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INSIDE

THIRD MEETING OF THE CONSULTATIVE GROUP ON CONTAGIOUS BOVINE PLEUROPNEUMONIA

The Third Meeting of the FAO-OIE-AU/IBAR-IAEA Consultative Group on Contagious Bovine Pleuropneumonia (CBPP) was held from 12 to 14 November 2003 at FAO headquarters in Rome and was attended by 39 participants from various research institutions, government departments, international organizations and FAO staff members and consultants. The theme of the meeting was "Towards sustainable CBPP control programmes for Africa", and it was formally opened by Ms Fernanda Guerrieri, Chief of the Emergency Operations Service of FAO (TCEO) (see page 2).

RIFT VALLEY FEVER IN WEST AFRICA

On 25 September 2003, a message of alert was sent to the members of the EMPRES discussion forum relating to an increased risk of Rift Valley fever (RVF) occurrence in West Africa, following above average rainfall during the 2003 rainy season. Within the framework of their regular active surveillance programme for RVF, viral circulation was detected by the veterinarian authorities of Mauritania in October 2003 in sentinel flocks located in potential high-risk areas of disease occurrence. Disease investigations were carried out in the field to define the extent of the problem and identify the clinical signs of the disease in the animal and human populations (see page 8).

PHOTO: V. MARTIN

Rift Valley fever poster being explained to a livestock owner and her children. This poster raises awareness of village communities about the disease, its spread and contamination of humans

DISEASE INVESTIGATION IN THE COMOROS – WHAT IS YOUR DIAGNOSIS?

In February 2003, EMPRES was alerted by the National Veterinary Authorities of the Comoros that frequent mortalities had been recorded in the cattle population. A preliminary epidemiological investigation carried out in the field identified cattle imported from the United Republic of Tanzania as the possible source of infection. These animals had been introduced to the Comoros without previous quarantine (see page 19).

This issue covers the period July to December 2003.

CONTAGIOUS BOVINE PLEUROPNEUMONIA

Third Meeting of the Consultative Group on Contagious Bovine Pleuropneumonia

The third meeting of the FAO/International Office of Epizootics (OIE – World Organisation for Animal Health)/African Union (AU)/Interafrican Bureau for Animal Resources (IBAR)/International Atomic Energy Agency (IAEA) Consultative Group on Contagious Bovine Pleuropneumonia (CBPP) was held from 12 to 14 November 2003, at FAO headquarters in Rome and was attended by 39 participants from various research institutions, government departments, international organizations and FAO staff members and consultants.

PHOTO: F. THIAUCOURT

Participants at the meeting of the Consultative Group on Contagious Bovine Pleuropneumonia, 12–14 November 2003, FAO headquarters, Rome

Small-scale livestock producers often felt the dramatic impact of animal disease outbreaks and this meeting should strive to assist them with practical and achievable outcomes which would make a difference in their production capacities

The theme of the meeting was "Towards sustainable CBPP control programmes for Africa", and it was formally opened by Ms Fernanda Guerrieri, Chief of the Emergency Operations Service of FAO (TCEO). In her opening remarks, Ms Guerrieri thanked the Animal Health Service (AGAH), for the excellent working relationship and the professionalism between AGAH and TCEO staff in providing technical assistance to member countries in the control of animal disease outbreaks. She stressed that small-scale livestock producers often felt the dramatic impact of animal disease outbreaks and this meeting should strive to assist them with practical and achievable outcomes which would make a difference in their production capacities. Special thanks were extended to Dr Yves Cheneau for his able leadership, untiring efforts and technical efficiency during his tenure as Chief of the Animal Health Service of FAO for nearly 12 years until his retirement at the end of November 2003. Ms Guerrieri declared the meeting open and wished all participants fruitful and productive deliberations.

Expected outputs of the consultative group meeting on CBPP

Dr Juan Lubroth, Senior Officer of the Infectious Diseases/EMPRES group of FAO delineated the objectives and expected outcome of the meeting by reiterating the need for practical solutions and an innovative approach to the control of CBPP in Africa. He reminded participants that the consultative group meeting for CBPP was unique in character in that it brought together field veterinarians, laboratory diagnosticians, researchers, policy-makers and international partner institutions such as AU-IBAR, OIE and the Joint FAO/International Atomic Energy Agency (IAEA) Division for seeking solutions to the problem of CBPP control. Dr Lubroth said that the cross-fertilization of ideas, technical exchanges and forceful interpretation of the way forward in CBPP control have at times resulted in sterile debates and arguments that have unfortunately led to less than productive meeting outcomes. He hoped that this would not be the case at this important meeting.

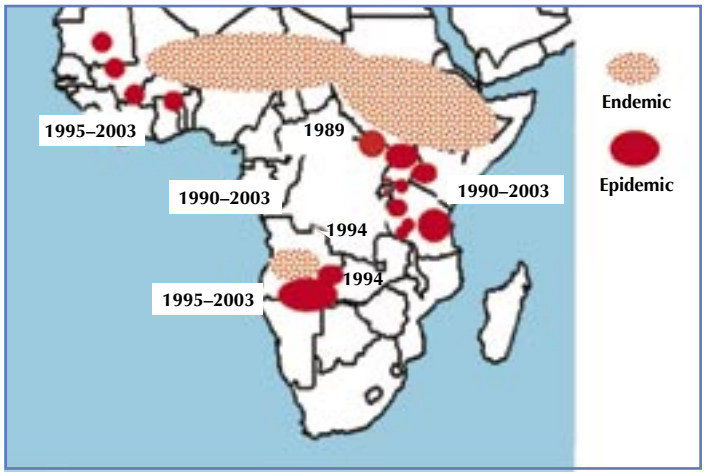
Since 1990, 13 projects have been utilized in emergency and capacity-building operations to establish field and laboratory activities for CBPP surveillance and control

Technical presentations

It was evident from the overview given by the FAO Animal Health Officer responsible for bacterial diseases, Dr William Amanfu, that CBPP was a major problem on the African continent and that it threatened uninfected areas of the continent from the focal regions of endemic disease in western, central and eastern Africa.

Such incursions were serious developments leading to urgent requests for assistance from governments and requiring emergency inputs in the form of Technical Cooperation Programme (TCP) projects delivered through FAO's EMPRES programme. Since 1990, 13 projects with an overall expenditure of over US$3 million have been utilized in emergency and capacity-building operations to establish field and laboratory activities for CBPP surveillance and control. The Joint FAO/IAEA Division in Vienna has also contributed significantly to the laboratory capability for CBPP diagnosis. These activities have collectively been a catalyst for synergism between member and donor communities and it is expected that such technical assistance, coupled with long-term strategic planning, could lead to sustainable strategies for CBPP control in Africa.

