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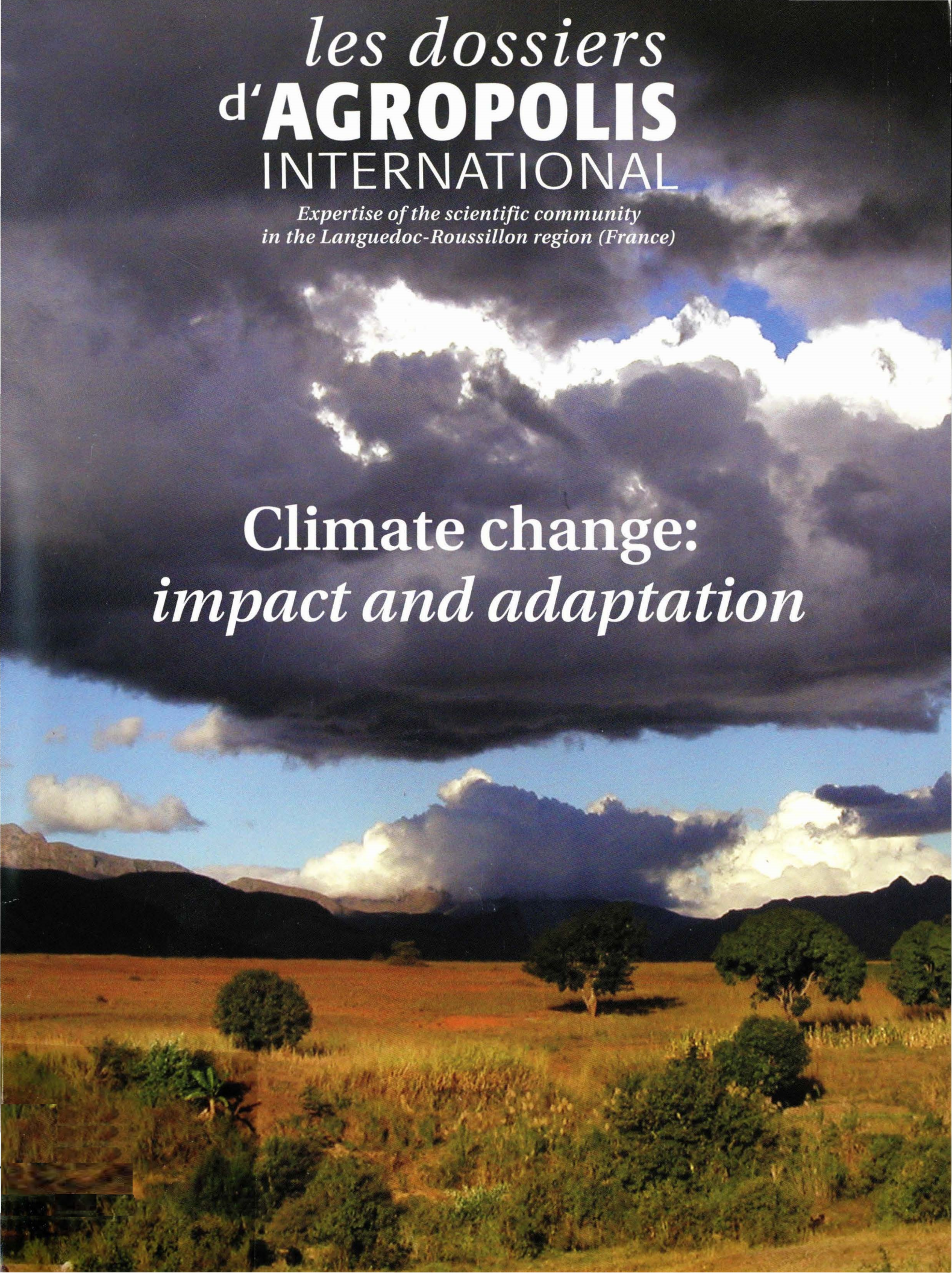
Expertise of the scientific community in the Languedoc-Roussillon region (France)

Climate change: *impact and adaptation*



▲ *Capturing a buffalo in Zimbabwe.*
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Managing animal health to mitigate epizootic disease risks

The aim of the **research unit *Animal and Integrated Risk Management* (UR AGIRS – CIRAD)** is to understand, predict and manage health risks associated with domestic and wild animals in developing countries in a changing global setting (environmental simplification, biodiversity loss, urbanization, deforestation, trade globalization and global warming). A large body of methods are used to achieve this: descriptive epidemiology, ecology, geomatics, biostatistics, health geography, anthropology, quantitative epidemiology and modelling of complex systems.

Two complementary approaches are jointly implemented within the programmes and projects carried out on various AGIRS study sites in Southeast Asia, Southern Africa, Madagascar and the Mediterranean Basin.

The first approach aims to identify factors that determine the behaviour, as well as the spatiotemporal patterns, of animal diseases (zoonotic or not) that have marked health and economic impacts. These diseases may be emerging, endemic, vector-borne or directly transmitted (avian influenza, foot-and-mouth disease, tuberculosis, African swine fever, Rift Valley fever, *etc.*). These diseases—by the mortality, morbidity or decreased milk or meat production that they cause—weigh heavily on the economy and subsistence capacity of small family livestock farms.

The second approach is focused on the functioning of socioecosystems in which hosts (wild and domestic animals, humans, i.e. farmers and/or consumers) and pathogens coexist. The aims are to assess the animal and public health risks and develop methods for managing these risks (monitoring and control) that are tailored and optimised for the targeted socioecosystems. It is essential to be ready to react quickly upon the emergence of an epizootic disease to ensure efficient control of animal diseases. Meeting this challenge is crucial in developing countries where resources (specific expertise, funding, computer tools, *etc.*) are limited.

AGIRS has close collaborations with many partner research and development institutes in France and in developing countries (Africa and Asia) while also being involved in several international networks. ■

Health strategies and policies under climate change

The necessary adaptation of health strategies and policies in response to climate change is part of a broader setting of global change concerning increased demand for animal products and their trade globalisation, as well as the impact of many key environmental, socioeconomic and climatic factors on human and animal health. These contextual elements boost the risk of the emergence, spread and maintenance of parasitic and infectious animal and zoonotic diseases. Through adaptation measures, it is therefore essential to increase the resilience of livestock production and health sectors against climate-sensitive diseases.

This adaptation requires disease prioritization, risk assessment, and risk reduction methods (monitoring, prevention and control), supported by *ad hoc* legislation under a 'one health' approach. Research conducted by AGIRS is hinged on all of these dimensions. The unit focuses specifically on optimising monitoring through research projects in Southeast Asia and Europe.

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