Research Fellowship

Economic analysis of the Bluetongue disease impacts on the Italian sheep industry and the National Health System

Research project

This research fellowship will support the activities of the project on “Cost assessment of the Bluetongue disease (BT) for the Italian sheep industry and the National Health System” (IZS AM 05/17 RC) co-ordinated by the Istituto Zooprofilattico Sperimentale dell’Abruzzo e del Molise in partnership with the Department of Agricultural and Food Technology of the University of Bologna, the Istituto Zooprofilattico Sperimentale della Toscana e del Lazio and the Istituto Zooprofilattico Sperimentale della Sardegna. In Italy, BT virus (BTV) was firstly detected in 2000 in Sardinia, and since then at least 12 epidemic seasons of varied intensity and extent have occurred with more than 50,000 outbreaks reported nationwide. BT is a disease with potential economic consequences and is qualified as notifiable disease by the World Organisation for Animal Health (OIE). The global BT economic impact has been estimated in 3 billion USD losses per year. BT losses may be classified as direct losses (directly affecting livestock production such as reduced milk yields, reduced fertility, abortions, weight losses, reduced meat production, and increased mortality) and indirect losses (e.g. costs of vaccines and of disease surveillance and control activities, lost revenues due to trade restrictions, etc.).

The scientific literature provides scarce information about the specific prevailing economic consequences of BT in both endemic and epidemic situations. In endemic areas, although the incursion of a virulent BTV strain may cause significant clinical outbreaks, BT consequences are mostly limited to flock fertility and possibly vaccination costs. In epidemic situations the impact of BT is much greater, since the presence of immunologically naive animals can cause very high mortality and the economic consequences can be aggravated by reproductive problems – especially in the situations where even small losses in the annual production of lambs and kids may represent a risk for farms’ economic sustainability – and by milk production decrease. Furthermore, the health measures to be adopted, such as vaccination campaigns and restrictions to animal mobility and trade of animal products, make indirect losses, in perspective, much more important than production losses. The understanding of these dynamics and a quantification of both direct and indirect losses are needed to develop economic models that support decision makers in the implementation of disease control strategies that allocate efficiently the financial resources available.

Italy has been affected by BT because of its geographical position and epidemiological situation and is constantly exposed to the risk of new outbreaks. National vaccination campaigns were carried out to tackle annual BTV incursions, but recently, due to financial and organizational constraints, vaccination of sensitive animals against circulating BTV serotypes is implemented in accordance with regional plans. Nevertheless, information on BT economic losses in Italy is not available yet and most of the economic data existing in the scientific literature cannot be directly applied to the Italian situation. Therefore, a comprehensive assessment of the BT economic impact in Italy is suitable to develop more efficient surveillance, prevention and control activities.

The project aims to assess the cost of BT for Italian sheep industry and for the National Health System based on retrospective and prospective studies. The retrospective studies will proceed to the analysis of farm data collected by the National Information System from BT affected regions, in both endemic and epidemic situations. The perspective study will examine the effects of the disease in sheep farms and at the supply chain level in endemic regions and in areas under BTV outbreak. The economic analysis will evaluate (i) the BT losses in selected sheep farms and at the supply chain level on a retrospective and perspective basis, (ii) the cost of BT surveillance and control measures under
different scenarios and the effectiveness of the proposed measures by comparing costs and benefits to provide a rational basis for decision-making.

Plan of activities

Under the direction and supervision of the fellowship tutor and of the responsible of the research for the University of Bologna and in cooperation with the partner institutions, the holder of the research fellowship will perform the following activities:

- To identify, in cooperation with the partner institutions, the areas and the sheep farms to be submitted to retrospective and prospective analyses;
- To elaborate, in cooperation with the partner institutions, the conceptual model for the economic assessment of BT impacts at different levels (sheep farms and sheep products’ supply chain on a regional scale);
- To design, in cooperation with the partner institutions, data collection and questionnaires for farm surveys according to the requirements for the economic assessment of BT losses (direct and indirect) and intervention strategies’ effects;
- To define criteria and parameters for the assessment of the costs attributable to the disease, and for the development of a cost-benefit analysis of the identified intervention strategies;
- Description and economic quantification of direct losses at the farm, sheep products’ supply chain and territorial levels (region) on the basis of the conceptual model and the related specifications, (e.g. speed of diffusion, risk, extension of outbreaks, etc.);
- Evaluation of BT economic losses on different scenarios (mainly based on risk analysis);
- Calculation of the costs and benefits of the identified intervention strategies;
- Elements of economic evaluation from a socio-economic perspective, in qualitative terms.