and the respective range among the experts]

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Table 6. The measures from Adaptive Conjoint Analysis (ACA; Sawtooth Software Inc., Sequim, WA) questionnaire 3 to assess the hygiene of the calving pen [ranked by the median utility score (US) and the respective range among the experts]

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