Transboundary Animal Diseases

Livestock crucial to livelihoods in the region

Livestock is an important sector of agricultural production in the countries of the Southern African Development Community (SADC). It accounts for 20 to 40 percent of the agricultural gross domestic product and holds a high social value for rural communities in the region. An estimated 60 percent of the SADC population depends on livestock. There is an ever increasing demand for livestock and livestock products in the region. Estimates by the SADC Secretariat indicate that over the next 10-15 years the average annual consumption of meat and milk will more than double from 7 to 15 kg of meat and from 20 to 50 litres of milk per person.

Although all SADC member states have ambitious plans for the livestock sector as a major factor in poverty reduction and food security strategies, only some states have thriving exports to international meat markets due to a better assured animal health situation than others.

FAO steps in with emergency interventions

Outbreaks of transboundary animal diseases in previously disease-free areas of SADC countries over the past few years endangered the animal health status of the entire region and threatened the livelihoods of more than half the population. The region's ability to trade in livestock and livestock products was likewise put in jeopardy. A severe regional drought in 2001-2002, chronic shortage of resources and social changes reduced the capacity of SADC countries to cope with these outbreaks. In 2004, the Food and Agriculture Organization of the United Nations (FAO) began a project in to implement emergency control of epidemic Foot-and-Mouth Disease and Contagious Bovine Pleuropneumonia and other dangerous animal diseases, such as Anthrax, in southern Africa.

Diseases successfully contained

Primary beneficiaries of FAO's transboundary animal disease projects are the owners and keepers of 2.14 million head of cattle in target areas in Malawi, the Caprivi Region of Namibia, Tanzania, Zambia and Zimbabwe. Spread of these dangerous livestock diseases within and across international borders has been successfully contained in all five countries. No new cases of FMD have been reported in Malawi in intervention areas. No new cases of Anthrax have been reported in the Caprivi Region of Namibia since January 2005 and reporting of new cases of CBPP has continued to decline substantially in southwest Tanzania. FAO helped control the CBPP epidemic in Zambia and contributed to completion of the first phase of progressive elimination of FMD in Zimbabwe. In addition, FAO helped the country to reclaim part of the beef export zone, as well as minimize losses in national milk production.

Foot-and-Mouth Disease

Definition: A highly contagious viral infection primarily of cloven-hoofed domestic animals (cattle, goats, sheep, pigs, and water buffalo) and cloven-hoofed wild animals. Symptoms are fever and ulcerating blisters in the mouth, hoofs, udder, and teats.

Contagious Bovine Pleuropneumonia

Definition: A highly infectious acute, sub-acute, or chronic disease, primarily of cattle, affecting the lungs and occasionally the joints, and caused by a bacterium of the *Mycoplasma* group. Symptoms include fever, loss of appetite, and a severe cough. If left unchecked, outbreaks can result in mortality rates of over 50 percent.

Avian Flu

Avian Flu represents an unprecedented challenge to animal and public health, not only for currently affected countries but for the world. FAO anticipated outbreaks of the Highly Pathogenic Avian Influenza (HPAI) in Africa with the launching of regional projects in 2005 to support countries in their preparedness and coordination efforts. In January 2006, FAO held a workshop in Nairobi, Kenya for countries in eastern and southern Africa on preparedness and contingency planning for a possible outbreak of HPAI.

Vaccinating cattle in Namibia

Definition: A panzootic viral disease of avian species (chickens, turkeys, guinea fowls, ostrich, migratory water fowl and others), with symptoms ranging from mild, or even asymptomatic, to acute and fatal. Symptoms include watery diarrhoea, loss of appetite, excessive thirst, depression, cessation of egg production and marked increased mortality. HPAI can easily be confused with Newcastle Disease in chickens.

Simple Technology May Bring Big Benefits: Using Digital Pens to Monitor Transboundary Diseases

The rather sterile environment of a regional office located in Johannesburg's northern suburbs did not impede two United Nations bureaucrats from dreaming up creative ideas. The UN Food and Agriculture Organization's Regional Emergency Livestock Officer, Fred Musisi, was faced with a problem and approached his colleague Phillip Fong, Regional Data Information Coordinator, over coffee.

Fred was having trouble getting timely data from remote field locations on potential outbreaks of animal diseases. Swiftly transmitting surveillance information from field officers to veterinary officers in capital cities and to Johannesburg is essential as the unchecked spread of animal diseases can result in massive losses for farmers and the livestock industry.

Phil had a story to tell. He had previously worked on the South African census, and had similarly been faced with the dilemma of on-the-hoof data collection from field locations. He learned about a digital pen that could transfer information instantaneously via cell phone or internet back to headquarters. The digital pens proved a success for the census.

Fred liked the digital pen idea, and an FAO pilot project was born.

"The pens appeared to be an almost revolutionary way to overcome a big problem with gathering data from the field and making timely decisions in case quarantine needed to be imposed. We are talking seconds to minutes, rather than several weeks to a month," explains Fred. "In Malawi, we calculated the time it took for people to collect information in the field to the time it reached headquarters – it was up to 30 days."

Delays such as this can result in massive animal and economic losses. Livestock production is one of the major sources of livelihood in Zimbabwe. An outbreak of Foot and Mouth Disease in 2001 led to the suspension of beef exports to European countries. In Botswana, thousands of cattle had to be slaughtered following an outbreak of Contagious Bovine Pleuropnuemonia in 1995 and subsequent control of the disease and restocking has been a costly exercise for the government.

Transboundary disease surveillance using Digital Pen technology is being piloted by FAO in remote border areas of Malawi, Namibia, and Zambia. "We figured if we could transmit data successfully from these areas with difficult terrain, harsh conditions and poor telecommunication infrastructure, it should be workable in all countries in the region," said Phil.

Digital Pen technology is only a few years old and was originally intended for commercial use. Rather than typing on a keyboard, you could just write your novel and it automatically would be recorded electronically. It is now realized that the pens can be ideal for specialized applications.

The technology works like this. The pen is the size of a magic marker. It has a built-in digital camera, Bluetooth connection, and memory chip. The user writes normally on pre-printed paper or forms. This paper has barely visible dots, like a watermark. The tiny camera snaps images of the ink as the person writes. The series of camera images are sent wirelessly to a computer, and the computer can calculate from the displacement of the dots what has been written.

"If there is a case of rabies or an outbreak of a deadly disease, a field worker can send the detailed surveillance data immediately only using a mobile. Worst case, if there is no mobile phone network nearby, the field worker has to move to a location with network or must find the nearest internet connection. But no longer do they have to drive hours back to a capital city before the information can be confirmed," explained Fred.

So far the technology has proven itself, with instantaneous reports being received clearly from the field. The final analysis of the pilot project is to come later this year, but it looks likely that digital pens will be used by FAO for disease surveillance throughout the region. And Phil and Fred, along with colleague Josee Koch who is the focal point on HIV/AIDS, are already mulling over ways the pens might be applied to her projects.

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For more information contact:
FAO Emergency and Rehabilitation Programme in Southern Africa
Regional Interagency Coordination Support Office (RIACSO)
11 Naivasha Road, Sunninghill, 2157, Johannesburg, South Africa
Phone: +27 11 517 1564 Fax: +27 11 517 1549 Web: www.fao.org/reliefoperations