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Editorial: Animal welfare and economic sustainability of farms

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Editorial on the Research Topic

Animal welfare and the economic sustainability of farms

Introduction

From the perspective of the farmer, increasing animal productivity has been a time-tested method to mitigate the price versus cost of production pressure and support the economic sustainability of the farm. The emphasis on production performance and production efficiency of farm animals has been criticized for compromising animal welfare (Hartcher and Lum (2020) on meat chickens). This paradigm has resulted in calls for changes in farm animal production systems. Moreover, animal welfare is being integrated with environmental sustainability (Lanzoni et al., 2023), including sustainable food production strategies (Bracke et al., 2023), all of which impact farm economic sustainability.

Scientists have found that improvements in animal welfare can be facilitated by changes to entire or parts of the working farm. The willingness of farmers to produce in this way (Balzani and Hanlon, 2020) and consumers' perceptions and willingness to accept trade-offs for these positive attributes are developing areas of research (Schütz et al., 2023). Furthermore, data-driven animal welfare assessment protocols like Welfare Quality® offer a potential methodological tool to disentangle the complex relationship between animal performance and animal welfare (Welfare Quality®, Lelystad: Welfare Quality® Consortium).

In this Research Topic, five papers tackle problems of animal welfare and farm economic sustainability. The first paper (Hemsworth et al.) reviews the empirical evidence concerning the welfare needs of lactating sows and piglets. The next two papers explore alternative management practices and assess the economic costs and benefits to farmers. One explores the economic viability of three different dairy cow-calf contact systems (Alvåsen et al.) and the other investigates the potential economic advantage of extending the egg-laying cycle in cage-free hens (Traore and Doyon). The remaining two papers focus on animal welfare assessments. One evaluates a sheep welfare assessment protocol for use by Mediterranean sheep producers (Parés et al.) and the final paper (Vissers et al.) reports a novel method for building the costs of animal welfare assessment into the production costs of the farm.

The first step is to identify whether production and housing practices need to change to improve animal welfare. The next step is to evaluate the impact on the economic sustainability of the farm.

A starting point for navigating a complex issue like animal welfare is to acquire a clear scientific understanding of what we know and do not know about the welfare of animals housed and managed within a production system. Scientific research has focused on identifying welfare parameters and conditions that are important for gestating sows and gilts. Conventional farrowing/lactation housing also subjects sows and their piglets to intensive confinement and is likely to incur similar criticism. [Hemsworth et al.](#) provide a critical review of the published scientific literature on the welfare of pre- and post-partum sows and piglets. The focus of their review is on how housing and positive human interactions influence the welfare of lactating sows and piglets.

Animal welfare concerns in dairy production have focused on the accommodation of natural behaviors and living conditions such as access to grazing and social interaction ([Beaver et al., 2020](#)). Conventional and organic farmers have adopted the practice of early cow-calf separation to protect calf health and facilitate economic efficiency. [Alvåsen et al.](#) fill an important knowledge gap by assessing the short-term economic consequences of leaving dairy cows in contact with their calves. Using a stochastic approach, they determine the short-term costs of employing three types of cow-calf contact systems.

The egg production cycle for a commercial laying hen is between 65 and 80 weeks after the start of laying. Typically, hens are culled when the production cycle is complete. Based on modern hen productivity, there is an opportunity to extend the laying cycle to benefit environmental sustainability through the conservation of natural resources. The impacts of extending the laying period on hen physiology and egg quality have been the focus of recent scientific research ([Alfonso-Carrillo et al., 2021](#)). However, demonstrating the economic benefits of extending the lay period is equally important to egg farmers. [Traore and Doyon](#) explored the economic sustainability of extending the egg production cycle under Canada's managed supply system. They used a partial budgeting model, two scenarios for analytical modeling, and mathematical modeling to determine the optimal laying cycle for hens housed in aviaries in Canada.

The tools developed for animal welfare assessment must be validated to ensure their integrity and usefulness and incorporated into the production costs of the farm

The heterogeneity of sheep production ([Morris, 2017](#)) across Europe presents a challenge to the development of a single animal welfare assessment tool for sheep farmers. Small ruminant welfare assessment protocols are not included in the Welfare Quality® program ([Welfare Quality®, Lelystad: Welfare Quality® Consortium](#)). To fill this void, a common sheep assessment protocol has been developed within the Animal Welfare

Indicators Project ([Dwyer et al., 2015](#)). Mediterranean breeds of sheep are managed differently and exhibit physical and behavioral differences from the other European breeds. With the breed and management differences in mind, [Parés et al.](#) evaluated the welfare of meat sheep on 100 sheep farms in Spain using the protocol developed by the Animal Welfare Indicators Project for sheep.

In the majority of cases, farmers are expected to absorb the costs of implementing on-farm changes to improve animal welfare and the third-party audits that will determine their compliance. The Welfare Quality® protocol is the oldest scientifically developed data-driven animal welfare assessment tool for common species of livestock and poultry ([Welfare Quality®, Lelystad: Welfare Quality® Consortium](#)). Using a case study approach, [Vissers et al.](#) estimate the external costs of animal welfare using a cost function that determines the relationship between the Welfare Quality® score of farm-level production and the cost of on-farm investments to improve animal welfare ([Welfare Quality®, Lelystad: Welfare Quality® Consortium](#)).

Conclusion

Farm animal housing systems and management practices are of growing concern to citizens. The value of scientific evidence in determining what needs to change and in elucidating the impacts on the economic sustainability of farms should not be underestimated. There is a role for validated data-driven assessment tools to assist in teasing out the benefits and tensions between on-farm improvements in animal welfare and the economic sustainability of farms.

Author contributions

JS: Writing – original draft, Writing – review & editing.

Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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