Technical presentations on "CBPP control strategies" were made by Drs B. Kebkibah (AU/IBAR, Nairobi), F. Musisi (FAO/Subregional Office for Southern and East Africa [SAFR], Harare), J. Mariner (AU/IBAR, Nairobi) and M. Lesnoff (International Cooperation Centre of Agricultural Research for Development/CIRAD-EMVT, Debre Zeit, Ethiopia). There was a pressing need for the collection of more timely, geographic data for a better understanding of disease dynamics and for the development of control strategies. Diagnostically derived data mainly from serological testing were required for the assessment of prevalence to confirm zoning. Therefore, further diagnostic capacity building and longitudinal studies on CBPP disease prevalence in local communities could be advantageous. Models of CBPP transmission that took into account social structures in pastoral communities were also discussed and could be used to predict the progress and persistence of disease in herds. The models showed that CBPP could persist in relatively small herds and could propagate easily wherever cattle were gathered, particularly at kraals and watering holes. Although quarantine was essential to break the transmission cycle of the disease, the difficulty of implementing this strategy in Africa was highlighted. The models were used to predict the effects of vaccination, antibiotic treatment alone and combined application of antibiotic and vaccine. Simulations showed that vaccination alone could not eradicate the disease and that treatment with an effective antibiotic might reduce current losses attributed to it. More field data would be required to improve the accuracy of these models and they would need to be validated against the many and varied situations observed in the African pastoral systems. The significance of CBPP resurgence in some Southern African Development Community (SADC) member countries was explained and continuing threats to international exports were raised by the recent outbreak of CBPP in the East Caprivi strip of Namibia near the border with Botswana. A phased 16-year plan to reduce CBPP endemicity in southern African countries was presented.



CBPP spread in Africa from the 1990s to 2003 (OIE reports)
Source: Consultative Group Meeting on CBPP, 2003.

Presentations that concerned novel vaccine technologies and vaccination strategies were given by Drs J. Frey (Institute of Veterinary Bacteriology,

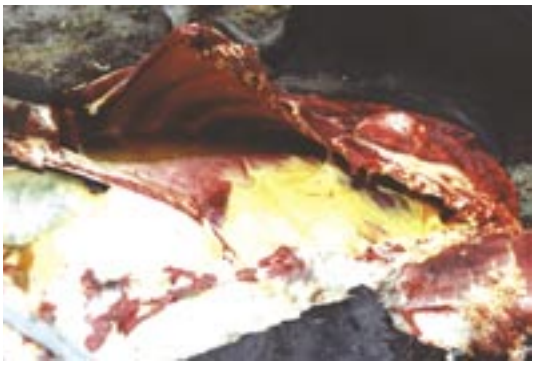
Cattle showing signs of CBPP: neck extension, mouth breathing, coughing, abducted elbows, abdominal breathing and heave line
Source: Extracted from CBPP CD by the Department of Veterinary Tropical Diseases, University of Pretoria, South Africa, June 1999.

Bern, Switzerland), R. Nicholas (Veterinary Laboratories Agency, Weybridge, United Kingdom), H. Wesonga (Kenya Agricultural Research Institute, Nairobi, Kenya), A. Yaya (LANAVET, Garoua, Cameroon) and J. March (Moredun Research Institute, Edinburgh, United Kingdom). In this scientifically oriented session, the work resulting from field trials of new improved vaccine formulations, dose response and apparent reversion to virulence of the current vaccine strain and the molecular basis of virulence were presented. CBPP is caused by the small colony variant of *Mycoplasma mycoides* subsp. *mycoides* (MmmSC). No toxins have been described for this mycoplasma. Instead, it probably produces disease through adverse interactions with the host's immune system and cellular metabolism. Several candidate molecules of MmmSC were described and evidence of their role as pathogenic factors was demonstrated. Some of these, especially those that were antigenic membrane proteins, could be targeted for vaccine development. It was shown that inoculation with whole saponized MmmSC vaccine exacerbated CBPP, as did pure preparations of a membrane lipoprotein Q (LppQ). It has been known for some time that CBPP vaccines sometimes lead to unpredictable adverse reactions at the site of inoculation. Organisms isolated from one such reaction site were shown to be capable of producing this reaction consistently in other inoculated bovines. These isolates were found to be biochemically different from the parental T_1 44 vaccine strain. The significance of this in the field is not clearly understood. The failure of some CBPP vaccines was also investigated and provisionally attributed to insufficient dosage. CBPP vaccine is a live attenuated vaccine and therefore its stability under field conditions and its correct administration are very critical to vaccine efficacy. Recent studies with diluents containing magnesium sulphate have shown that they lower the pH of the vaccine, resulting in the death of mycoplasma cells in the vaccine preparation. Moreover, they are stable for only two hours under these conditions. Options for alternative diluents that do not alter pH, or provide better buffering formulations and the addition of pH indicators in the vaccine preparation to assess deterioration under field conditions, were described. Better protocols and formulation of vaccine batches were presented to solve some of these problems. Discussions on the requirement of new vaccines came to the conclusion that current vaccines could be improved in their formulations, thermal stability and quality assurance. Basic research was needed to continue towards realization of better vaccines that produce higher protective immunity and allow differentiation between vaccination immunity and field-acquired immunity.

In the session on the "Use of antibiotics and diagnostic tests", presentations were made by Drs F. Thiaucourt (CIRAD-EMVT, Montpellier), R. Gieger (IAEA, Vienna), J. Regalla (National Laboratory of Veterinary Science [LNIV], Lisbon), A. Catley (Pan African Programme for the Control of Epizootics [PACE]/Community-based Animal Health and Participatory Epidemiology Unit [CAPE]/IBAR, Nairobi), M. Rweyemamu (Advanced Veterinary Information System [AVIS], London), G. Thompson (PACE/IBAR, Nairobi) and F. Mbithi (International Livestock Research Institute [ILRI], Nairobi). Dr M. Rweyemamu presented a new Web-based product from AVIS on the current information on CBPP; it was demonstrated and opened for comment from participants.

The use of antibiotics in the treatment of CBPP has long been a source of heated debate and controversy

The use of antibiotics in the treatment of CBPP has long been a source of heated debate and controversy. Their use to treat lung sickness has been illegal in many countries. The reality in the field is that tetracycline is often used to treat CBPP. A trial showed that it reduced local inflammation and reduced the overall disease pathology in the animals but did not kill the pathogen. It could therefore not be recommended for use in eradication campaigns. Clearly more research into the antimicrobial activity of antimycoplasma antibiotics needs to be conducted urgently.



Sero-fibrinous pleural effusion
Source: Extracted from CBPP CD-ROM by the Department of Veterinary Tropical Diseases, University of Pretoria, South Africa, June 1999.

