Student’s maps to help Pakistani chicken farmers minimise bird flu risk

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Hassaan Bin Aslam’s studies exploring the structure of the chicken industry in Pakistan have generated maps of chicken production systems and value chains which can be used by scientists and policymakers seeking to identify and implement interventions to keep the country free of avian influenza (bird flu).

Chicken meat and eggs are affordable sources of animal protein and important micronutrients. To meet the increasing demand for them, chicken production is growing rapidly and now is the second-largest industry in Pakistan.

However, infectious diseases like avian influenza (AI) can lead to economic losses for farmers, reduce animal welfare, disturb the supply of products and slow the industry’s growth. Among AI viruses, low pathogenic avian influenza (LPAI) subtype H9N2 is endemic in flocks in Pakistan, where it causes sickness in the birds, threatening the livelihoods of farmers and others involved in chicken production. It also has the potential to mutate into forms that can infect chickens and people at the same time, which could result in even greater losses for farmers and have serious implications for public health.

Hassaan, a veterinarian and microbiologist from Pakistan, was one of 16 students accepted on to the ZELS-AS programme, a PhD scholarship associated with the ZELS projects, in his case the Combating bird flu by developing new diagnostic tools and vaccines project. Hassaan’s work involved characterising the chicken industry in Pakistan, estimating the socioeconomic impact of LPAI and considering vaccination in chicken production systems. It also explored the potential barriers to farmer take-up of LPAI control interventions such as vaccination.

He undertook his fieldwork in Punjab province, where 70% of Pakistan’s chicken production takes place. He surveyed 274 chicken farmers over five months, generating data from which he produced detailed chicken production systems maps, including the distribution and marketing channels, flows of products and stakeholders involved. The data were also used in economic models to quantify the impacts of LPAI and the cost-effectiveness of vaccinating birds.

These maps can now be used by the scientific community and policymakers to identify how the virus may spread and where disease may have the biggest impact. They can be useful to identify points where interventions such as vaccination, suitable dead bird disposal and improved sanitation practices can be targeted.

Hassaan’s PhD work will also inform policy reforms for the successful control of diseases in chicken production. Simplified versions of his models are being introduced to chicken farmers for use as decision-making tools when choosing best farming practices and economically efficient disease control measures.

In addition, the research has laid the path for using such interdisciplinary modelling approaches for addressing potential barriers in technology uptake not only for LPAI but also for other chicken diseases such as High Pathogenic Avian Influenza (HPAI) and Newcastle disease.