Automatic monitoring of health and welfare through feeding behaviour: lessons learned in pigs which may also be relevant for dairy

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The authors are developing an automated warning system for health, welfare and productivity problems in growing-finishing pigs. A High Frequency Radio Frequency Identification (HF RFID) system is being used to measure the individual pigs' feeding behaviour. Abnormal changes in this behaviour are detected through Synergistic Control. During development of the system, lessons were learned that are also important to consider when measuring dairy feeding behaviour, whether for research-purposes or to develop a system for health and welfare monitoring. First of all, feeding is affected by many influencing factors such as diet, housing, feeding and drinking system, breed and environment. Animals tend to be very flexible in their feeding behaviour and large inter- and intra-individual differences exist. The best results for problem detection could thus be obtained when measurements and detection limits are specific for the individual animal, taking into account also the intra-individual variation (e.g. age and lactation stadium). Second, the type of sensor used can also influence the (measured) feeding behaviour. Examples of these influences can be given. The following questions should be considered: 'What are the advantages and limitations of this sensor?', 'Is the system properly validated for the intended purpose and are its settings suitable for my application?'. A third aspect to consider is that feeding behaviour occurs in visits and in meals. Some systems even provide registrations at the feeder or chews. Which unit you use can influence the way you look at the feeding behaviour and the results significantly. In literature, the most relevant unit or variable to use for disease detection has not yet been established. Finally, if meals are constructed, it is important to know that numerous methods exist. Some of these methods are out-dated and proven to be inaccurate, but also new and promising methods exist. There is a need for more validation of these methods, especially from a behavioural point-of-view. To conclude, four important steps need to be taken when measuring animal feeding behaviour: understand feeding and its influencing factors, choose the appropriate sensor, choose the appropriate unit and use a sound method for meal determination.

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