The complement fixation test (CFT) developed in 1953 has been the linchpin of CBPP serological diagnosis. Recently, a competition ELISA (cELISA) was developed and a five-year coordinated research project was conducted by the FAO/IAEA Joint Division to validate the test in the field. This study was completed in 2003. The strengths of this technique were its ability to detect infected animals over a longer period of the infectious cycle than the CFT, its ease of use and the provision of internal quality control systems. However, it did not consistently detect animals at the early stages of infection as did the CFT. It exhibited a relative sensitivity of 73 percent compared to the CFT and a relative specificity of about 98 percent. Based on these data, the test has been recommended to the OIE for inclusion in the prescribed tests for CBPP diagnosis. It was surmised that no single diagnostic method was suitable for definitive serological diagnosis of CBPP but CFT and cELISA could be conducted in tandem to increase the overall performance of serological diagnosis. CFT followed by the immunoblotting test (IBT) was used consistently in Portugal during its CBPP eradication campaign. The IBT was capable of confirming the results of CFT and distinguishing false positive results that were sometimes obtained with CFT. It also remained positive over a longer period of infection than the CFT. The control measures of zoning after serological prevalence studies, abattoir surveillance and movement control coupled with CFT, mycoplasma isolation, histopathology, and the polymerase chain reaction (PCR) test were adopted in the effort that eventually eradicated CBPP from Portugal, culminating in the country's declaration of freedom from CBPP by the OIE in 2003.

In Africa, where veterinary services have weakened, and field and laboratory resources have diminished, conventional basic epidemiological parameters such as prevalence that are essential for zoning are rarely available. Therefore, new techniques that draw on the local expert knowledge of livestock owners and handlers have been used to collect essential epidemiological data. These participatory methods have been used by PACE/CAPE to gauge the extent of CBPP, to map the extent of livestock movements and assess the impact of the disease within a community. Unlike conventional methods, participatory epidemiology (PE) is a comparative, proportional approach within which random sampling, standardization and error checking can be used. It is also "an insider's view" where private and sensitive information can be gathered that considers social factors while obtaining ground truth information.

The main mandate of PACE is policy development and to that end, it requires accurate epidemiological data, impact assessments and a deeper understanding of the tools available for CBPP control. Activities to generate these data were outlined over the PACE projects' lifespan that may come to an end in October 2004. The overall aim

PHOTO: ROLAND GEIGER

Participants at a laboratory training workshop on CBPP diagnosis in Bamako, Mali, February 2003

was to persuade the authorities to adopt regionally integrated policies of control and surveillance in the management of livestock diseases. Interim policies and the draft policy document were mentioned, but better impact measurement studies were required to secure their basis. The alternative vaccination strategies offered were based on a public–private partnership of "elective" vaccination and effective antibiotic treatment, neither of which is officially endorsed. The feasibility of this strategy would require liberalization of vaccine availability for farmers, acceptance of antibiotic therapy and training of appropriate personnel. The principle of elective vaccination was strongly debated but no firm decisions were taken.

The situation of CBPP in various regions and countries was presented in the session "Country-specific control strategies". The presenters, Drs B. Seck (Central Veterinary Laboratory, Bamako, Mali), F. Fasanmi (Abuja, Nigeria), J. Simão (Luanda, Angola), O. Huebchele (Central Veterinary Laboratory, Windhoek, Namibia), D. Bangoura (Director, Veterinary Services, Conakry, Guinea) and P. Mangani (Deputy Director, Department of Research and Specialist Services, Lusaka, Zambia), gave an updated insight into the extent of the disease in west and central Africa. It was apparent that in west, central and southern Africa, where extensive pastoral and nomadic livestock husbandry is practised and where north to south cattle trade movement is very important, CBPP has an adverse impact as shown by mortality and morbidity data. However, it was not possible to assess the full impact of the disease because many countries in this region did not offer consistent reports of CBPP outbreaks. A phased approach to CBPP control was suggested, but the most significant factor in the implementation of such a strategy was the presence of political will and commitment. Other factors such as a good preparatory phase and the opportunity to develop and maintain institutional capacity and coordination among regions were likewise considered important. Some countries such as Nigeria cited the lack of consistent funding and sustainability coupled with the lack of a policy framework as the major constraints. In Angola, it was impossible to construct a physical barrier between infected and non-infected areas as has been done south of the border in Namibia. Instead, well-defined policies, good vaccine and vaccination campaigns, political will and international support were deemed necessary for effective CBPP control. An alarming report of a new outbreak in the East Caprivi strip in Namibia north of the Botswana border exemplified the threat of CBPP to free areas in the SADC region. In Zambia, the incursion of CBPP from the west and its movement northwards into previously free areas were shown. Control efforts in Guinea included zonation, public awareness via the popular press, training through workshops and the provision of handbooks, and legislation to ensure the traceable identity of animals with government and international financial support in CBPP disease control.

Summary of recommendations

Three working groups to consider control strategies, tools for CBPP control, vaccines, and the use of antibiotics and diagnostic tests were formed to consider the current status and provide workable solutions that would aid CBPP control in Africa. The recommendations of the meetings were to gather data to conduct impact, cost-benefit and prevalence studies in order to formulate strategic and progressive control methodologies that were regionally

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targeted. The use of PE and modelling were seen as useful tools to this effect. Quality assured vaccines with improved formulations and improved thermal stability and the use of antibiotics that were clinically proven to produce bacteriological sterility from MmmSC were identified as the main requirements for CBPP therapeutic control. It was noted that combined therapy with these could be a useful regimen for this purpose. The Pan African Veterinary Vaccine Centre (PANVAC) should be re-established and maintained by AU/IBAR for vaccine production and quality assurance. Continuing research efforts into the basic pathobiology of CBPP with a view towards vaccine improvement and robust diagnostic tests that were capable of distinguishing between vaccinated and field-acquired immunity or disease were required. However, the current serological tests of CFT and cELISA were deemed adequate for herd diagnoses and epidemiological studies. Thus, laboratory capacity building for these and other diagnostic tests such as mycoplasma identification by culture and the confirmatory IBT were also required.

There is a wealth of knowledge available on CBPP in the scientific literature and increasingly in Web-based information packages (links to some of these may be found on the FAO EMPRES Web site (http://www.fao.org/ag/AGA/AGAH/EMPRES/index.asp).

After this very successful consultative group meeting that assembled knowledge from wide areas of regulatory, field, scientific and technical disciplines, consensus was obtained that CBPP was difficult to control in Africa and innovative approaches may eventually be necessary to control the disease. The recommendation of establishing pilot projects to evaluate alternatives was made.

ALAIN PROVOST

The second consultative group meeting on CBPP was held in Rome from 24 to 26 October 2000. Dr Alain Provost, then representing the OIE, was the session Chair for the meeting. Sadly, Dr Provost, affectionately referred to as the "Pope" of CBPP by his colleagues and peers, passed away on 24 November 2002. In a brief citation before the posthumous award of a silver medal of recognition from FAO in honour of Dr Provost, Dr Yves Cheneau acknowledged his scientific achievements and contributions to the control of CBPP in Africa. He said that "Dr Alain Provost's research work on CBPP will forever remain part of the foundation of fundamental research in the control of CBPP in the world, particularly his scientific contributions in the development of current CBPP vaccines".

