



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

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D5.5 - Policy outlining options for supporting farmers to improve animal health

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Executive Summary

The IMPRO project developed a novel farm level diagnostic approach towards improving animal health on organic dairy farms. This participatory approach, including the necessary tools, has been shown to be well-received by dairy farmers and their advisors. Given the difference in expectations of consumers and the reality of a high level of production diseases on organic dairy farms, a wider implementation of the IMPRO approach is recommended. The EU Commission, National governments, dairy processors, retailers and organic stakeholders should all play a role in further work suited to improve the currently unsatisfying situation.

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1 Introduction

1.1 Development of organic dairy production in Europe

The organic sector has been rapidly developing over the last decade. In Europe, there are now more than 330'000 organic producers. Organic farms are active both in the fruit, arable crop and livestock sectors. According to Eurostat data, all of these sectors are registering ongoing growth, most recently at an annual rate of approximately 6 percent. The European market for organic products was valued at approximately 24.3 billion Euros (North America almost 27 billion Euros). European countries have top rankings for market share and per capita consumption worldwide. The strongest increase in animal numbers between 2007 and 2013 was noted for poultry: +78 percent. However, beef and dairy cattle also grew substantially (+50 percent), followed by pigs (+32 percent) and sheep (+29 percent). The number of organic cattle in the EU-28 registered a 12% annual growth from 2005 to 2011. In the EU-15, the organic sector represents 3.7% of all dairy cows¹.

While market prices of conventionally-produced milk are currently facing a dramatic decline because of global over-supply, prices for organic dairy products – although already at a high level for years - are still increasing, resulting in a considerable price premium per kg of milk. The existence of this price premium reflects, in part, consumer expectations that they are compensating farmers for higher expenditure on animal health and welfare, with the expectation that these states are better under organic than conventional systems. While organic production is characterised by an enhanced level of minimum standards that go beyond the conventional level, the price gap raises the question of whether organic producers actually do offer a higher level of animal health and welfare. The willingness of consumers to continue to pay such premium prices will depend on the availability of evidence to support these expectations.

1.2 Why do we need a new approach to health management?

As a process quality, animal health plays a major role for the confidence of consumers in organic products of animal origin. Due to its complexity, this issue cannot be addressed directly but requires manageable procedures and operationalisable objectives. The absence of disease is a necessary - though not a sufficient – condition of animal health which can be assessed and managed. In this respect, production diseases (PD) (e.g. mastitis, metabolic and fertility disorders and lameness) are the main cause of health problems in dairy herds. Thus, reducing the prevalence of PD provides a good operational approach for the improvement of animal health. In the IMPRO project, a tool has been created which provides insights into the current state of selected PD, using data from monthly milk records without being dependent on the assessment of comprehensive and time consuming farm protocols.

Results of on-farm assessments in four different European countries, carried out in the IMPRO project revealed that the prevalence of PD on organic dairy farms, in general, does not differ from those found in conventional dairy production. Confirming the results of recent extensive literature reviews^{2, 3}, it has been verified that the approach of enhanced minimum standards in organic farming is not suited to promote an increased animal health status. Furthermore, variations regarding the prevalence of production diseases among organic dairy farms were very large both

¹FIBL and IFOAM. The world of organic agriculture. Statistics and emerging trends 2015. <http://www.organic-world.net/yearbook-2015.html>.

²Sundrum, A. 2014. Organic Livestock Production. Encyclopedia of Agriculture and Food Systems, Vol. 4, San Diego: Elsevier; pp. 287-303.

³Van Wagenberg, C.P.A., Y. de Haas, H. Hogeveen, M.M. van Krimpen, M.P.M. Meuwissen, C.E. van Middelaar, and Rodenburg, T.B.. 2016. Lessons learned from comparing conventional and organic livestock husbandry for sustainable production. Wageningen UR Report (in press).

within, and between, countries. The fact that the organic label covers quite heterogeneous process qualities and that premium prices are paid for quite different levels of performance contradicts not only organic principles of health but also those of fairness.

As the reality of health status in organic dairy farming does not necessarily meet consumers' expectations, consumers will sooner or later come to realize the value-reality gap and might react by a noticeable buying restraint. Thus, improvements to the health of organic livestock are crucial to support consumers' confidence and their willingness to pay premium prices, which are essential for organic farmers to cover their higher production costs. However, it cannot be expected that a further enhancement of minimum standards (more of the same approach) is suited to improve the animal health status. Consequently, a new approach is required which provides commercially viable and target-oriented incentives to organic producers to develop further a fair and sustainable brand label.

2 What is new about the *equifinal* approach of IMPRO?

Previous herd health planning concepts have prepared the ground for advancements beyond the concept of minimum standards. However, one of the main barriers to the achievement of improvements are the very heterogeneous rearing conditions on organic farms in Europe. Correspondingly, generalised recommendations for health measures are often ineffective and inefficient, and this can counteract the preparedness of farmers to invest in improving animal health status. Furthermore, efforts to implement preventive measures can be costly and this is a particular barrier when farmers don't know if a return on their investment is likely. Due to the fact that the milk price does not vary according to the prevalence of production diseases or the efforts and investments in health management that farmers are making, preparedness to improve the situation is discouraged with long-term damaging effects.

