EMPRES
Transboundary Animal Diseases Bulletin

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INSIDE

GOOD EMERGENCY MANAGEMENT PRACTICES: EMPRES CODE FOR DISEASE EMERGENCIES

Dealing with animal disease emergencies requires careful planning and meticulous execution. EMPRES has developed Good Emergency Management Practices (GEMP) as a multimedia program, available on CD-ROM and on the FAO/ EMPRES Web site, to promote the concept of a code of practice in dealing with animal disease emergencies *(see page 15)*.

RINDERPEST IN PAKISTAN

Three years after rinderpest was last reported, the disease reappeared in September 2000 in Manzoor Colony, South Karachi district of Sindh Province. The origin of the outbreak has not been discovered although there are indications as to its source. However, in order to eradicate rinderpest from Pakistan, it is essential that the endemic area where the disease is contained is identified *(see page 2)*.

UPDATE ON RIFT VALLEY FEVER OUTBREAKS IN SAUDI ARABIA AND YEMEN

In September 2000, Rift Valley fever (RVF) was detected in Saudi Arabia and Yemen, causing human deaths and major losses in the livestock population. It was considered the first documented RVF outbreak outside the African continent, although the virus could possibly have been endemic in the wadi zones for many years in cryptic foci *(see page 4)*.

Editor's note: The numbers 1 to 4 alongside the Issue No. refer to the quarters of the year. Bulletin 15 is in fact a double issue covering the third and fourth quarters of the year 2000, i.e. July to December.

RINDERPEST

Rinderpest detected again in Pakistan

After an apparent absence of approximately three years, rinderpest cases are again being detected in Sindh Province; in 2000 three outbreaks were detected in dairy farms near Karachi. The diagnoses were confirmed at the Animal Sciences Institute of the National Agricultural Research Centre (NARC), Islamabad, by immunocapture ELISA. It is now clear that the apparent absence was a reflection of the low incidence combined with deficiencies in the disease recognition and reporting system. Although most field service veterinarians in Karachi are experienced in the diagnosis of rinderpest, the symptoms they readily recognize are acute, severe and involve large numbers of animals. They are less confident in diagnosing rinderpest when it presents as a subacute condition in a small number of animals. One of the key factors to improve rinderpest reporting is the availability of a rapid “penside” test for rinderpest infection (the Rapid Chromatographic Strip Test), developed by the World Reference Laboratory for Rinderpest. Isolated outbreaks of low morbidity and case fatality rate, such as those encountered to date, would probably have been overlooked in the past or have attracted only therapeutic interventions; it is normal to treat rinderpest-affected cattle and buffaloes in Pakistan.

Trace-back studies suggested a link to the interior of Punjab for one outbreak and to northern Sindh for the others. Investigations provided no evidence of disease at the origin in Punjab, suggesting that infection might have occurred in transit, perhaps at overnight halts. Further investigations by Dr Manzoor Hussain of NARC in November uncovered evidence of a small number of previously unreported rinderpest outbreaks which occurred in northern Sindh during the years 1998-2000 (as recently as November). The endemic rinderpest situation appears to be closely linked to the dairy buffalo farming system and to the long-distance transportation of newly calved buffaloes; yet, at a detailed level, it is not understood how the virus transmission chain is being maintained. Understanding these factors is a prerequisite for timely and cost-effective eradication. The interim strategy is therefore to concentrate on developing an understanding of the infected area – the size of the maintenance population and the physical limits of its distribution – before the use of pulsed vaccination is contemplated. It is vital that all clinical cases of rinderpest should be reported. To this end the FAO project (TCP/PAK/8923 *Epidemiological analysis of rinderpest and development of an eradication strategy*) is strengthening the disease surveillance and reporting systems and has produced a rinderpest recognition manual for distribution to all field staff.

Pakistan’s declaration to the International Office of Epizootics (OIE) can be viewed on the OIE Web site at the following address: www.oie.int/eng/info/hebdo/AIS_53.HTM#Sec1

Declarations to OIE

Declaration of the Islamic Republic of Iran to the International Office of Epizootics

In order to comply with the OIE pathway and in line with the Global Rinderpest Eradication Programme (GREP) recommendations, the Veterinary Organization of Iran intends to stop vaccination against rinderpest in four southern and southwestern Iranian provinces. This cessation of vaccination will be replaced by active disease surveillance. The full report can be obtained on the OIE Web site: www.oie.int/eng/info/hebdo/AIS_77.HTM#Sec0

Central African Republic provisional freedom declaration to OIE

The western part of the country has been declared provisionally free, with cessation of vaccination in this zone replaced by intensified surveillance. The country is now divided into three zones:

- the control zone (vaccination zone);
- the buffer zone (vaccination zone with intensified surveillance);
- the provisionally free zone where vaccination is now prohibited.

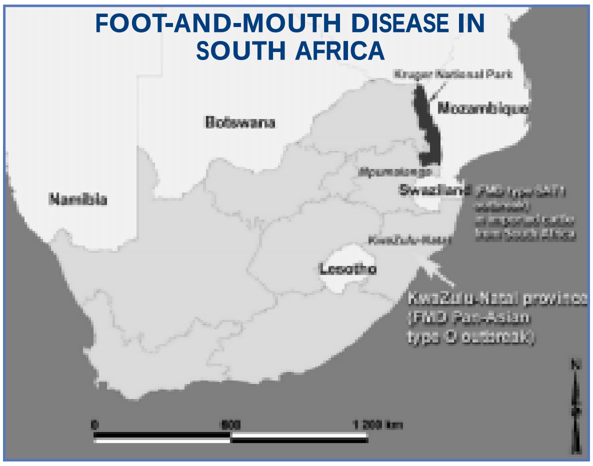
The full report can be obtained on the OIE Web site: www.oie.int/eng/info/hebdo/AIS_69.HTM#Sec0

FOOT-AND-MOUTH DISEASE

FMD outbreak in South Africa and Swaziland

The potential for the spread of livestock epidemic diseases over vast distances was, unfortunately, clearly demonstrated late this year when Pan-Asian type O foot-and-mouth disease (FMD) entered South Africa. It was the first outbreak of FMD in South Africa's free zone since 1957; it is also the first time that the Pan-Asian strain of FMD type O has been detected on the African continent.

On 4 September 2000, a farmer near Pietermaritzburg (KwaZulu-Natal Province) presented two pigs – one dead, one alive – to the Regional Veterinary Laboratory at Allerton. At first, FMD was not recognized; it was only some days later when more cases were presented that local veterinarians suspected FMD. By the time the diagnosis was confirmed, 247 pigs were clinically infected, of which 83 had died. Stamping-out was applied immediately, and all animals on the farm were destroyed – in all, the remaining 643 pigs, ten goats, five sheep and six cattle.



A quarantine zone with a radius of 10 km around the initial focus was instituted; no animals were allowed to leave this zone. A surveillance zone with a 20-km radius was declared, and a control zone comprising some 16 districts around the infected focus was implemented. No products originating from the control zone could be certified for export.

