

Bridging the gap - Impact matrix analysis and cost-benefit calculations to improve management practices regarding health status in organic dairy farming

ALBERT SUNDRUM¹, SUSANNE HOISCHEN-TAUBNER¹

Key words: systemic approach, impact matrix, production diseases, farm level, complexity, animal health

Abstract

Animal health status in organic dairy farming does not in all respect meet consumers' expectations. Improvements are crucial to support consumers' confidence and their willingness to pay premium prices. Considering animal health as an emergent property of the whole farm system the presented project aims to increase the implementation of evidence based measures and to improve practice of health management. This will be achieved by a multidisciplinary and participatory approach to develop farm specific solutions regarding preventive measures and appropriate treatment strategies.

Introduction

Animal health status in organic farming, in general, does not differ from conventional production and as such does not meet the expectations of consumers with respect to healthy animals as a precondition of healthy food (Sundrum 2012; Cicconi-Hogan et al. 2013). Improvements are crucial to support consumers' confidence and their willingness to pay premium prices. These are urgently needed to cover the higher production costs in organic farming and thus ensure a viable European organic dairy production. Previous herd health planning has contributed to improving farm management and has prepared the ground for further advancements. However, recommended measures have often been implemented only to a low and unsatisfactory degree, differing widely between farms.

In general, production diseases are of complex aetiology. Within a farm situation health related factors are interconnected and influence each other. Accordingly, the animal health status of a farm is an emergent property of the whole farm system and cannot be explained sufficiently by single factors.

The aim of the IMPRO project (www.impro-dairy.eu) is to substantially overcome the weak points in current health management strategies on organic dairy farms and increase the possibilities for proactive herd health management. This will be achieved by a multidisciplinary and participatory approach to develop farm specific solutions regarding preventive measures and early treatment strategies.

The four years of research (2012 to 2016) will be carried out as different work packages.

Material and methods

Beside the workpackages (WP) for project management and dissemination the research topics of the IMPRO project are as follows:

WP2: On-farm assessment of effective measures by an impact matrix

A farm-centric approach, making use of a participatory process and an impact matrix, will be used to identify the measures that are likely to be the most effective to improve animal health status. This will be performed on a selection of 200 farms in four European countries. Regional workshops have been organised within a multidisciplinary framework, involving farmers' organisations, farm advisory services, veterinarians, and scientists of different disciplines to identify appropriate variables in relation to animal health on the farm level to be used in the impact matrix.

WP3: Improving monitoring and prevention on the herd level

A monitoring and adaptive prevention approach will be evaluated in 40 farms in two countries, after prior evaluation of farm specific constraints, options for management, initial health status and variables of interest in WP2. This will enable to determine the added-value of the monitoring and prevention protocols per se. Data necessary for cost-benefit analysis of the proposed protocols will be collected for WP5.

¹ Department of Animal Nutrition and Animal Health, Faculty of Organic Agricultural Science, University of Kassel, Germany, www.uni-kassel.de/agrar/tiereg, sundrum@uni-kassel.de

WP4: Manageability of alternative treatments

Protocols or decision trees for prescribing and using homeopathic remedies will be developed on the basis of the best available scientific evidence. They will then be tested on a sample of farms and compared with the outcomes of more conventional protocols on a separate sample, in the specific case of mastitis.

WP5: Socio-economic implications of changes in the management

Considering the limited availability of resources on a farm, farmers allocate resources to the risk sources which are considered to be of the highest importance. Farmers need decision support to indicate those measures that will give them the highest economic net return within the farm's constraints. Based on the recommendations derived from the impact matrix and the insights on alternative measures a cost-benefit calculation models will be developed, which makes it possible to evaluate required resources and expected benefits of recommended measures and thereby optimises the allocation of available resources.

Furthermore, in WP5 the perceived importance of animal health problems will be evaluated in relation to other sources of production risks.

WP6: Development of a software-based decision support tool

Solutions, elaborated in different work packages, will be integrated into a coherent and easily manageable software tool to support the diagnostic procedure on the farm level with respect to multi-factorial syndromes, and to identify the most appropriate measures to improve animal health.

The integration of economic analysis into the herd management software and the inclusion of a participatory consulting approach by an impact matrix represent a challenge that will lead to an innovative product to disseminate the relevant results of the project.

Results and conclusions

The approach in the IMPRO project integrates information and knowledge gained from different sources into a coherent concept, striving for a high level of fitting accuracy at different scales to the specific health problems and farm specific conditions and constraints. The objective is to achieve a high level of fitting accuracy at different scales following the key-lock-principle.

The IMPRO project will combine a number of methodological approaches for characterising the health status profile of dairy farms. It will identify and validate related variables and specific risk factors in order to assess and implement appropriate measures to achieve an improved health status. Additionally, new farming techniques associated with preventive and proactive measures will be tested in well-defined organic farming systems.

Acknowledgement

The IMPRO project receives funding from the European Union Seventh Framework Programme (FP7/2007-2013) under grant agreement n°311824.

References

- Cicconi-Hogan KM, Gamroth M, Richert R, Ruegg PL, Stiglbauer KE, Schukken YH (2013) Associations of risk factors with somatic cell count in bulk tank milk on organic and conventional dairy farms in the United States. *J Dairy Sci* 96:3689–3702.
- Sundrum A (2012) "Healthy Food" from Healthy Cows. In: Konvalina P (ed) *Organic Farming and Food Production*. InTech Book, pp 95–120, www.intechopen.com/books/organic-farming-and-food-production/-healthy-food-from-healthy-cows.