RIFT VALLEY FEVER

Rift Valley fever in West Africa

On 25 September 2003, a message of alert was sent to the members of the EMPRES discussion forum relating to an increased risk of Rift Valley fever (RVF) occurrence in West Africa, following above average rainfall during the 2003 rainy season.

PHOTO: V. MARTIN

Sentinel herd (small ruminants) of Ross-Bethio in Senegal. Flocks of small ruminants are located in RVF high-risk areas along the Senegal River

It is necessary to strengthen the surveillance of the disease at a regional level and define appropriate control strategies

Within the framework of their regular active surveillance programme for RVF, viral circulation was detected by the veterinarian authorities of Mauritania in October 2003 in sentinel flocks located in potential high-risk areas of disease occurrence. Disease investigations were carried out in the field to define the extent of the problem and identify the clinical signs of the disease in the animal and human populations.

The situation in Mauritania triggered an investigation mission to Senegal where the disease was also detected in various parts of the country, causing storms of abortion in the small ruminant population.

Since RVF can occur in regions with similar ecosystems and the same climatic constraints, it is likely that the disease was present in other countries of the region. However, in the absence of a proper surveillance system, the disease can remain undetected or misdiagnosed for other diseases that occur under similar conditions. The importance of confirmatory diagnosis is essential in protecting the welfare of the human population and exposed animals.

RVF poster being explained to a livestock owner and her children. This poster raises awareness of village communities about the disease, its spread and contamination of humans

PHOTO: V. MARTIN

Sentinel herd in Senegal with a young shepherd

PHOTO: V. MARTIN

In order to mitigate the adverse effects of RVF on small ruminant production systems and on the villagers, it is necessary to strengthen the surveillance of the disease at a regional level and define appropriate control strategies. A workshop involving the different stakeholders of RVF surveillance was to be held in Dakar from 22 to 24 January 2004 to address this issue.

FOOT-AND-MOUTH DISEASE

Foot-and-mouth disease in Argentina

Latin America was affected by several outbreaks of foot-and-mouth disease (FMD) in 2002–2003. Following previous outbreaks in Paraguay (July 2003) and Bolivia (July–August 2003), an outbreak of FMD occurred in Tartagal, province of Salta (northern Argentina, near the border with Paraguay) in September 2003.

FMD in Argentina and in neighbouring countries in 2003

Background information

Argentina, the second largest country in South America after Brazil, is situated in southern South America and shares borders with Bolivia and Paraguay to the north, Brazil and Uruguay to the east and Chile to the west. The country covers an area of 2 766 890 km^2 with a human population of 38 740 807.

Argentina is the world's fifth largest producer of cattle, yet its exports of live cattle are small because of the presence of FMD in the country and quotas imposed by importing countries. Argentina produces 5 percent of the world's bovine meat (beef and buffalo) at almost 3 million tonnes. This make it the world's fourth largest producer of beef and veal and the tenth largest exporter of fresh bovine meat. In 2000, the United States of America was Argentina's principal market for beef, followed by Germany, Chile, Canada and Israel. Until July 2003, Argentina also exported 9 000 tonnes of beef to Brazil, valued at US$13 million and it sent 19 000 tonnes of beef to Chile worth US$30 million.

Livestock are mainly concentrated in the provinces of Buenos Aires, Santa Fé, Córdoba, Ente Ríos, Corrientes and La Pampa. The province of Salta is characterized

TABLE 1
Livestock production and trade for Argentina

Animal population	1999	2000	2001	2002
Cattle stocks (head)	49 056 700	48 674 400	48 851 400	50 669 000
Sheep stocks (head)	13 703 400	13 561 600	13 500 000	4 250 000
Goat stocks (head)	3 402 700	3 490 200	3 386 600	3 550 000
Pig stocks (head)	4 200 000	4 200 000	4 200 000	4 250 000
Cattle exports (head)	10 222	21 041	14 021	79
Bovine meat exports (tonnes)	298 961	301 837	133 996	–

Source: FAOSTAT.

TABLE 2
Recent foot-and-mouth disease outbreaks in Argentina and neighbouring countries reported to the OIE

Country	Date of outbreak	Place	Serotype
Argentina	September 2003	Tartagal, province of Salta	O
Bolivia	September 2003	San Antonio, Chuquisaca department Ocuri, Potosí department Sopachuy, Chuquisaca department Torrecillas, Tarija department Morros Blancos, Tarija department	O
	August 2003	La Paz department	O
	July 2003	Chuquisaca department, Hernando Siles province Potosi department, Cornelio Saavedra province	O
Paraguay	July 2003	Pozo Hondo, Pedro P. Pena district, Boquerón department (3 km from the border with Argentina and 7 km from the border with Bolivia)	O and A
	October 2002	Canindey province (which borders Brazil)	O
Venezuela	October 2002	Presidente Paez Parish, Alberto Adriani municipality, Merida state	A

by a low livestock density, mainly with subsistence producers. Beef production in Argentina is divided into different zones or areas according to the main purpose for which cattle are bred, determined by geographic, ecological and weather conditions of each area.

Normally, animals sent to slaughter, whether for domestic consumption or for export, consist of steers fattened under extensive conditions with natural or planted pastures in fattening areas. Steers of six to seven months of age are weaned and between the ages of seven months to one year are transported by hoof or truck to fattening areas. This system implies the movement of 12 million animals each season.

Sheep production is mainly carried out in the FMD-free Patagonia region (south of the Rio Colorado), which has over 66 percent of the national sheep stock.

Industrial pig production in the country is characterized by full-cycle, closed integrated systems that start the process with piglet breeding and fattening for subsequent slaughter, conducted in facilities often owned by the same firm or in establishments with which agreements have been made. Pigs raised in these types of operations are kept in confinement until the time of slaughter ("all-in-all-out processing"). Since these are closed production systems, there is no contact between pigs and other animal species.

While serotype A has been identified in Venezuela, Bolivia and Argentina were affected by serotype O and Paraguay by both serotypes O and A. Serotype C has not been recorded since 1995 (in Brazil). No Asia 1 or any of the SAT viruses have ever occurred in the Americas.

In April 2001, a widespread outbreak of FMD serotype A affected Argentina's major cattle concentration region. The number of animals exposed to the disease was 2 289 280. Out of 120 383 animals that were affected by the disease, 118 617 (98.5 percent) were bovine, 1 654 (1.4 percent) were pigs, 106 (0.01 percent) were sheep and six were goats. Argentina lost its status of FMD-free country shortly after it had been attained and a new FMD eradication plan was adopted based on the strategy of mass vaccination of the cattle population (a total of 122 million bivalent vaccines using serotypes O and A doses of oil adjuvant vaccine were distributed).