On 21 September a cow on the adjoining farm was reported as having FMD which was then confirmed; this farm was also depopulated, involving the slaughter of a further 53 cattle and 3 500 pigs. Serological investigations and physical inspections continued, all reporting negative results.

On 10 October the preliminary results of serological testing of cattle and goats in the nearby communal grazing area known as the Valley of a Thousand Hills appeared to indicate that these animals had been infected. With the disease apparently spreading, it was decided to institute a limited vaccination programme to assist in reducing virus transmission. The vaccination programme (type O) began on 9 November. It was later discovered that in fact there was actually no serological evidence of infection in the communal grazing area. The small number of Liquid Phase Blocking ELISA positive results was not confirmed by the Virus Neutralization Test or 3ABC ELISA (for antibody to virus infection associated antigen) at either Onderstepoort Institute for Exotic Diseases or the World Reference Laboratory for FMD. Intensive investigations demonstrated that the disease had been contained within the originally declared 10-km critical control area. As of end January 2001, the last cases were those detected in early November, yet vaccination was continuing in the communal area.

Coincidentally, in November 2000, FMD caused by serotype SAT 1 was recognized in Swaziland in a group of cattle imported from South Africa. Lesions were discovered during the process of slaughter at an abattoir. All 110 imported cattle were slaughtered and buried. Subsequently intensive surveillance in the quarantine zone detected clinical disease and cattle, sheep and goats in a 10-km radius "high risk" area of a declared quarantine zone were vaccinated with trivalent SAT vaccine. This outbreak was within the FMD-free area that is subject to trade agreements with the European Union. A limited spread of infection was still occurring in January 2001, including outbreaks in the traditionally FMD-free area. In some of the later outbreaks the disease was associated with cattle which had illegally crossed into Swaziland. In January 2001, a stamping-out policy was applied with compensation and the outbreak area was fenced in an attempt to limit the spread. A temporary loss of trade is to be expected until the disease can be contained. Trace-back studies disclosed the source to be inside the FMD surveillance zone, which surrounds the FMD control zone around Kruger National Park in South Africa, at a feedlot in Mpumalanga Province that was thought to have been affected by bovine virus diarrhoea. It appears that the infection was introduced to the feedlot from farms in the control zone where clinical disease or serological evidence of inapparent infection were found. The virus involved was genetically similar to SAT 1 viruses isolated previously from wildlife in the southern Kruger National Park, suggesting the origin. Vaccination with trivalent SAT vaccine was repeated in the FMD control zone and its extension to take in the newly infected area. No further cases were detected in this area after early December.

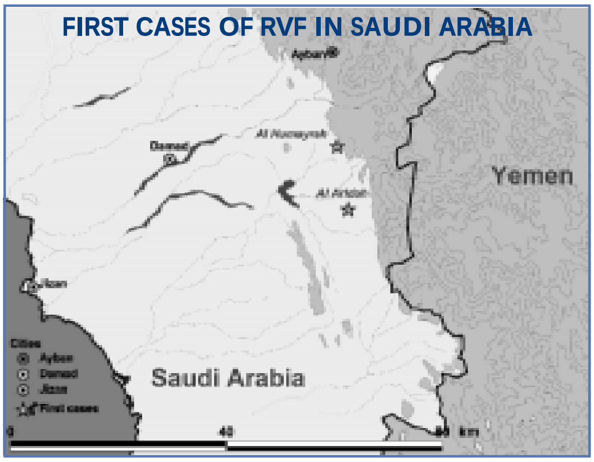
RIFT VALLEY FEVER

Update on RVF outbreaks in Saudi Arabia and Yemen

In September 2000, Rift Valley fever (RVF) was detected in Saudi Arabia and Yemen, causing human deaths and major losses in the livestock population. It was considered the first documented RVF outbreak outside the African continent, although the virus could have been endemic in the wadi zones for some years in cryptic foci.

Situation in Saudi Arabia

The first reports of widespread abortion in sheep and goats in Saudi Arabia were in August and early September 2000. Human cases of RVF were first recognized on about 11 September, and the virus was isolated and identified by the Center for Disease Control and Prevention (CDC), Atlanta, on 19 September and at the Ministry of Agriculture Virology Laboratory in Jeddah.



FIRST CASES OF RVF IN SAUDI ARABIA

Epidemiological features

As usual, the onset of Rift Valley fever was characterized by many abortions in sheep, goats, cattle and camels. The first cases were encountered at Al Humayrah, 70 km east of Jizan (see map), where over 90 percent of the pregnant sheep and goats aborted.

The clinical disease was not usually observed in the adult sheep or goats before the abortions. In a two-week period, 2 699 abortions and 943 deaths were recorded, mostly in sheep and goats, and the total number of abortions has been estimated to be in the order of 8-10 000.

PHOTO COURTESY OF ROGER PASKIN (EMPRES)

Small ruminants in infected areas

The appearance of RVF in some flocks has been dramatic, with 60-90 percent of the pregnant females aborting within a period of 10-14 days. In the drier wadi zones to the north, the number of abortions reported was fewer, with only 5 to 20 percent of the flock affected.

A constant finding has been the random nature of the occurrence of the disease, in a village or community, where some flocks are affected and others not at all. This is reflected in the serological results. Indeed, in one area of 20 flocks, only seven were shown to have been infected with RVF. This situation has been encountered in all RVF epizootic situations in Africa and Egypt.

Sequencing shows that the virus strain is closely related to that isolated in the Horn of Africa in 1997-98.

Geographical distribution

Clinical observations suggestive of RVF in animals were made at many widely distributed foci throughout the Jizan region. The outbreak appeared to be multifocal in origin and was coincident with similar RVF outbreaks in Yemen.

The cases in humans and animals were invariably associated with the wadi systems (the alluvial floodplains of the rivers as they emerge from the mountains) and were particularly serious at the upper watershed of the Jizan dam. Most of the problems were recognized in the regions close to the mountains, where terraced agriculture utilizes the rainfall catchment in the narrow wadi clefts and valleys.

Cases were also seen in the more isolated wadi systems, higher up into the mountains. No RVF cases were seen in sheep or goats kept on the mountains themselves nor in the dry sandy Tihama regions. The wellhead irrigation systems have not been associated with RVF outbreaks; the surface water generated by these systems persists for only short periods of time and does not allow sufficient generation time for mosquitoes.

PHOTO COURTESY OF ROGER PASKIN (EMPRES)

Typical ecosystem close to the mountains where RVF is prevalent

The northern limit for the disease was originally thought to be at latitude 17°75' N, but it has become apparent that RVF cases have been occurring much further north, up to and possibly beyond latitude 19° N. There is some evidence to show that abortions started in August in some areas. A decline in the number of new cases was noticed in the second and third weeks of October.

