Translating individual on-line sensors data into animal welfare parameters

Ephraim Maltz, Ilan Halachmi

Agricultural Research Organization (A.R.O.), The Institute of Agricultural Engineering, The Volcani Centre. , P. O. Box 6, Bet Dagan 50250, Israel emaltz@volcani.agri.gov.il

The dairy cow manifests its feelings and well being by behavior and physiological response. The off-the-shelf commercial individual sensors provide multivariable behavioural as well as physiological data that can be translated into well being parameters and identify welfare malfunction. The data these sensors provide can be translated into solid objective quantitative parameters that can replace the subjective impressive parameters used. This includes human-animal (milking and milking parlour), facilities-animal (free stalls, milking robot), housing-animal (space and space sharing) and management- animal (feeding, cooling) interactions. The main obstacle that prevents the practical application of the data flow into welfare improvement is the absence of reference standards that apply to the variety of conditions, housing and management, in which dairy cows live to which the inflowing information can be compared. Another problem is sensor producers is that practically prevents their combined use in commercial dairies.

To overcome the main obstacle we have to decide first what are the optimal conditions under which dairy cows live and are managed on the one hand and then quantify the information based on the different sensors data inflow under these conditions. Until then, in the ARO, The Volcani Center we concentrate on comparing behavioural and physiological variables under different condition in order to assess their welfare advantages or disadvantages. Among these studies are: lying time and lying bouts under different management (cooling systems, summer and winter) and housing (free stalls vs no stalls housing), milk let down and milkability as effected by different milking routines. In addition we quantify behavioural and physiological variables under normal local conditions and correlate diversion from normal to health and welfare problems.

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