Since 2002, Argentina, which has not had an outbreak of FMD since January 2002 (Vicuña Mackenna, Córdoba province), resumed the export of fresh beef to 62 foreign markets. In the first seven months of 2003, Argentina's beef exports totalled US$322 million. According to government statistics, this was 26 percent more than during the

TABLE 3
Surveillance area, estimated number of producers and susceptible animals in Argentina in the provinces of Salta, Formosa and Chaco

Provinces	Department	Surface (km²)	Estimated no. of producers	No. of bovines	No. of swine	No. of ovines and caprines	Total susceptibles
Salta	Santa Victoria	3 912	1 044	16 155	1 575	142 188	159 918
	Iruya	3 515	154	3 314	1 532	2 538	7 384
	Oran	11 892	511	21 362	2 221	6 154	29 737
	Rivadavia (South)	4 280	889	25 432	15 150	25 722	66 304
Formosa	Patino	24 502	2 377	421 763	21 143	64 453	507 359
Chaco	Almirante Brown	17 272	765	126 583	3 243	35 730	165 556
	TOTAL	65 373	5 740	614 609	44 864	276 785	936 258

Source: Servicio Nacional de Sanidad y Calidad Agroalimentaria (SENASA).

same period in 2001, when many international markets were still closed to Argentine exports.

History of FMD viruses from Argentina

FMD was first recorded in Argentina in 1864. Over the past decade, the country has had three major phases of FMD outbreaks. The first phase was from 1990 to 1994, the second from 2000 to January 2002 and the third in 2003. From 1990 to 1994 FMD types A, O and C strains were isolated. From July 2000 to December 2000 types A and O were isolated; from December 2000 to January 2002 exclusively type A, and in September 2003 serotype O was identified.

FMD affected Tartagal in September 2003

Areas affected and measures undertaken

FMD affected Tartagal, province of Salta (northern Argentina, near the border with Bolivia), in September 2003 (see map on p. 14).

Table 3 shows the surveillance area, producers and susceptible animals per department in Argentina.

Vesicular lesions on the snout of a pig with foot-and-mouth disease

Foot-and-mouth disease in a bovid: break in the hoof wall

PHOTOS: University of Pretoria: J.A.W. Coetzer; R.C. Tustin; G.R. Thomson

Inspection and disinfection check point – Argentina

In September 2003, the total number of susceptible animals in the outbreak was 58 pigs, ten goats, two sheep and three bovines. Of the 58 pigs, 18 were affected and two cases of deaths were reported. FMD virus type O was detected from swine samples.

The presence of virus serotype O was deduced from the serological response and detected by the liquid phase blocking ELISA (LPB-ELISA), although viral activity was also determined by the 3ABC ELISA and confirmed by Western blotting (WB). Control measures were immediately taken by SENASA (Servicio Nacional de Sanidad y Calidad Agroalimentaria), Argentina, in order to avoid the spread of the disease.

In addition to immediate implementation of disease control measures in the area affected (by focal, perifocal and surveillance), zoning was initially established as a strategy to mitigate sanitary risk of FMD extension involving the departments of San Martin, Santa Victoria, Orán, Iruya and Rivadavia and the department of Ramón Lista in the province of Formosa.

The zoning areas were subsequently enlarged and at this time they involved an area comprised of the Bermejo River to the north at the international border with Bolivia and Paraguay, including the department of Gral, José de San Martín and northern Rivadavia in the province of Salta and the departments of Ramón Lista, Matacos and Bermejo in the province of Formosa. The implementation of intensive strategic sanitary measures was established in this zone. Outside this area, surveillance area actions were established, comprising the bordering departments of the provinces of Salta and Formosa.

Closure of an important auction market in Argentina

TABLE 4
Specific measures of the sanitary emergency

Area affected (action zone)	• Movement of the Emergency Team to the zone. The team consists of SENASA staff from the Epidemiology, Laboratory and Technical Control Bureaus. They are in the zone to coordinate and develop sanitary actions with regard to suspected FMD. • Focal area: prohibition of all movements of incoming and outgoing susceptible species from the establishments, including people and potentially contaminated objects (fomites), which may act as carriers of the aetiological agent. Sample collection, sacrifice and incineration of affected animals and contacts, disinfection and biosecurity measures were also conducted. • Perifocal area: a distance of 3 km from the focal area where vaccination of all susceptible animals, control of animal movements, identification, tracing and serological sampling were carried out. • Surveillance area: 10 km from the perifocal area. In this area, vaccination of all susceptible species, control of movement, tracing and serological sampling with identification were carried out. Also instituted were: • the closure of the Tartagal municipal slaughterhouse; • the establishment of four disinfection and movement control posts.
Additional intensive strategic actions (cordon sanitaire)	**Measures** • Temporary prohibition of movement of FMD-susceptible animals, to any destination and for any purpose, with the exception of immediate local slaughter. • Prohibition of incoming FMD susceptible animals, except those intended for immediate slaughter. • Disallowing entry into the area of animals destined for slaughter. • Closure of slaughterhouses with no national or provincial approval or with inadequate biosecurity measures. **Actions** • Registration of all farms and producers within the area. • Strategic vaccination against FMD and identification by ear tags of all susceptible animals. • Revaccination after 30 days. • Establishment of disinfection and movement control posts, with personnel from SENASA and the support of the security forces (border police, police, etc.). • Public awareness bulletin for local media with the aim of informing people about sanitary actions to be carried out within the zone. • Intensification of border controls at crossings and conducting border patrols with national border police assistance.
Surveillance area actions (surveillance zone)	• Registration of all farms and producers in the area housing susceptible animals. • Systematic FMD vaccination of bovines. • Prohibition of animal movement unless destined for slaughter, outside the surveillance zone conducted under official control. • Epidemiological surveillance (disease search, serological screening).

Measures undertaken by neighbouring countries

Brazil, Chile, Paraguay and Uruguay temporarily banned imports of Argentine meat products to prevent the spread of a new FMD outbreak.

The agriculture ministers of Argentina, Bolivia, Brazil, Chile, Paraguay, Peru and Uruguay held a meeting in July 2003 in Bolivia to increase cooperation in controlling FMD in the region and signed an agreement on emergency and contingency plans.