Incidence in humans

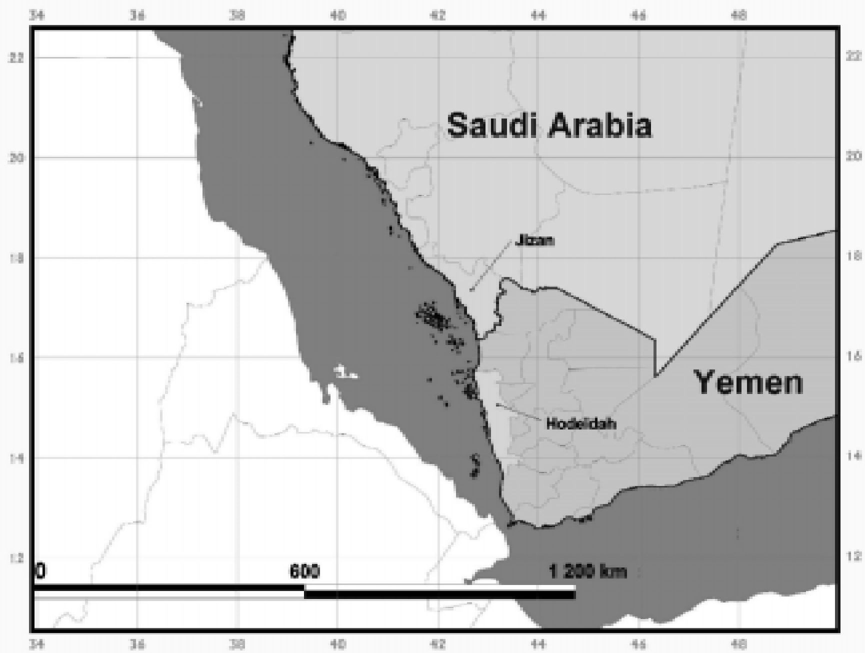
There have been 70 deaths in Jizan Province and approximately 400 cases have been confirmed by ELISA (IgM +ve), many with severe clinical signs including visual disturbances. Cases in humans appeared to be more numerous in the Al Aridah township area, which was one of the worst affected. Most of the men sleep outside at night, which was said to be because of the absence of electricity, whereas women sleep inside; the majority of the cases were seen in males. Although cases are occurring in village people associated with livestock in their daily work, no slaughterhouse staff nor veterinarians appear to have been infected. Here, the Jizan dam and lake, holding up the waters of the Jizan wadi, have created a higher water table over a wide area upstream. This in turn has created more mosquito breeding sites and greater vector populations.

Situation in Yemen

In September 2000, suspected RVF involving human deaths and abortion storms in animals was reported from Hodeidah Governorate, El Zuhrah district in the area of Wadi Mawr.

This outbreak was reported at the same time as the one in Saudi Arabia. More than 90 percent of the confirmed cases have been within the area encompassed by the north and south canal systems in this wadi where there is an abundance of standing water pools in all irrigated areas ready for cultivation and numerous small rainfall pools. The water pools are associated with the river flow in the wadi bed, with irrigation channels which flood fields and with habitation.

REGIONS AFFECTED BY RVF IN SAUDI ARABIA AND YEMEN



Epidemiological features

An ephemeral fever-like disease was reported in Wadi Mawr on 5 September, and abortions in sheep and goats on 9 September. Many more abortions with some mortality in young animals were again reported from 15 to 25 September. In addition, towards the end of August and in early September, there were abortion storms in sheep and goats, when up to 90 percent of the pregnant animals in a single flock were affected. Although no adult animals died, some deaths were seen in very young lambs and kids and others up to six months of age. Few cattle aborted, but some young calves died after showing signs of RVF (some 30 percent of the total livestock population of Yemen are to be found in Hodeidah Governorate).

Animal sera have been tested for IgM to RVF virus, including those collected by the investigation teams in their work in the immediate environment of El Zohrah, sera sent in from many parts of the country where RVF was suspected, and some collected as a part of the wadi sero survey. These results have shown that recent RVF virus activity has occurred in Sada'd, Hajah, Dahrar and Hodeidah Governorates.

Incidence in humans (WHO Weekly Epidemiological Record, No. 48. 1/12/2000)

Between 7 August and 7 November 2000, 1 087 suspected cases were identified, including 121 (11 percent) people who subsequently died. These figures do not reflect all ongoing transmission owing to the inability of teams to visit all the affected areas. The clinical spectrum of disease is typical of that associated with RVF and includes patients with haemorrhagic disease, encephalitis, retinitis and uncomplicated RVF. Most patients (75 percent) reported exposure to sick animals, handling an aborted foetus or slaughtering animals in the week prior to illness. Of the 490 patients who underwent serological testing, 136 (26 percent) had IgM class antibody to RVF virus and 17 (3 percent) had weak reactions to the serological tests. Serologically confirmed disease transmission has been detected in 16 districts throughout the coastal plain and adjacent mountains.

Origin of these outbreaks

RVF virus has not previously been recognized in Yemen and Saudi Arabia. Whether this current outbreak of disease is the result of a recent introduction or is an extremely rare epizootic occurrence in an existing enzootic area is not known at present. The simultaneous appearance of foci of RVF activity in Jizan Province of Saudi Arabia and in many of the wadis in Yemen, from the Saudi border southwards, does suggest the simultaneous emergence of RVF virus at widely distant foci. This is characteristic of RVF virus emergence in epizootic areas in Africa in response to regional climatic conditions.

Climatic conditions

Although it is well known that favourable climatic conditions characterized by persistent and above average rainfall are essential for the disease to reach epizootic proportions, the 2000 rainy season does not appear to have created such dramatic conditions. Interpolated estimated rainfall data generated by the Climate Prediction Center (CPC) of the United States National Oceanic and Atmospheric Administration (NOAA) were extracted for Al Humayrha region (a 100 km^2 study area centred on Al Humayrha – average rainfall estimate by month from 1995 to 2000), which was the first recognized focus and one of the most affected areas in Saudi Arabia. It shows above average rainfall in 1996 and 1997 which reverted to normal during the next years. The study of Vegetation Index images, derived from data from the Advanced Very High Resolution Radiometer (AVHRR) instrument on board the NOAA polar orbiting satellites, reflects the same kind of pattern.

INTERPOLATED ESTIMATED RAINFALL IN THE REGION OF AL HUMAYRHA FROM 1995 TO 2000 (Climate Prediction Center)

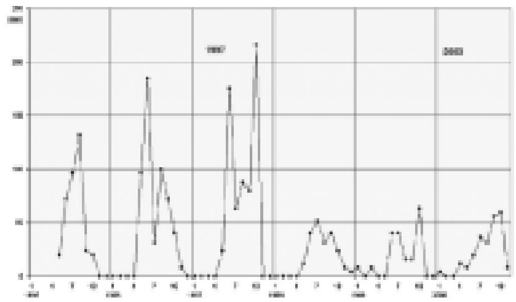


PHOTO COURTESY OF ROGER PASKIN (EMPRES)

Typical swamp area susceptible to mosquito breeding

However, it is also believed that the area of most interest in terms of rainfall patterns could be the catchment area, further east in the mountains, which might reveal different conditions during the 2000 rainy season.