To improve health management and to develop evidence based strategies, the IMPRO project has dealt with relevant weak points in current strategies in health management on organic dairy farms. These weaknesses are grounded in the fact that farmers in most European Countries do not have a detailed knowledge of the current prevalence of production diseases on their farm and on other organic farms. Farmers are often not fully aware which health issue they should prioritize and the efficiency of different measures to combat particular problems and which resources (skills, capital, and labour) are needed and which investments are suited to provide an appropriate return on investments. In general, this information is farm specific and not accessible by general scientific knowledge or published advisory recommendations.

These barriers have been addressed by a multidisciplinary and participatory approach, taking into account the need to develop farm specific solutions. The approach is based on the following:

- Development of the impact matrix as a participatory and farm-centric tool for diagnostic work on the farm level, identifying the most effective measures to improve animal health;
- Evaluation of farm-specific costs and incentives of farmers through estimation of the benefits of recommended measures, optimised to resources;
- Examination of the motivation and attitudes of farmers, involved in health management practice;
- Elaboration of benchmarks for achievable levels for the prevalence of production diseases;
- Development of a pro-active monitoring protocol aimed at the improvement of effectiveness of preventive and treatment strategies and for a reduction in the use of allopathic remedies;
- Assessment of the manageability of alternative treatments according to the state-of-the-art;
- Development of a software-based tool including health monitoring, farm diagnostic procedures, cost-benefit calculation, and break-even analysis.

The *equifinal* approach of IMPRO is based on the principle that, in open systems, a given end state can be reached by many potential means. It emphasizes that the same end state may be achieved via many different paths or trajectories. While in closed systems, a direct cause-and-effect relationship exists between the initial condition and the final state of the system, open systems operate quite differently. Farm systems, as open systems by nature, can ensure a high adaptability of farm animals to heterogeneous living conditions and can achieve a low level of production diseases with different initial conditions and in many different ways⁴. A low PD-level is the outcome of complex interactions between various factors within the farm system and which can be strived for by appropriate farm management. From the farmer's perspective, it is most important that he/she is encouraged to envisage the goal of a low PD-level if it is mandatory for all other organic competitors. However, competition would only be effective if there were some impact on market returns of higher health state. Unfortunately, there is no such market mechanism at present. Thus, the motivation of farmers is limited to the realisation of more aspirational targets for health states; an improved understanding of the potential and means to reduce sub-optimal health states; a desire to reduce economic losses from sub-optimal health states; and a desire to achieve these health gains at least cost.

2.1 Our participatory approach

A sound diagnostic procedure at the farm level is an essential precondition to identify the most appropriate treatments and management measures to improve animal health. The farm specific interconnectedness of health related variables are assessed within the approach of IMPRO using an impact matrix. The impact matrix serves as an innovative diagnostic tool to narrow down relevant factors involved in the development of multi-factorial production diseases at the farm level. Simultaneously, farm specific options and constraints to improve animal health status are identified. The impact matrix is based on a participatory approach, involving farmers, veterinarians, and advisors. It is used to gain a comprehensive insight from these different perspectives and achieve agreement about a ranking order of the measures that are expected to most likely improve animal health in the farm. The procedure enables a validated identification of the most effective measures in the context of individual farms, expected to improve the prevalence of production diseases and replacement rates. In the IMPRO project, tools have been developed to apply the proposed participatory approach. Initially, versions of these innovative diagnostic tools were applied on almost 200 organic dairy farms in France, Germany, Spain and Sweden. From this application, it was concluded that farmers and their (veterinary) advisors saw this approach as useful. Moreover, preliminary results of interviews about adoption of suggested preventive measures, indicated that 95% of the farmers did implement one or more new preventive health measures.

2.2 Implementation is both crucial and difficult

The IMPRO project delivers a novel participatory approach including the accompanying tools that can be used to improve animal health on organic dairy farms. Implementation of the participatory approach to animal health management on organic dairy farms will be both crucial to successful improvement of health status and difficult. The initial barrier will be farmers actually realising they have a problem and, then making the decision to change their practices. This decision, once taken, can then be brought into implementation with assistance from the farmers' advisors and veterinarians, if consulted. However, it should be realised by policy-makers that organic dairy farmers in the EU are a diverse group who approach their farming from a range of different perspectives with varying goals and values. Farmers also vary in age, training and levels of financial

⁴ For further details see: Sundrum, A. 2015. Metabolic disorders in the transition period indicate that the dairy cows' ability to adapt is overstressed. *Animals* 5, 978-1020.

resources. The level of implementation depends on farmers' motivation to do so as well as on their advisors' beliefs in a new approach.