Discussion and conclusion

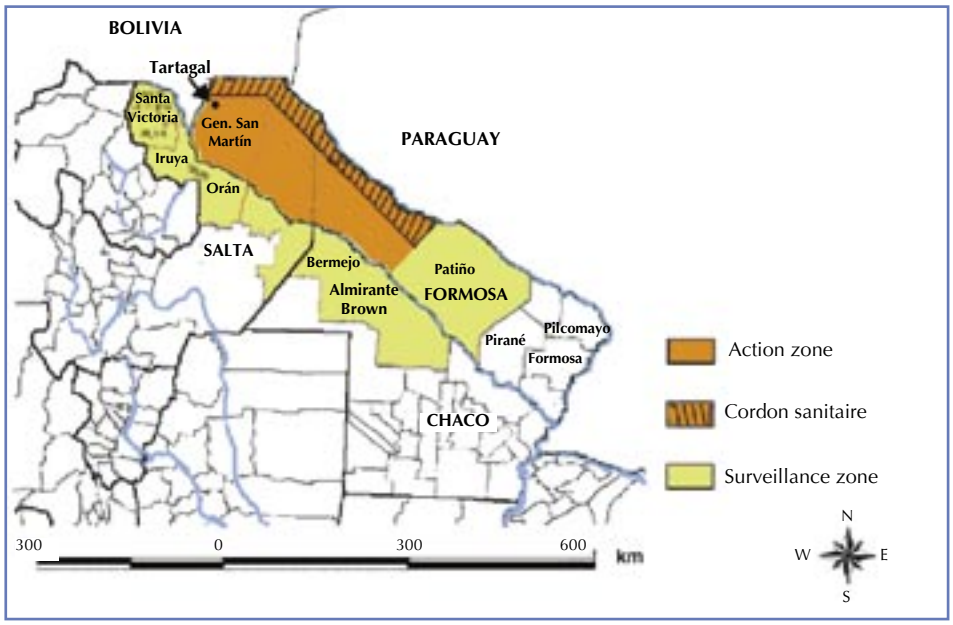
To date there are no new outbreaks of FMD reported in Argentina and the last active outbreak was contained

The province of Salta is characterized by a low livestock density, mainly with subsistence producers, with no production link with other regions.

To date there are no new outbreaks of FMD reported in Argentina and the last active outbreak was contained. All the FMD outbreaks in Bolivia, including the outbreak in Morros Blancos, Tarija department, have been controlled. In Paraguay, stamping out of all susceptible animals in the outbreak was completed by 15 July 2003.

In comparison with the events of 2001, where the producers' concern was made public, measures were undertaken late because of the lack of communication within Argentina and the subsequent spread of FMD to Uruguay and Brazil. By contrast, in 2003, coordinated action inside the country and an exchange of information among neighbours were indispensable to control disease in the region. The difference between FMD outbreak outcomes between the type A Argentine epidemic of 2001 and the most recent one caused by serotype O in 2003 is attributed to early detection and early response.

Zoning area on the border with Paraguay and Bolivia



SOURCE: SENASA

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The Second FMD Round Table Meeting held in Cairo, Egypt from 5 to 6 October 2003 and its recommendations

Organized by the Food and Agriculture Organization of the United Nations (FAO) in collaboration with the Egyptian Veterinary Medical Association (EVMA) and attended by representatives from Egypt, Kuwait, Saudi Arabia, the Sudan, the Syrian Arab Republic, Tunisia and Turkey and representatives from FAO, the European Commission for the Control of Foot-and-Mouth Disease (EUFMD), OIE and the Arab Organization for Agricultural Development (AOAD)

1. The attendees of the Second FMD Round Table Meeting recognized the value of FAO's Regional Animal Disease Surveillance and Control Network (RADISCON) and the impact it has had on improving the level of epidemiology information, equipment installation and quality of training. The participating representatives therefore urged the international donor community and ministries to identify funds for RADISCON phase 2 initiatives that include modernization of equipment, software, improved continued surveillance and reporting for transboundary animal diseases and those of public health concern, emergency preparedness and contingency planning at the national and regional level.
2. The meeting supported the establishment of the Animal Health Commission for the Near East and North Africa (AHCNENA), which has already been endorsed by the agriculture and livestock ministers of the region. This Commission should become an important body working together with the OIE/FAO Regional Steering Committee. A decision for the establishment of AHCNENA was hoped to be made at the 27th FAO Regional Conference for the New East held in Doha, Qatar, in March 2004.
3. The meeting supported activities that will enable an early approval and implementation of a regional Technical Cooperation Project for the Upgrading of Immunoprophylactic Measures for the Control of Prevalent Infectious Animal Diseases in the Near East and North Africa. FAO is requested urgently to facilitate the application, for example by an advance allocation for the formulation of the project. The activity to identify candidate reference laboratories and the required level of upgrading and identifying potential funding sources is recommended.
4. The meeting recommended that a Regional Reference Laboratory for FMD be selected, capable of receiving specimens and virus isolates from across the region, including exotic virus strains with which the region is at risk. Upgrading of national laboratories to meet international acceptable levels of biosafety, with national (and possible international) support, would enhance linking field surveillance and accurate diagnostic capabilities.
5. The meeting supported the principles of the AOAD initiative and considers that, given the potential overlap with other regional initiatives, close collaboration with international organizations is strongly encouraged to increase the effectiveness of planned activities and the feasibility of activities in future phases.
6. A research network should be established with a coordinator who can facilitate the links between national laboratories and the FAO World Reference Laboratory at Pirbright, United Kingdom, and with research networks and laboratories in other regions, such as the EUFMD Research Group.
7. A proposed FAO/OIE round table on FMD and other transboundary animal diseases (TADs) in the Near East Region should be organized every two years, with the responsibility of organizing the meeting rotating between FAO and OIE. On this basis, the OIE Regional Representation would be expected to organize the next Session in 2005.

8. Shortage of funds for TADs, and particularly for FMD research, surveillance, and control measures is a critical constraint for the region and the meeting recommended that investment in these activities by donors be given a very high priority.

These recommendations were submitted by Dr Talib Ali Elam at the high-level technical workshop "Regional Programmes for Food Security in the Near East: Towards Sustainable Food Security and Poverty Alleviation" held in Jeddah, Saudi Arabia, from 8 to 9 October 2003. The workshop was organized by the Islamic Development Bank (IDB) and FAO and was attended by representatives from Saudi Arabia, the Arab Maghreb Union (AMU), the Arab Organization for Agricultural Development (AOAD), the Arab Authority for Agricultural Investment and Development (AAAID), the Community of Sahel and Saharan States (CEN-SAD), the Intergovernmental Authority on Development (IGAD), the Economic Cooperation Organization (ECO), the African Development Bank (ADB) and the OPEC Fund for Development.

WORKSHOPS

SADC Directors of Veterinary Services and Chief Veterinary Officers' Workshop

The Southern African Development Community (SADC) countries have noted unprecedented outbreaks of major transboundary animal diseases (TADs) in the last five years. Consequently the Chief Veterinary Officers (CVOs) held a workshop from 21 to 22 July 2003 in Pretoria, South Africa to define the most pressing needs for assistance; the workshop was funded by FAO project TCP/RAF/2809 – "Control of foot-and-mouth (FMD) disease and other TADs in southern Africa".

With the facilitation of an international consultant, the CVOs reviewed the EMPRES precepts, namely *early warning, early reaction, enabling research* and *international coordination*, and the relevant tools developed to empower the CVOs.

They categorized TADs for the southern African region as follows.

- *Strategic* – FMD and contagious bovine pleuropneumonia (CBPP).
- *Tactical* – African swine fever (ASF), Rift Valley fever (RVF), Newcastle disease (NCD), lumpy skin disease (LSD).
- *Emerging/exotic to the southern African region* – rinderpest, peste des petits ruminants (PPR), bovine spongiform encephalopathy (BSE) and highly pathogenic avian influenza (AI).