Although the above-mentioned satellite images did not show climatic conditions as dramatic as expected for this period with regard to such an epizootic, swamps and flooded areas present in different parts of the country definitely provided good conditions for mosquito breeding.

ECOLOGICAL CONSIDERATIONS – THE WADI BIOTOPE

The Tihama describes the whole of the coastal plain in the Arabian peninsula in the west and southwest of Saudi Arabia and Yemen. It consists of low hillocks bordering the north-south mountain chain. Wadis or river valleys occur in the Tihama and constitute the alluvial floodplains of the rivers as they emerge from the mountains. These soils are sands, loamy silts and clays, of very low salt content, with little humus or nitrogen. The first ecozone is of *Panicum* and *Cyperus* grasslands, which are seasonally flooded. In many areas, terraced catchments have improved the utilization of water from the rivers at these points. The second and larger zone borders the rivers as they proceed to the sea, and consists of *Acacia zizyphispina* and *Dobera* spp., with some grasses and bare earth. The riverine zones are characterized by the presence of *Dactyloctenium* grasses and are altered in some wadis by lateral canal systems extending north and south of the rivers. The rivers are seasonal in flow, largely fed by the mountain catchment areas, and are dry for much of the year. Towards the sea is a belt of land with a high salt content, planted with *Salsola* spp.

The Tihama biotope has been the focus of extensive agricultural development over the last 20 to 30 years as greater use is made of the available water resources for cultivation. These changes have a direct impact upon the environment, creating a more extensive habitat for RVF mosquito vectors. In Yemen, for example, the largest wadi (Wadi Mawr) covers some 18 000 hectares watered by the canal systems.

The methods used for the utilization of the spate flow in the wadis are very similar in Saudi Arabia and Yemen. Agriculture is practised in the riverine alluvial deposits and surrounding sandy soils. Water flow is directed by channel systems into field units, and new areas are flooded sequentially. Together with the rainfall, this results in many large and small water pools suitable as breeding sites for certain mosquito species.

The changes in the wadi systems, which have been made to ensure more effective use of the available water, are also those that favour the development of more extensive breeding sites for the mosquito species that are believed to be of greatest importance in amplifying and transmitting the RVF virus.

Additional ecozones where primary RVF virus amplification may take place following the emergence of *Aedes* mosquitoes are in the wet highland plateau grasslands planted with *Acacia combretum* and allied species. These are found in Thaiz and Ibb Governorates and possibly also in Sa'dah. The virus may also be expected to occur along the wadi river beds far up into the mountain zones, especially where these broaden out into alluvial plains with pockets of clay soil.

Control measures in both countries

Control measures were based on vector-control (insecticide spraying) associated with restrictions on animal movement and sensitization campaigns to limit the spread of the disease in the human population.

RVF surveillance in West Africa

Rift Valley fever surveillance system in Mali, Mauritania and Senegal (TCP/RAF/8931)

In order to improve the early detection of Rift Valley fever in West Africa and the control of potential epizootics of the disease in the future, a regional disease surveillance system has been implemented in Mali, Mauritania and Senegal through a FAO Technical Cooperation Programme project (TCP/RAF/8931). The project started in April 2000, before the beginning of the rainy season, with the following objectives:

- early detection of the disease through the implementation of a regional surveillance system based on sentinel herd monitoring and disease reporting;
- risk analysis of disease occurrence and spread, combining climate indicators and epidemiological data;
- information sharing at regional level, including a systematic and regular feedback to the project's stakeholders based on information generated by the project;
- data recording and analysis of present and past outbreaks as well as of data generated from serosurveillance;
- communication and training, through the production of a video, a poster and a technical manual on disease recognition.

The table on p. 10 summarizes the approach adopted, including the information collected, the tools employed and the main expected outcomes of the project.

The surveillance system

In the context of the National Animal Disease Surveillance Systems, a network of sentinel herds (small ruminants) was established in the three countries at the beginning of the project. Sentinel herd locations were chosen in potential high risk areas, based on ecological considerations and the suitability of these places to harbour the virus (proximity

Rift Valley fever surveillance system in Mali, Mauritania and Senegal (TCP/RAF/8931)

OBJECTIVES	INFORMATION REQUESTED AND COLLECTED	TOOLS	OUTCOME
EARLY DETECTION	Viral circulation Clinical manifestations	Sentinel herds (IgM antibodies) Active and passive disease search	Disease analysis RVF alerts in Mali —> Joint veterinarians/ physicians field investigation mission and risk assessment No recent viral circulation in Senegal and Mauritania
RISK ANALYSIS	Climate indicators Epidemiological data Current and historical data (past outbreaks) – results of serological surveys	Climate forecast models available on the Web Satellite images provided by FAO-Artemis (NDVI, rainfall estimate) National Veterinary Services – TCP Mauritania	Risk assessment in Bulletins Nos 1, 2 and 3 Risk rating
INFORMATION SHARING at regional level	Above-mentioned information	Bulletins Nos 1, 2 and 3	Increased regional awareness Early reaction Risk management Emergency preparedness
DATA RECORDING AND ANALYSIS	Above-mentioned information	Regional database linked to a geographic information system (GIS)	Past and present occurrence of the disease recorded Disease trend – predicting models
COMMUNICATION AND TRAINING		Posters, video, booklet, radio messages	Increase in the number of suspected cases

to rivers, swamps, dams, etc.). An average of 30 animals per herd were sampled each time and all the animals sampled were clinically examined by field agents. Collected serum samples were analysed at national level by central veterinary laboratories (namely CNERV-Mauritania, LCV-Mali and LNERV-Senegal). These samples were tested for IgM and IgG antibodies to RVF in order to reveal recent and past viral circulation. A total number of 31 herds were visited five times during the period and around 5 000 samples were analysed.


PHOTO COURTESY OF FABIEN SCHNEEGANS (CNERV, MAURITANIA)

Sentinel herd monitoring in Mauritania by a field agent

The principle was to discard the animals in the herd which were IgG positives and keep sampling the susceptible animals only (IgG free), to reveal a recent viral circulation. A regional database was set up at the coordination unit in Dakar to record and analyse all the data related to the disease (serosurveillance surveys, suspicions and outbreak notification) generated by the project. Historical data and results of past serological survey campaigns which started ten years ago in Senegal will also be computerized before the end of the project, in order to highlight the long-term disease trends.

The necessary feedback to the project's stakeholders, and more particularly to decision-makers, was given through a newsletter which was distributed after the first results were obtained. The three bulletins (a fourth one is pending) have been key elements in information sharing at regional level and risk management. A geographical representation of the results obtained from serological surveys was presented in each bulletin in order to give a better understanding of the situation in terms of viral circulation.

Communication and training materials (a booklet, video and poster) were produced by the project to raise local awareness of Rift Valley fever consequences on livestock and human health as well as to train field agents in disease recognition.

