

Updated guidelines for the recording, evaluation, and genetic improvement of udder health in dairy cattle

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Abstract

Dairy cattle require healthy, functional udders to produce high-quality milk for human consumption and the manufacture of cheese and other products. Consumers of these products also expect their food to be produced in a manner that promotes the health and welfare of the animal. Clinical and subclinical mastitis are the most costly diseases associated with dairy production, implying that effective mastitis control and improvement programs are very important. A successful recording scheme for udder health will include the collection of information on animals, such as veterinary diagnoses and other observations about udder health, as well as udder conformation, milking speed, and culling data. Additional data are generated through milk analysis, including findings from bacteriological examination of milk samples, udder health indicators like somatic cell count (SCC), electric conductivity, and mid-infrared milk spectral data. Farm-level data include bulk tank SCC and information about the environment in which the cow is housed and milked. The current Guidelines for Recording, Evaluation, and Genetic Improvement of Udder Health (Section 7.3 in the June 2016 edition of the ICAR Guidelines) include recommendations for collection and use of some, but not all, of this information. The objective of this report is to describe changes to the ICAR udder health guidelines to incorporate current state-of-the-art knowledge for data use in management, genetic improvement, and monitoring programs. These guidelines reflect current best practices with regard to udder health that should be applied to dairy cattle populations for the improvement of health, welfare, and profitability. Somatic cell counts are the basis for most udder health improvement programs because they can be quickly and inexpensively recorded from test-day milk samples. Recent research has shown that changes in the pattern of SCC over time provide important information about udder health that is not captured by individual test-day samples, so recommendations about the collection and use of serial SCC have been incorporated into the

guidelines. Differential SCC provide information about the relative abundance of different cell types in milk and is used for detection of subclinical mastitis. The information derived from SCC data is complementary to direct observations of infection status, i.e., information on presence versus absence of clinical mastitis which may include bacteriological information about the causal organism. Improvements in technology are also supporting the increased collection of milking speed and related data, such as electrical conductivity and detection of clinical mastitis, from milking systems. Many milk testing laboratories record mid-infrared spectral data from test-day milk samples routinely, and those observations can be used to monitor udder health. Indirect observations, such as the proportion of cows culled for chronic mastitis or deficient conformation, are complementary to direct observations of disease and can be used when direct observations are unavailable. The udder health guidelines will continue to evolve as the technology available for monitoring cow performance changes and more precise phenotypes become available for lower costs, while the overall goal of providing dairy farmers with useful tools for making management and breeding decisions remains unchanged.

Keywords: clinical mastitis, recording guidelines, somatic cell count, udder health