They will be seeking internal and donor funding for progressive control of the strategic TADs with a plan that spans 16 years.

The CVOs proposed two phases to address the FMD and CBPP problems in the SADC region:

a) *The emergency needs*
   - For FMD, Zimbabwe, Mozambique and Malawi face emergency needs to undertake various actions including quality vaccination, repair of fencing, surveillance, movement control, buffalo segregation and molecular epidemiological investigations of buffalo viral strains.
   - The CBPP emergency needs for Angola, the western province of Zambia, southern Tanzania, eastern Zambia and Malawi are vaccination, surveillance and movement control.

b) *The medium-term/recovery needs*

   FMD serotypes SAT 1, 2, 3, O and A. Contagious bovine pleuropneumonia, Newcastle disease, African swine fever, Rift Valley fever and lumpy skin disease were listed as the major TADs in the region, while concern about BSE and avian

PHOTO: W. UNGERER

Participants at the SADC Directors of Veterinary Services and Chief Veterinary Officers' Workshop, Pretoria, South Africa, July 2003

influenza was also expressed. Weaknesses include institutional limitations that are derived from economic impediments, inability to monitor animal movement control, land ownership rights, wild buffalo ranching and inadequate or insufficient epidemiological data for strategy design. Furthermore, universities and research establishments are not involved in strategic issues for national veterinary services and in undertaking programmed enabling research; nor are they included in developing a coherent regional livestock development policy.

Inadequate regional coordination poses a problem. There is also an uncertain vision beyond the cordon fences – the long-term vision in this regard needs to be elaborated. With the increasing interest in buffalo ranching, there is a pressing need to establish a code of conduct on good buffalo farming practices at the legislative and practical levels.

The concept of epidemiological clusters was described and discussed with the following synopsis by the CVOs.

FMD clusters

- FMD endemic in livestock – Angola and the United Republic of Tanzania.
- Sporadic FMD cluster – Mozambique, Malawi, Zambia, Zimbabwe, northern Botswana and northern Namibia.
- Freedom without vaccination – areas of Namibia, Botswana, South Africa, Lesotho, Swaziland, Seychelles and Mauritius.

CBPP clusters

- Primary endemic – Angola and northern Tanzania.
- Sporadic/secondary endemic – northern Namibia, Zambia, southern Tanzania and eastern Democratic Republic of the Congo.
- Free but at immediate risk – southern Namibia, northern Botswana, northwest Zimbabwe, Malawi and northern Mozambique.
- Free and at lower risk – South Africa, southern Botswana, rest of Zimbabwe, Lesotho, Swaziland, southern Mozambique, Mauritius and Seychelles.

The outcome of the working group's discussions was summarized as follows.

a) Scientific support for effective prevention and progressive control of FMD, CBPP and other major TADs in SADC. The group identified the concept of primary laboratory consortia in order to assist with confirmatory diagnosis and characterization of causal agents. The consortia proposed are:
   - primary laboratory consortia for FMD, formed by EDD-OVI (Onderstepoort), BVI-NVL (Gaborone), CVRL (Harare) and ADRI-CVL (Temeke);
   - primary laboratory consortia for CBPP, formed by CVL (Windhoek), OVI, BVI, CVRI (Balmoral) and ADRI-CVL (Temeke).

   All countries should aim at securing access to a laboratory, either national or regional, for undertaking primary diagnosis. The need for closer collaboration between BVI and OVI for characterization and identification of candidate vaccine strains was highlighted.

b) The disease management and coordination group affirmed that FMD and CBPP were the diseases of strategic importance and a 16-year programme for entering into the OIE pathways to freedom from these diseases must be developed. The group also proposed the establishment of a Southern African Commission on TADs.

c) The diseases group dealing with the tactical diseases linked to food security problems and the occurrence of TADs in short-cycle animals (swine and poultry) recommended that surveillance and control efforts be concentrated on NCD and ASF as well as proving freedom from BSE to stem the concern for beef exports.

In conclusion, the 16-year programme is to address the following.

- proper assessments of national importance of livestock and the economic impact of TADs;
- basic epidemiological studies in emergency areas to understand better the dynamics of the diseases and plan their control;
- preparation of national and regional contingency plans and appropriate coordination mechanisms;
- preparation of a draft proposal for the emergency control of FMD and CBPP in the SADC region;
- preparation of a concept note for the regional framework for the progressive control of FMD and other major TADs in SADC, as part of the FAO/OIE GF-TADs initiative (see following pages of this issue);
- formation of a Southern African Commission for the Control of TADs.

EMPRES IN ACTION

Disease investigation in the Comoros – what is your diagnosis?

In February 2003, EMPRES was alerted by the National Veterinary Authorities of the Comoros that frequent mortalities had been recorded in the cattle population. A preliminary epidemiological investigation carried out in the field identified cattle imported from the United Republic of Tanzania as the possible source of infection.These animals had been introduced to the Comoros without previous sanitary control (quarantine).

More than 500 cattle died or were destroyed and 6 000 were at risk.

The salient clinical and pathological signs reported to EMPRES were as given in Table 5.

PHOTO: J.-M. GOURREAU

Watering point in the Comoros

Animal affected by the disease under investigation. Clinical signs included salivation, high fever, eye and nasal discharge, weakness, anorexia and the presence of ticks

PHOTO: V. MARTIN

TABLE 5
Clinical and pathological signs reported to EMPRES

Clinical signs	Pathological findings
Peracute	Generalized hepatic necrosis in some cases
Sudden death	Enlarged, friable, soft and discoloured liver (yellow to dark red with grey foci, showing areas of necrosis and petechiation)
Acute	Multiple visceral, pleural, serosal and cutaneous haemorrhages
Fever (40–41°C)	Occasional findings of ascites, hydropericardium, hydrothorax, pulmonary oedema
Anxiety	Splenomegaly
Anorexia	Thin or watery blood of cyanotic or clear appearance
Rapid pulse	Dry reticulum
Weakness	Petechiation of the intestine
Ataxia	
Mucopurulent nasal discharge	
Excess salivation	
Hiccups	
Intermittent haemorrhagic diarrhoea	
Cutaneous petechiation on the skin of limbs	
Rapid decrease of milk yield	
Death from one to three days after onset	
Subacute	
Jaundice (icterus) is the predominant sign	

The epidemiology and clinical signs observed in sick animals oriented suspicion towards a group of vector-borne diseases and more specifically towards bovine theileriosis which is endemic in East Africa. However, the samples collected could not confirm the presence of the disease

In light of this emergency situation, the FAO Representation in Madagascar responded by initiating a letter of agreement with the Association comorienne des techniciens et infirmiers vétérinaires (ACTIV), a non-governmental organization, in order to provide urgent funds necessary to carry out the first preliminary field investigation. From the EMPRES side, Dr Jean-Marie Gourreau (Ecole nationale vétérinaire, Maisons-Alfort, France) was recruited to assist in the epidemiological investigation and went to the Comoros from 16 to 22 June 2003. During his mission, Dr Gourreau, in close collaboration with the national authorities and ACTIV, assessed the situation and highlighted the difficulty in establishing a definitive diagnosis. Little cooperation was obtained from livestock owners affected by the disease and only a few cases were available for clinical or pathological evaluation. The epidemiology and clinical signs observed in sick animals oriented suspicion towards a group of vector-borne diseases, and more specifically towards bovine theileriosis, which is endemic in East Africa. However, the samples collected could not confirm the presence of the disease.

