

Abstract of the talk

Session 2 : Forecasting the impact of global environmental changes on livestock

Quantification of the impact of climate change on animal health: effects on pathogens, vectors, and hosts

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Short CV

Renaud Lancelot is a French veterinary epidemiologist with a PhD in population biology and ecology. He is the deputy director, as well as the epidemiology team leader, in the INRA-CIRAD research unit “Control of emerging and exotic animal diseases” (Montpellier, France): <http://umr-cmaee.cirad.fr/>. He has a 30-year experience in the epidemiology of animal and zoonotic diseases, including 20 years of field work in French Guiana, Mauritania, Chad, Senegal, and Madagascar. Since 2006, he has been coordinating the large collaborative European projects EDEN (Emerging diseases in a changing European environment) and EDENext (Biology and control of vector-borne infections) (<http://www.edenext.eu/>). His current research interests are in the epidemiology and modelling of peste des petits ruminants, Rift Valley fever, and tsetse flies. He is the author of > 150 scientific publications, communications, books and statistical software.

Abstract

Several animal or zoonotic emerging infectious disease (EID) events were recently caused by vector-borne pathogens, e.g. bluetongue virus transmitted by biting midges, or tick-borne encephalitis in Europe. The effects of climate changes have been put forward to explain these events. Because the bio-ecological features of arthropod vectors make them highly sensitive to environmental conditions, vector-borne diseases are ideal candidates to assess the effect of climate changes on EID. The question was extensively studied these last years. Results show that each EID is a special case and involves a complex network of interacting causes. In several cases, socio-economic changes, including the intensification of trade and travels, were found to have a dominant effect over climate changes.

Conversely, the indirect effects of climate changes on animal health have been rarely studied so far. For instance, regarding northern and sub-Saharan Africa, climate-change scenarios often point to important consequences on farming systems (e.g., greater importance of small ruminants with respect to cattle) and urbanization. These changes will cause major changes in transboundary livestock trade, thus allowing the introduction of pathogens (and their possible vectors) into previously free areas. This is a further illustration of the need to better control animal diseases in their geographic are of endemicity, and to improve surveillance and preparedness for early warning and reaction in case of high risk of EID.

