

Development of a welfare assessment protocol and assessment of dairy cattle welfare in Haryana and Punjab states of Northern India

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Abstract

The aim of this study was to develop an on-farm dairy cattle welfare assessment protocol at different-sized farms in two major commercial dairy farming states in India. For developing the protocol, the basic 'Integrative Diagnostic System Welfare' (IDSW) framework was modified to include three welfare components (animal housing and other facilities; feeds and feeding practices; and animal health, performance and behaviour) and 20 welfare indicators (ten resource- and ten animal-based). Each indicator was weighed on a value scale with an aggregate welfare score of 100. The protocol was tested for feasibility, validity and reliability using Cronbach's alpha and Guttman split-half coefficient. Using this protocol, welfare was assessed on 60 commercial farms in Punjab and 50 in Haryana, divided into three adult herd sizes: small ($S < 20$), medium ($M = 21-50$) and large ($L > 50$). Welfare scores in L (76.60 [± 1.70]) and M (68.40 [± 2.27]) sized herds in Punjab were higher than in S herds (60.80 [± 2.77]). In Haryana these were higher in L (68.1 [± 1.18]) than in S (60.50 [± 2.74]) and M (59.35 [± 2.17]) sized herds. The aggregate average welfare score was higher in Punjab (68.60 [± 1.49]) than in Haryana (62.65 [± 2.02]). Welfare at more than 75% of the farms in Punjab and more than 50% of those in Haryana was judged as 'acceptable.' Six welfare indicators in Punjab and eight in Haryana were most compromised. Four indicators (microclimate protection measures, availability of milking parlour, cow cleanliness and reproductive efficiency) were the most compromised indicators in both states. To improve dairy cattle welfare in these states we recommend an emphasis on improving housing and feeding conditions, especially at small and medium farms, along with heat stress amelioration measures and improving hygiene and reproductive efficiency at all farms.

Keywords: animal welfare, dairy cattle, farm size, India, welfare assessment, welfare protocol