Advisors and veterinarians will need to assess whether the farmer they are advising in our recommended participatory approach is concerned about their animal health status either from a welfare approach, or a financial one, or both. Whichever standpoint the farmers come from, it is likely that the cost effectiveness of the recommended change measures should be stressed in order to achieve full 'buy in' by farmers. It is well known that it is not easy to change people's beliefs and farm routines with regard to animal health. Moreover, it has been shown (amongst others in the IMPRO project) that these beliefs and habits greatly differ between farms as well as between advisors. Therefore, support is needed to overcome resistance and/or barriers to change their habits and beliefs. Given the results of the IMPRO project so far, we are convinced that the new *equifinal* approach will be of great benefit to the health of dairy cows in the organic dairy system.

3 Policy recommendations

In the sections that follow, policy recommendations are made that are appropriate to different levels of governance and types of organisation.

3.1 European Commission

The large variation among organic dairy farms regarding the prevalence of PD is not at par with consumers' expectations with respect to added values and premium prices justifying them. Moreover, it is to some degree in conflict with the ethos of a brand label reflecting greater homogeneity in particular traits. When striving for a fostering of organic agriculture, it is recommended that the EC focus its efforts on measures which narrow the range of variation in health state between farms by raising the performance of those farms with below-average performance.

Such large variation resembles unfair competition as organic farmers receive the same price for their products although the quality in terms of animal health and welfare and product quality is different. Those farmers producing products with lower production costs while risking a higher prevalence of production diseases are favoured towards those farmers who invest effort and money without obtaining premium prices for a higher quality. Thus, 'unfair' competition is a relevant barrier for any improvements. To reduce and prevent unfair competition, regular monitoring of health data (including milk recording data) is required, demanding a unique methodology to estimate and assess health data and establish independent data surveillance as part of the certification process. Tools have been elaborated in the IMPRO project that might serve as the basis of such monitoring approaches.

To support the organic agriculture movement to improve the animal health and welfare situation, we recommend that this issue should be directly addressed in the EC organic regulation as a self-contained aim of the production process. The minimum standards should be supplemented by target values with respect to the prevalence of production diseases which should not be exceeded without facing consequences. This provides orientation for both, producers, retailers and consumers.

Moreover, the European Commission may support a large scale European project, rolling out of the developed participatory approach, and designed in such a way that a thorough effectiveness analysis can be carried out. Research into effective and fair methods to change the milk payment

system is needed so that farmers who do pay good attention to animal health will be rewarded, could support the supply chain approach towards this problem.

3.2 National governments

Governments through their Ministries of Agriculture would need to take the lead by publicly backing the participatory approach in various media used by farmers. In the few EU countries where a state-funded advisory service exists (e.g. Ireland), direct funding could be provided for this purpose; in others, some financial help could be given to the commercial advisory organisations for this. To counteract the development of unfair competition between farmers and to provide reference values for orientation, the National governments should establish a monitoring system regarding the prevalence of selected production diseases on organic dairy farms.

3.3 Dairy processors, manufacturers and retailers

Consumers, and their representative bodies, might in due course demand improved herd health in those supplying their dairy produce. A study to survey consumers' acceptability under this scenario would be helpful. In addition, consumers might possibly be prepared to pay more for produce emanating from such a background. Thus, the processors, manufacturers and retailers should be encouraged to force change on farmers regarding animal health through a two-pronged approach e.g. by offering bonuses for good health and penalties for a poor health status on-farm.

Such stakeholders should be reminded that poor health risks a loss of confidence by consumers who purchase organic products and may lead to a loss of sales and competitive advantage. Dairy processors and retailers should look at their payment system and think about methods to bring the milk payment system more in line with the value items of the organic dairy products they produce.

3.4 Other organic stakeholders

For many customers, a low level of PD is a trait of process quality. This trait is closely related to the demand of consumers for "healthy products from healthy animals"⁵, encompassing the issues of animal welfare and food safety. Professional bodies involved in livestock farming, such as national governing bodies for veterinarians, farm advisors and farm costing services should provide courses and advice on the participatory approach. Farm assurance schemes should also be encouraged to promote, or insist on the participatory adoption approach as a condition of membership. Marketing orders and agreements would allow producers to promote orderly marketing through collectively influencing the supply, demand or price of a particular commodity. A possible binding market order could enclose different grades within the organic production, e.g. milk products from farms which differ in their prevalence of PD.

4 Conclusions

The IMPRO project developed a novel farm level diagnostic approach towards the improvement of animal health on organic dairy farms. This participatory approach, including the necessary tools, has shown to be well received by dairy farmers and their advisors. Given the difference in expectations of consumers and the reality with respect to production diseases on organic dairy farms, a wider implementation of the IMPRO approach is recommended. The European Commission, National governments, dairy processors, retail and other organic stakeholders all should play a role in further processes that are suited to improve the currently unsatisfying situation.

⁵ For further details see Sundrum, A. 2012. "Healthy food" from healthy cows. In: Konvalina, P. (ed.), Organic Farming and Food Production. InTech Book, p. 95-120. <http://www.intechopen.com/books/organic-farming-and-food-production/-healthy-food-from-healthy-cows>.