Some interesting results

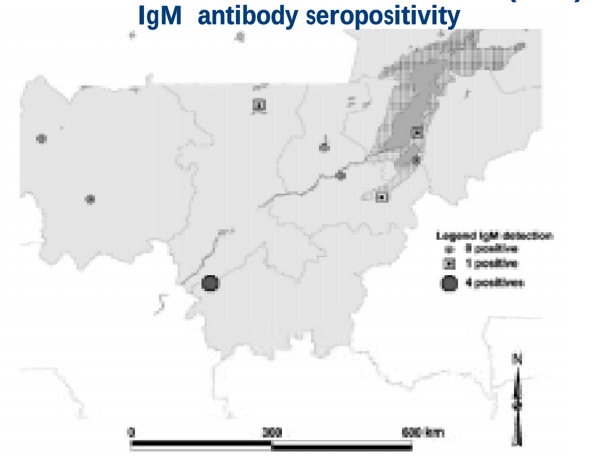
Rift Valley fever epizootics generally appear following an association of favourable conditions, including the combination of extreme climatic events such as El Niño, above average rainfall, changes of hydrological conditions (dams, changes in irrigation scheme, etc.), overall immunity of the animal population (referring to its susceptibility to the disease) and the general conditions of the animals (especially after a period of drought). The disease is frequently detected at the end of an epizootic, when the disease in humans is reported and cannot be related to another pathology. When reaching this advanced stage of an epizootic, control measures are very often useless and the disease dies out by itself. Retrospective studies are often carried out but major difficulties are encountered in assessing the real impact of Rift Valley fever on the livestock sector in comparison with other pathologies which developed in the same context.

The RVF regional surveillance system currently implemented through the FAO project aims at strengthening the capacity of national veterinary services to detect the early signs of the disease and react accordingly should the disease occur. The decision for action stems from objective information generated by the project (laboratory results and reported suspicions) and the perception of a risk given by environmental parameters such as the rainfall pattern, climate forecast and NDVI data.

Viral circulation in 2000

The situation in 2000 was particularly quiet, especially in Mauritania and Senegal where the virus does not seem to have circulated during the whole rainy season. After two years of viral activity, especially in Mauritania, no IgM antibodies were detected in sentinel herds of both countries from June to October. The epizootic cycle in Mauritania in fact began in 1998, with some recurrent activity in 1999 (due to persistent favourable climatic conditions). This period of activity ended in 2000 with conditions back to normal and a good general immunity coverage in the livestock population.

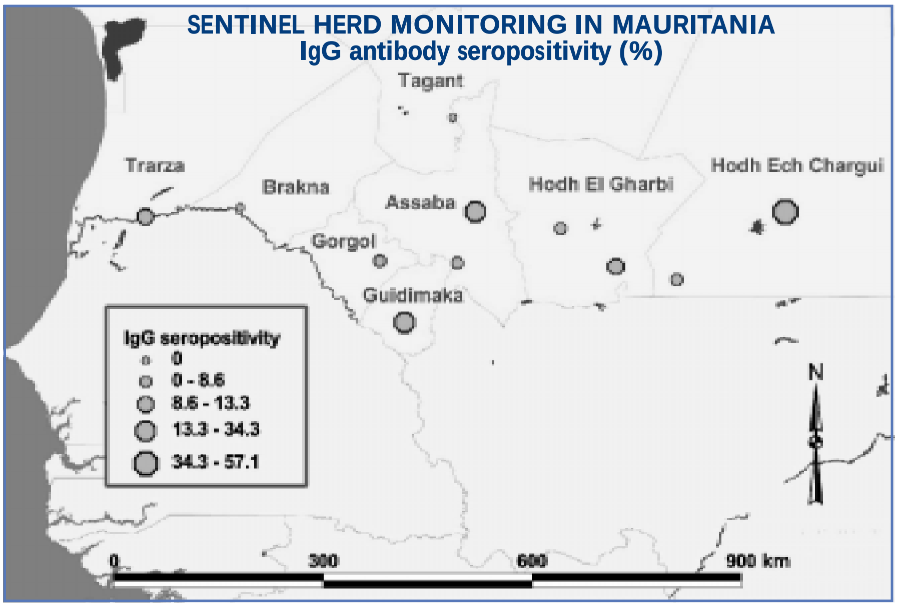
SENTINEL HERD MONITORING IN MALI (2000)
IgM antibody seropositivity



However, some very low level viral circulation has been encountered in Mali in July 2000, although the disease has not been detected. Four animals out of 30 were found to be IgM positive, and this seropositivity was confirmed after the animals were retested.

IgG antibodies were detected at different levels in the three countries. Moderate to high levels of seropositivity were found in Mauritania, where in one region up to 57 percent of the animals (20 animals out of 35) were found to be IgG positive in one herd (Hodh Ech Chargui).

The detection of IgG antibodies in 2000 is likely to be related to the above average rainfall in the previ-

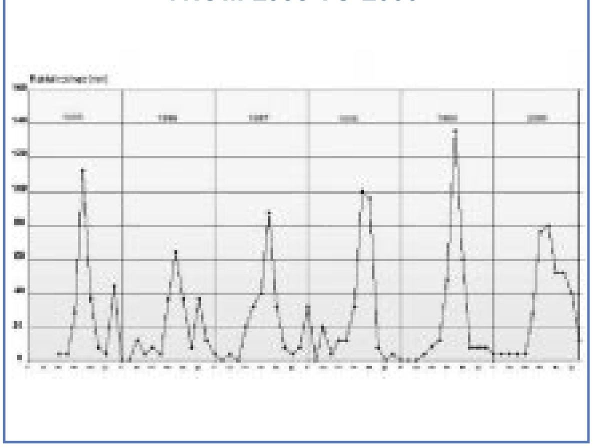


SENTINEL HERD MONITORING IN MAURITANIA
IgG antibody seropositivity (%)

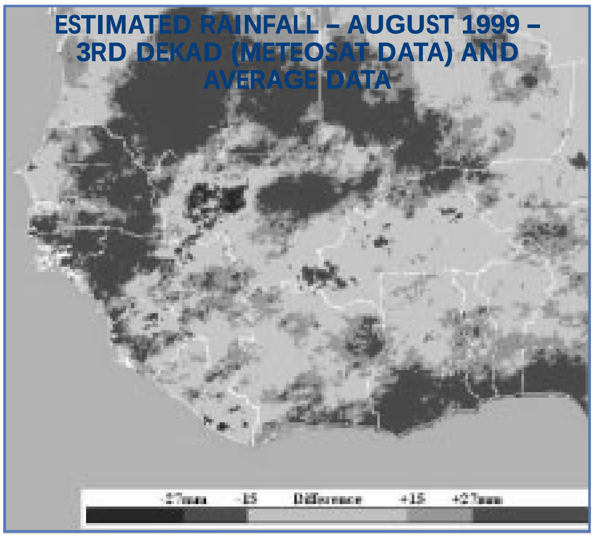
ous rainy season, which reverted to normal in 2000. Interpolated estimated rainfall generated by the Climate Prediction Center (CPC) for the region of Hodh El Gharbi in Mauritania shows a peak in 1999 (see graph below left).

