

# *les dossiers* d'**AGROPOLIS** INTERNATIONAL

*Expertise of the scientific community  
in the Languedoc-Roussillon region (France)*



## Family farming





▲ A small flock of geese tended by a young boy. Alaotra Lake, Madagascar.

► A Khmer farmer and her buffalo in Svay Rieng province, Cambodia.

## Monitoring endemic and epidemic diseases—Newcastle disease (Madagascar) and foot-and-mouth disease (Southeast Asia)

CIRAD (UPR AGIRs and UMR MOISA) and partners are conducting two epidemiological research projects on Newcastle disease and foot-and-mouth disease to gain insight into the risks of disease outbreaks and improve strategies for controlling these diseases.

Newcastle disease is a heavy economic constraint for small family poultry farms in Madagascar. Surveillance and early detection of epizootic diseases is a major challenge to meet in order to reduce morbidity and mortality of poultry due to the disease and thus improve livestock farmers' livelihoods. Vaccinations, which are performed only occasionally due to problems of cost and accessibility, do not significantly reduce the disease impact on the household economy. Formal and informal marketing channels are the main mode of Newcastle disease spread between villages, and markets are key sites for disease control and surveillance. Under the GRIPAVI project\*, a study (Alaotra Lake region) was carried out that combined an analysis of marketing channels and outbreaks of the disease in order to identify central markets through which most poultry passes on the way to secondary markets. Targeted surveillance of these markets would enable early detection of mortality and/or morbidity due to the disease. Market closure and/or disinfection would quickly stall the spread of the disease along trade routes. A study of the sensitivity of this type of surveillance is under way.

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Under the REVASIA programme\*\*, a participatory approach was developed to describe the epidemiological situation regarding foot-and-mouth disease in different Cambodian villages (Svay Rieng Province). In 2010, 138 outbreaks were reported in 19 provinces, with more than 59 000 animals affected. These figures are certainly underestimated since impacts of the disease are spread over time and are not perceived directly by farmers. Regarding these constraints, it is difficult to determine the real situation of the disease and its patterns, thus also limiting the development of control strategies. Participatory epidemiology could overcome these shortcomings. This approach is based on the triangulation principle whereby several data recovery sources are mapped—local knowledge, scientific observations, secondary sources—and allowing quality control of the results. Serological assays performed in parallel to the surveys help to validate farmers' responses and to estimate the sensitivity of the participatory method. This approach was found to be useful for understanding economic factors affecting disease management by farmers. Its widespread use would get farmers more involved by boosting their awareness on the real impact of the disease, while helping managers develop control methods tailored to the disease patterns.

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\* Ecology and epidemiology of avian influenza in developing countries: <http://gripavi.cirad.fr>

\*\* Research for Evaluation of Avian Influenza Surveillance in South East Asia: [www.grease-network.org/main-projects/on-going/revasia](http://www.grease-network.org/main-projects/on-going/revasia)