Estimating society's economic welfare of an animal disease

SRUC

The Challenge

Animal diseases impact the productivity and financial profitability of affected farms. While evaluating economic welfare associated with animal health is particularly important from various perspectives, the cost of many livestock diseases is usually not estimated beyond the farmgate. The aim of this study was to develop and apply a modelling framework to analyse the distribution of economic welfare among stakeholders associated with Johne's disease in Scotland.

Policy Implication

The economic winners and losers can be used as a decision-support tool for policymakers to prioritise animal health intervention. This research goes beyond the farm level to provide perspectives on the wider costs of a disease at the national-level and the economic burden that consumers and producers experience. This economic welfare framework can be extended to cover a longer time horizon needed for assessing the impacts of endemic diseases, such as Johne's, and any control and eradication campaign. It can also be applied to alternative diseases to examine the relative economic impact of outbreaks, or eradication, of a disease among stakeholders.

Research

Using an epidemiological and economic welfare model we estimated the changes in economic welfare after a year associated with Johne's disease in Scotland for dairy producers of infected herds, producers of uninfected herds, and milk consumers. Sensitivity analysis evaluated changes in economic welfare associated with a range of input parameter values obtained from literature.

Results

An overall loss of £1.61M was estimated for Scotland, as a consequence of Johne's disease in the national dairy herd. Milk consumers experience the largest economic loss associated with the presence of Johne's. Producers of infected herds also incur economic losses, suggesting that the higher market price of milk is not sufficient to offset losses incurred from reduced yield and higher costs. Conversely, producers of uninfected herds actually benefit from higher market prices because they do not incur additional production costs.

Loss per infected animal (£37.01) was two times larger than for an uninfected producer's gain (£16.23) from Johne's disease (Table 1). A Johne's eradication scheme would favour milk consumers and farmers of infected herds, who experience economic losses. However, such benefits may be partially offset as uninfected producers lose their comparative advantage.

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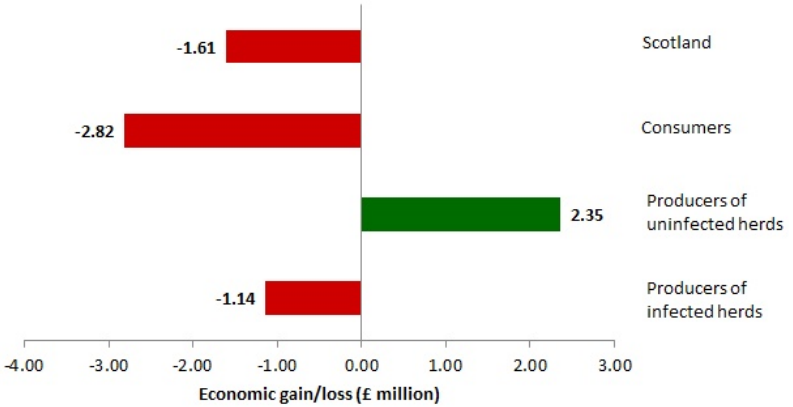

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About

The Land Economy, Environment and Society (LEES) Research Group is one of the largest groupings of economists and social scientists working in the rural, agricultural and land based sectors in the UK. Our vision is to be recognised as one of the leading centres for agricultural and wider rural economic and social research globally, benefiting the land use sector, the environment and rural communities.