Estimated rainfall images can also be derived from the dekadal cold cloud duration (CCD) images, using a technique developed by the TAMSAT group of the University of Reading in the United Kingdom. The estimations are based on a linear regression between CCD and rainfall using historical data, as opposed to the "real time" interpolation approach adopted by the United States NOAA Climate Prediction Center, and can be displayed as maps. With images available back to 1988, average estimated rainfall has been calculated over the period 1988 to 2000. Using Windisp software developed by FAO, a map expressing the difference between August 1999 (3rd dekad) and the average data obtained over the past 12 years was created (see map below). This model shows that above average rainfall was expected (>27 mm above average) in the eastern part of Mauritania in August 1999.

Although at a lower level than in Mauritania, IgG antibodies were detected in Mali in most of the sentinel herds. Only one herd did not show any antibodies.



RAINFALL ESTIMATE IN MAURITANIA (HODH EL GHARBI) METEOSAT DATA FROM 1995 TO 2000



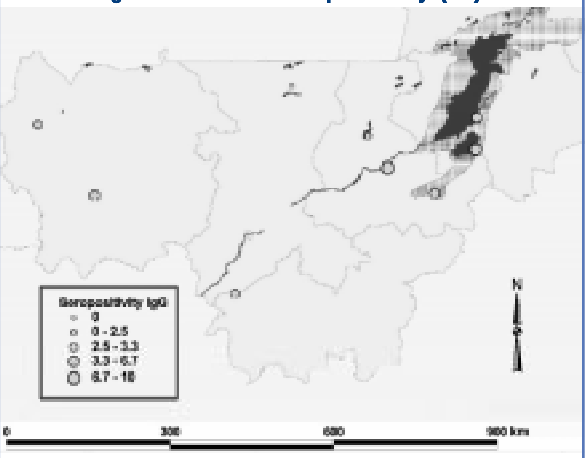
ESTIMATED RAINFALL – AUGUST 1999 – 3RD DEKAD (METEOSAT DATA) AND AVERAGE DATA

Increased awareness and improvement in emergency management practices

The National Animal Disease Surveillance Systems already in place in each country were supported in their task by the project activities, which resulted in a significant increase in disease awareness. Through the passive surveillance system, several suspected RVF outbreaks in humans were reported from Mauritania (Trarza region and Hodh El Gharbi) and suspicions of RVF in animals were reported from Senegal. All the suspicions investigated were found negative.

Emergency management practices were improved and actions were taken on the basis of laboratory results obtained by sentinel herd monitoring. After detection of viral circulation in Mali (IgM antibodies detected in July), a joint mission involving the veterinary services and the Ministry of Public Health went immediately into the field to investigate the suspicions. No clinical signs of Rift Valley fever were found during the investigation and field agents closely monitored the situation throughout the rainy season. Appropriate advice was given to the farmers to report to the veterinary services any abnormal event, such as stillbirth and abortions, and to avoid contact with infectious material. Follow-up activities showed, several months later, that the infection within the herd did not evolve and that the situation was under control.

SENTINEL HERD MONITORING IN MALI (2000)
IgG antibodies seropositivity (%)



The prompt reaction of the veterinary services showed that there has been a positive impact on the decision-making process through a better assessment of the risk associated with RVF viral circulation. As observed during the investigation mission in July and the surveillance period covering the rest of the rainy season, it is important to understand that RVF viral circulation is not always associated with the clinical signs of the disease, showing that the expression of the disease is the complex result of risk factors present at the same time. Consequently, a multifactorial approach must be adopted to understand the epidemiology of the disease and to set up a RVF surveillance system.

Rift Valley fever geographical distribution

The disease was observed in Senegal and Mauritania in the past and there is serological evidence of low level viral circulation in the three countries.

Since 1987, the most severe form of the disease has been seen in Mauritania where several human deaths were experienced in 1987 and 1998. Most of the outbreaks were reported from the dry Sahelian Acacia savannah, as far north as the Tagant region. Although the outbreak in 1987 was related to the installation of the Diama dam on the Senegal river basin, it is still unclear what are the determining factors of emergence of Rift Valley fever epizootics in the region. More recent oubtreaks show that above average rainfall is likely to contribute also to the expression of the disease in this part of Africa.

Now that climatic conditions are back to normal, weather patterns and major changes in hydrological conditions should be closely monitored during the next two to three years in order to detect any changes which could foster another epidemic. Vector-borne disease monitoring and surveillance of environmental parameters are also fundamental at this time of global warming and extreme weather events.

CONTAGIOUS BOVINE PLEUROPNEUMONIA

Second Meeting of the Consultative Group on CBPP

The Second Meeting of the FAO/OIE/OAU/IAEA Consultative Group on Contagious Bovine Pleuropneumonia (CBPP) was held at FAO headquarters in Rome from 24 to 26 October 2000. Participants from various African countries, from research institutions and FAO partner organizations attended. The theme of the meeting was "Reviving progressive control of CBPP in Africa".

The group concluded that in the near future it was possible only to envisage enhancing the existing systems of CBPP control to suppress the incidence of disease in the endemic maintenance zones and strengthen the protection of free areas. In the longer term, it would be desirable to work towards achieving progressively more effective control, thereby reducing the extent of endemic maintenance areas and the risk of CBPP movement to peripheral areas. Total eradication should be the eventual goal. This would require veterinary services and contagious disease control to be accorded higher priority by governments than it has at present and the exploration of funding mechanisms which would undoubtedly differ from country to country. This matter would need to be brought to the attention of national Ministries of Agriculture at the highest level in appropriate regional fora and at national level through PACE national activities.

TAD*INFO*

Implementation in Viet Nam

TAD*info* software was provided by FAO to Viet Nam and will be used as the national animal health database. Some modules of the software were modified by adding fields and changing the analysis function. It was also translated into Vietnamese to make sure the system can be used without any problems of understanding.

Because the software needs appropriate epidemiological data, the disease surveillance system was strengthened accordingly, more particularly in a pilot area (four provinces) where a new disease reporting form was tested. These activities were supported by the European Union project "Strengthening veterinary services" within its epidemiological component.

During this pilot phase, data coming from the field were recorded in TAD*info*, which was evaluated by the staff as "an appropriate tool for the Epidemiology Division of the Department of Animal Health". However, the major problem so far remains the quality of the data, which needs to be improved.

Training courses in Arcview Software (software used for the mapping component of TAD*info*) and database management were attended by five staff members from the Epidemiology Division and Project Management Unit. Another training course in disease reporting procedures is planned for people who will be in charge of training provincial and district staff.

