



New livestock disease threats



Upsurges in animal disease emergencies worldwide are linked to the increased mobility of people, goods and livestock, changes in farming systems and climate, and the weakening of many livestock health services. In both developed and developing countries, outbreaks have sometimes eluded the attention of central veterinary authorities for days or even months, allowing them to spread unchecked. The result has been unnecessary production losses, and growing difficulty in mounting effective control and disease eradication campaigns. These trends indicate that early warning is one of the weakest links in disease surveillance systems, at the national, regional and international levels.

For that reason, FAO, in partnership with the International Office of Epizootics and the World Health Organisation, is now developing proposals for a Global Early Warning System on Transboundary Animal Diseases (TADs) that would combine the OIE's official disease-reporting system with "innovative methods of disease intelligence". The system would be tightly focused on major epizootics - such as foot-and-mouth disease, rinderpest, Rift Valley fever, African swine fever and avian influenza - and would build on existing national and international disease reporting structures. It would also use a mix of formal and informal techniques, including comprehensive sero-monitoring, abattoir monitoring and incentive-aided disease searching.

Traditional approaches. FAO's Emergency Prevention System (EMPRES), which has eight years experience in fighting animal disease outbreaks, has pinpointed key weaknesses in veterinary epidemiology's traditional approach to disease introduction and geographical distribution. For example, the 1997 FMD outbreak in Taiwan, province of China, spread across the whole island in less than two months, striking 6,000 farms and forcing the slaughter of 3.8 million pigs. But the infection is believed to have gone undetected for as much as six weeks beforehand, apparently because the first cases of FMD - a disease unknown on Taiwan since 1929 - were mistakenly diagnosed as Swine Vesicular Disease. Attempts to stem the spread of the virus also failed because it struck during the Chinese



New Year, when market movements of animals increase. This association of risk factors fostered the introduction and spread of the disease, and shows the importance of differential diagnostics in disease emergency preparedness.

Transboundary diseases may also arrive from new, unexpected sources. An FMD outbreak in Algeria in 1999 was traced to livestock brought from West Africa across the Sahara which, until then, had been regarded as a natural protective barrier. EMPRES says the Maghreb outbreak showed how the disease is finding new routes of introduction, suggesting that known, traditional patterns may need to be re-assessed frequently as changes occur throughout the world.

In many developing countries, disease-monitoring systems are based primarily on passive reporting of outbreaks, rather than active disease surveillance, and there is poor coordination of field and laboratory veterinary services. An outbreak in 2000 of African Swine Fever (ASF) among pigs shipped to Dar-es-Salaam, Tanzania, probably originated in known endemic *foci* in neighbouring countries, and was facilitated by delays in reporting and investigation. High mortality rates among pigs outside the capital, suggestive of acute ASF, were simply not communicated to the country's central epidemiology unit.

Better early warning might also have helped block outbreaks of Rift Valley Fever (RVF), a mosquito-borne viral zoonotic disease that also affects humans in Africa. An RVF outbreak in East Africa in 1997-8 not only caused heavy livestock losses and human deaths, but also seriously disrupted the subregion's valuable livestock export trade to the Middle East. In September 2000, the disease was reported for the first time outside the African continent, in

Saudi Arabia and Yemen, again causing human deaths and major losses in the livestock population. In all cases, RVF was detected first in humans, i.e. long after the disease had established itself in the livestock population, without being reported. Earlier detection of viral circulation in domestic animals would have avoided the spread of the disease into the human population and many unnecessary deaths.

Disease intelligence. EMPRES says preventing similar disasters in the future requires action focused on improving farmer and veterinary awareness, identifying possible new routes of disease introduction and trends in animal movements, and improving communication among laboratories and between human health institutions and veterinary services. Disease intelligence is a prerequisite to effective early warning. In-country surveillance usually makes use of the formal data-gathering mechanisms. Disease intelligence goes further and makes use of additional information sources, many of them informal and often outside the standard national surveillance system. Disease intelligence helps boost awareness of disease threats and developments that may otherwise remain undetected.

The proposed global system on TADs would help improve international preparedness for epidemics by actively collecting information on ongoing outbreaks - or rumours of outbreaks - world-wide and then disseminating verified information at regional and national level. The ultimate goal would be to provide advice and assistance to countries following early warning of an imminent disease threat. The envisaged system must therefore be linked to early reaction - expert interventions, technical co-operation programmes, quarantine advice, contingency plans, disease recognition and diagnostic assistance, and vaccine sourcing.

For further details on the proposed Global Early Warning System on Transboundary Animal Diseases, see the **EMPRES Bulletin**, No. 20/1, June 2002. Contact: empres-livestock@fao.org

About EMPRES

Agricultural pests and diseases often migrate or spread across borders and cause major losses and emergencies. In the past, such damage has on occasions been catastrophic, leading to famines and sometimes triggering trade restrictions. Developing countries are frequently not able to react sufficiently quickly to such events, and extensive emergency operations as well as international assistance becomes necessary. Although effective control methods usually exist now against these pests and diseases, such crisis management inevitably involves delays, a low efficiency/cost ratio and an inability to contain the problem at an early stage. In 1994 FAO established an Emergency Prevention System (EMPRES) for Transboundary Animal and Plant Pests and Diseases in order to minimize the risk of such emergencies developing. Initial priority was given to two transboundary pest and diseases problems:

▶ **Animal disease component**

Major transboundary livestock diseases, including Rinderpest and other epidemic animal diseases (contagious bovine pleuropneumonia, foot-and-mouth disease, contagious caprine pleuropneumonia, peste de petit ruminants, rift valley fever, and lumpy skin disease). These diseases are among the most contagious and place a serious burden on the economies of the countries in which they occur.

▶ **Desert locust component**

The Desert Locust is an international problem due to the frequent migration of swarms across borders. Since earliest recorded history, this pest has been considered a serious threat to agricultural production in Africa, the Near East and Southwest Asia and often requires large-scale control operations.