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QUANTIFYING THE TECHNICAL AND ECONOMIC BENEFITS OF DAIRY-HERD MANAGEMENT INFORMATION SYSTEMS USING PANEL DATA

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All over the world, electronic data recording and processing facilities have developed rapidly in dairy farming. Since the beginning of the 1980 s, manual calculations have been replaced almost completely by central computer processing of herd data. A few years later, personal computer based systems became available to dairy farmers. These systems are designed to provide daily production information on individual animals levels that is of potential value in making management decisions.

Adoption of management information systems (MIS) may be an indication that farmers benefit from MIS, but it is certainly not solid evidence. More objective measures for MIS benefits are desirable as development of MIS proceeds. The information can be of use not only to farmers and veterinarians, but also to firms that design and market MIS.

Economic benefits of MIS in dairy farming were quantified using a dataset available at the Texas A and M University. The dataset contained 330 herds and 3406 observations between October 1982 and October 1995. Within this dataset, 154 herds and 2144 observations were available with a complete data record between 1882 and 1995 (so without missing values). Panel analysis was conducted through estimation of a mixed-effects model by ordinary least squares. Effects were analyzed both within farms and over farms at the same time, controlling for self-selection bias and changes over time. Adjusted for effects in the model, milk production on farms adopting MIS increased significantly by 370 Kg/cow/year (820 lbs milk/cow/year).

This paper outlines and discusses the apllied research method. First, our research approach involving a quasi-experimental, nonequivalent time-series research design is explained. Then the mixed-effects model and the results obtained are presented and discussed.

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