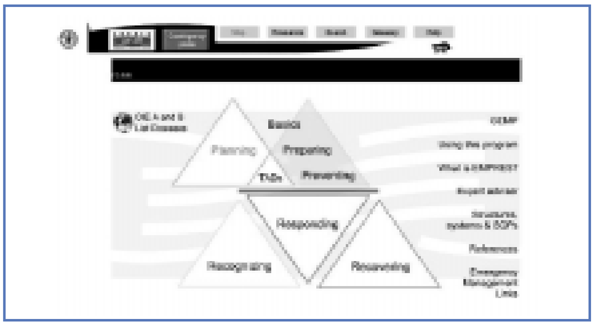
NEWS

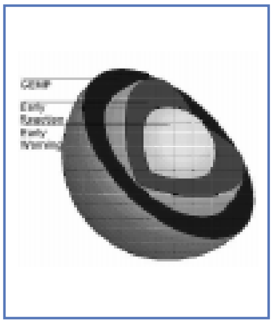
GEMP: EMPRES code for disease emergencies

Good Emergency Management Practices (GEMP): EMPRES code for disease emergencies

Dealing with animal disease emergencies requires careful planning and meticulous execution. EMPRES has developed a multimedia program entitled Good Emergency Management Practices (GEMP), available on CD-ROM and on the FAO/EMPRES Web site (www.fao.org/AGA/AGAH/EMPRES/GEMP.htm*)*, to promote the concept of a code of practice in dealing with animal disease emergencies.

GEMP is the sum total of organized procedures, structures and resource management that lead to early detection of disease or infection in an animal population, prediction of the likely spread, prompt limitation, targeted control and elimination with subsequent re-establishment of verifiable freedom from infection in accordance with the OIE International Animal Health Code. The following diagram summarizes the underlying principles.





Animal health Web-based application

HANDISTATUS II now available on the OIE Web site

Handistatus II is a computer application providing access to monthly and annual OIE data. This new application is now available on the OIE Web site at the following address*:* www.oie.int/eng/info/en_bdd.htm

Publications

Recognizing African swine fever – a field manual

African swine fever (ASF) is the main disease threat to the development of the pig industry in Africa. Periodically it has extended to other continents causing heavy losses. There is no vaccine or treatment for ASF and therefore control depends on the exclusion and/or elimination of the virus from an area. Fundamental to the success of this strategy is the ability to detect the signs of the disease early and take prompt measures to eliminate infection. The purpose of this manual is to enhance recognition of ASF wherever and whenever it occurs. It is hoped that the manual will be useful for veterinary field personnel, farmers and pig breeders in rural and peri-urban areas. A pdf version of the manual can be downloaded from the EMPRES Web site at the following address: www.fao.org/AGA/AGAH/EMPRES/Info/asf/ASFman.htm

CONTRIBUTIONS FROM FAO REFERENCE LABORATORIES AND COLLABORATING CENTRES

Reports from FAO/OIE World Reference Laboratory for FMD, Rinderpest and PPR, Pirbright, UK

Foot-and-mouth disease

Year-end report: present world situation

- *Europe*

Foot-and-mouth disease type Asia 1 entered Greece in July, probably caused by infected animals moving across the Evros River from neighbouring Turkey. A total of 14 outbreaks were reported in the Prefectures of Evros and Xanthi, three of them primary. The nucleotide sequence of the strain was very similar to that of isolates from Iran and Turkey received in 1999 and 2000. However, there were no reports of FMD in European Turkey (Turkish Thrace).

- *Africa and the Near East*

There have been no outbreaks of FMD reported from Tunisia, Morocco or Algeria during 2000, following the successful eradication of the disease in 1999. FMD type O is still present in Egypt. There have been outbreaks of type SAT 1 in Namibia, Swaziland, Zambia, Malawi and South Africa. The first outbreak of type O was reported from South Africa in September affecting a pig herd. The origin was traced to infected swill collected from the port of Durban. The virus spread to a neighbouring farm and also into cattle on communal grazing land. Monovalent type O vaccination has been started around the outbreaks to contain any further spread. Type O isolates were also received from Uganda.

- *Asia*

Outbreaks of types A, Asia 1 and O have been reported from Turkey and Iran, although their distribution, particularly of the Iran/96 and Iran/99 topotypes of type A, is not well defined. These serotypes have also spread into the Caucasian countries. A strain of A Iran/96 was also isolated from samples from Iraq. Outbreaks due to type O have been widespread throughout West Asia, but this year, for the first time, there have been outbreaks due to SAT 2 in Saudi Arabia and on the border with Kuwait. SAT 2 vaccine was used in large dairy herds to help control the outbreaks, and will be included in the routine vaccination programme. The type SAT 2 was probably imported with live animals from northeast Africa, where strains with a similar nucleotide sequence had been circulating during 1999.

FMD remains endemic in Pakistan, Afghanistan, India, Nepal, Bhutan, Myanmar and Bangladesh, outbreaks being predominantly due to type O. Type O has also caused large outbreaks in Turkmenistan, Kazakhstan and Kyrgyzstan.

Outbreaks, also predominantly due to type O, have been reported from Thailand, Lao People's Democratic Republic, Viet Nam and Cambodia with occasional reports of type Asia 1 and A. The Philippines has outbreaks of type O restricted to Luzon island, affecting pigs only. Taiwan Province of China also has type O, but two strains are present: the 1997 adapted pig strain also present in the Philippines and China, Hong Kong Special Administrative Region, and a newer (1999) introduction that caused outbreaks in cattle and goats.

In March this year, there were outbreaks of FMD type O in Japan and the Republic of Korea, the first since 1908 and 1934, respectively. Japan reported four outbreaks, and was able to contain the disease by slaughter and serosurveillance, while the Republic of Korea quickly introduced vaccination. Soon after, in April, an outbreak of type O was reported in a pig farm close to Vladivostock in the Russian Federation, and in southeast Mongolia in cattle, sheep, goats and camels. All these outbreaks were due to the same strain, and probably originated in China. This strain also appeared in Taiwan Province of China in 1999, is responsible for the South African outbreak, and has been found throughout West and East Asia. Because of its wide distribution it has been given the name Pan-Asian strain.

- *South America*

There have been new introductions of FMD virus into Argentina, southern Brazil (Rio Grande do Sul) and Uruguay, after many years of absence. The virus recovered in Argentina was the A_{24} strain, closely related to the vaccine strain, while the outbreaks in Rio Grande do Sol and Uruguay were due to type O. Argentina and Uruguay have eliminated the infections, although the situation in Brazil is unclear. Paraguay has reintroduced vaccination. Outbreaks of types O and A have also occurred in the north of South America.

This is the fourth year in which the World Reference Laboratory has not received samples containing type C FMD virus.

FMD report for July to December 2000

COUNTRY	TYPE
Argentina	A
China, Hong Kong SAR	O
Greece	Asia 1
Iran	O, A
Lao PDR	O, Asia 1
Mauritania	O
Myanmar	O, Asia 1
Nepal	O
Philippines	O
South Africa	O, SAT1
Thailand	O, A
Uganda	O
Zimbabwe	SAT1, SAT3

Rinderpest and peste des petits ruminants

Rinderpest and peste des petits ruminants (PPR) report for July to December 2000

COUNTRY	SPECIES	DISEASE	DIAGNOSIS TECHNIQUE	RESULT
Africa*	Wildlife	Rinderpest/PPR	C-ELISA	RP& PPR +ve
Chad	Wildlife	Rinderpest/PPR	C-ELISA	PPR +ve
Iraq	Goats	Rinderpest/PPR	PCR	PPR +ve
	Sheep	Rinderpest/PPR	PCR	PPR +ve
Pakistan	Cattle	Rinderpest/PPR	PCR	-ve
Senegal	Unknown	Rinderpest/PPR	C-ELISA	RP & PPR +ve
South Africa	Wildlife	Rinderpest/PPR	C-ELISA	-ve
Yemen	Cattle, sheep, goats	Rinderpest/PPR	PCR	PPR +ve
	Cattle	Rinderpest/PPR	C-ELISA	RP & PPR +ve
Zimbabwe	Unknown	Rinderpest/PPR	PCR	-ve

** Country names not communicated.*

Rinderpest and peste des petits ruminants (PPR) report for the year 2000 (PCR results)

COUNTRY	DATE RECEIVED	NUMBER	SPECIES AND MATERIAL	PCR RINDERPEST	PCR PPR
Central African Republic	29/02/00	21	Cattle: swabs and lymph nodes	-ve	-ve
	03/03/00	60	Cattle: swabs	-ve	-ve
Iraq	28/04/00	7	Sheep: swabs	-ve	+ve
	13/07/00	7	Goats: lymph node, lung, intestine	-ve	+ve
	04/09/00	7	Goats: lung, lymph node spleen, liver swab	-ve	-ve
	26/10/00	30	Sheep: lymph node, spleen, lung, intestines and swabs	-ve	+ve
Pakistan	26/06/00	6	Cattle: swabs, tonsil, lymph nodes	-ve	-ve
Sudan	13/03/00	6	Cattle: swabs and blood	-ve	-ve
Turkey	22/12/99	8	Sheep and goats: lung, lymph node, spleen, tongue	-ve	+ve
Uganda	11/01/00	8	Cattle, sheep and goats: blood and swabs	-ve	-ve
Yemen	15/09/00	30	Cattle, sheep and goats: lymph node, lung, spleen, swabs and intestine	-ve	+ve
Zimbabwe	06/06/00	2	Tissue culture cell lines	-ve	-ve

NEWS@RADISCON

Radiscon Regional Animal Disease Surveillance and Control Network

Flash news

The RADISCON project (IFAD/FAO) has been extended up to June 2001. A proposal for RADISCON Phase II will be presented to donors for funding a second phase of this successful programme. This phase would build on the achievements of the first phase and would serve as a bridge to the future Animal Health Commission for the Near East.

RADISCON workshop in Baghdad

RADISCON Workshop for the Strengthening of the National Animal Disease Surveillance System (NADSS), Baghdad, Iraq, 23-28 September 2000

This was the last workshop in the series of workshops organized to strengthen/establish NADSSs in participating countries. Twenty-five veterinarians participated in the workshop, with a representative from each of the 18 Governorates (Mouhafadhats) that constitute the country, four from the Central Veterinary Laboratory and three from the Central Veterinary Services (see group photograph).

The main outcome of the workshop is to establish soon an Epidemiology Unit to coordinate the NADSS work. It will be responsible for data gathering, verification and analysis. The national desire is to develop it into an Epidemiology Service.

PHOTO COURTESY OF KARIM BEN JEBARA

Workshop participants

The RADISCON Reporting Form, with slight amendments, was adopted to serve as a basis for disease reporting in Iraq and will be used shortly countrywide. As part of the strengthening of the surveillance system in Iraq, six computers and printers were purchased, destined for the Epidemiology Unit and for some Governorates.

The TAD*info* database was customized for Iraq and the RADISCON National Liaison Officers (NLO) were trained in its use in Rome in November 2000. TAD*info*-Iraq is now being implemented.

TAD*info* training

Advanced RADISCON training on the use of TADinfo to manage national databases

An advanced course on TAD*info* took place in Rome from 13 to 17 November 2000. The operators of national databases in Algeria, Libyan Arab Jamahiriya, Morocco and Tunisia took part in the training (see group photograph).

TAD*info* is now implemented in all the Maghreb countries. While the disease observation module is used in all countries, only Algeria and Tunisia are using the disease surveys module, in support respectively of brucellosis active surveillance and bluetongue surveillance. Older versions of TAD*info* in use in these countries were updated, with the final version having all the modules completed (vaccination and livestock census). All the countries have adopted the RADISCON Disease Outbreak Report model to use in their own national animal disease surveillance and monitoring systems. The system has started functioning in these countries and reports are being received from the field. The operators of the database suggested three major ideas in developing TAD*info* that would help them in their work. These are as follows:


PHOTO COURTESY OF KARIM BEN JEBARA

Advanced course on TAD*info* and database management, Rome, 13-17 November 2000

- include a multiuser database to help data processing and analysis;
- allow entry and analysis of follow-up reports; and
- add a field dedicated to the name of the livestock owner, which is important for follow-up on outbreaks.

Participants analysed data using TAD*info* modules and a variety of tools (such as Excel and a macro for economic analysis). Participants made information searches using the Internet on the livestock sector and disease situations in some countries that may be useful for decision-makers.

While the Java version of TAD*info* will solve the problem of multiuser access to the database when it is available, it was agreed that in the future TAD*info* would incorporate the livestock owner's name to allow the processing and analysis of outbreak follow-up reports.

French version of TADinfo implemented in Mauritania

A mission took place in Nouakchott, Mauritania, from 3 to 7 September 2000. Three future operators of the National Database TAD*info*-Mauritania (French version) were trained in its use. Numerous efforts have been made since the start of the Mauritanian Animal Disease Surveillance and Monitoring Network (REMEMA) in 1996 to build up the Network. Priority diseases are mainly rinderpest, FMD, peste des petits ruminants (PPR), CBPP and RVF.

Workshop on FMD control in Algeria

Workshop on Emergency Preparedness and Contingency Planning for the Control of Foot-and-Mouth Disease, Algiers, Algeria, 15-17 October 2000, for the National Algerian Veterinary Services

The workshop was organized as part of the Technical Cooperation Programme (TCP/ ALG/8922) and was attended by headquarters staff from the National Veterinary Services, the National Institute for Veterinary Medicine and senior veterinarians from 45 of the 48 Wilayates (Provinces) of Algeria. The programme of the workshop was designed to provide participants with the necessary background information on the disease and its control, including the Algerian experience, and on the principles and practice of emergency preparedness and contingency planning, leading progressively to the formulation of recommendations for the strengthening of the Algerian FMD Contingency Plan.

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