Other aetiological considerations in the differential diagnosis included acute trypanosomiasis (*Trypanosoma vivax*), cowdriosis, babesiosis and rinderpest disease.

Without a final diagnosis to define an appropriate control strategy, additional samples were needed as the problem affecting cattle had subsided but not disappeared. A second mission was consequently organized. Vincent Martin, FAO-EMPRES Animal Health Officer (Infectious Disease Emergencies) travelled to the Comoros in November 2003 in collaboration with Dr Cheryl French, Veterinary Epidemiologist and APHIS representative for Africa. The principal objective of the mission was to identify precisely the causative agent responsible for the mortality in cattle.

The field mission visited newly affected villages in the northeast of the island (Moidja, Ngnadomboni and Mbeni). Twenty-one animals were clinically examined and three necropsies were performed. The following samples were also collected and sent to the Onderstepoort Veterinary Institute in South Africa:

- 34 tissue samples
- 61 blood samples (EDTA, heparin, total)
- tick samples
- plant specimens

PHOTO: J.-M. GOURREAU

Enlarged spleen (three times normal size)

PHOTO: V. MARTIN

Enlarged prescapular lymph node (2.5 times normal size)

During the field investigation, it was observed that general pasture and feeding conditions were often very poor and not adequate to keep the animals in a good general condition. Sick animals had high temperatures (40–41.5°C), anorexia, weakness, ocular and nasal discharge, ptyalism, diarrhoea and enlargement of the prescapular lymph nodes. The cattle examined also showed heavy tick infestation. On post-mortem, the following signs were observed: splenic enlargement, enlarged prescapular lymph nodes, sometimes showing oedematous and haemorrhagic lesions, dry fore stomach omasum and reticulum, and pasty ruminant contents. In one young steer petechial haemorrhages were seen on the kidney.

The first results from the Ondestepoort Veterinary Institute were suggestive of theileriosis, in association with other diseases such as babesiosis. The plants collected were not found to be toxic. More details will be provided in the next issue of the *Bulletin*.

COMMUNICATION

Global Framework for the Progressive Control of Foot-and-Mouth Disease and Other Transboundary Animal Diseases

Recommendations of two regional consultations held in Ludhiana, India (June 2003) and Bangkok, Thailand (July 2003)

As reported in *EMPRES Bulletin* No. 23, the Global Framework for the Progressive Control of FMD and Other Transboundary Diseases (GF-TADs) is a joint FAO/OIE initiative with the objective of effective prevention and progressive control of transboundary animal diseases worldwide.

Between June and July 2003, two subregional consultations were held, one for South Asia (SA) and the other for Southeast Asia (SEA). For the SA consultation, held from 2 to 5 June in Ludhiana, India, participants were invited from Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka. Invitations for the SEA consultation, held in Bangkok from 28 to 30 July, were extended to Cambodia, China, Indonesia, the Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, Thailand and Viet Nam.

Both consultations were supported and facilitated by a number of invited resource people from India (Indian Council for Agriculture Research, Indian Veterinary Research Institute, Punjab Agricultural University and private industry), Thailand (Chulalongkorn University, National Institute for Animal Health, Department for Livestock Development), Malaysia (Department of Veterinary Services), and the United Kingdom (Veterinary Laboratories Agency). Additional inputs were provided by international agencies including OIE, FAO and the Japan International Cooperation Agency (JICA).

Cattle with FMD in a south Asia market

PHOTO: P.L. ROEDER

The consultations were informed of the contribution of the livestock sector to the national economy, priority farming systems and diseases that constrain trade and food security in the SEA countries through reports presented by country representatives from the subregion. Background information on the key trade-limiting diseases of livestock in the subregion was presented by the invited experts.

Recommendations for the progressive control of key transboundary animal diseases (TADs) were developed through a series of small group discussions.

Recommendations of the Southeast Asia consultation

Rinderpest

A regional initiative for the control of TADs should include:

- maintaining early warning systems at national and regional levels for effective surveillance and diagnostic confirmation;
- ensuring early reaction systems are in place in the event of reintroduction or resurgence;
- the aim for all countries to achieve OIE accreditation of freedom from rinderpest infection by the end of 2007.

Peste des petits ruminants (PPR)

1. Awareness of the risks of introduction and emergency preparedness need to be strengthened in the region.
2. Active surveillance for PPR should be established in the Bangladesh/India/Myanmar border area to ensure that the disease has not entered Myanmar and to act as an early warning mechanism for possible future introduction.

Foot-and-mouth disease (FMD)

1. Strengthen regional coordination and cooperation.
   - Strengthen the laboratory network, including the World Reference Laboratory and the laboratory in Thailand as the proposed Regional Reference Laboratory (RPL) at Pak Chong, as well as national laboratories.

- Establish an epidemiological network involving regional and national focal points for information analysis and accelerate the development of harmonized information systems for animal health and production.
- Create linkages with neighbouring countries (China, India and Bangladesh).
- Establish mechanisms to integrate all stakeholders (public, private and international agencies) as partners in the funding and delivery of global, regional and national programmes.
- Strengthen communication among countries of the region.

2. Accelerate a progressive zoning approach for the control and eradication of FMD in Southeast Asia.
   - Provide resources to complete the feasibility process for the establishment of FMD-free zones according to agreed principles for FMD zoning.
   - Build regional capacities to deliver animal health services in countries with fewer resources (including laboratory diagnosis, epidemiological analysis, delivery of field activities and vaccine quality control).
   - Review policy and implement effective animal movement management to establish and maintain FMD-free zone status.
   - Implement practical and harmonized approaches to animal identification.
   - Enhance planning and training for emergency preparedness.
   - Target a programme of communication and public awareness.

Classical swine fever (CSF)

1. The national governments of the Association of Southeast Asian Nations (ASEAN) should formulate a policy for the control of CSF in consultation with stakeholders.
   - Produce a model national plan, or plans, for CSF progressive control.
   - Integrate such plans with existing FMD control efforts where significant trade opportunities are possible.
2. Introduce policies and strategies that accord with sound epidemiological data and analysis on the prevalence and incidence of CSF in different farming systems.
   - Analyse existing CSF data from laboratories.
   - Conduct a structured survey of veterinary practitioners and farmers.
   - Build upon networks established for FMD diagnosis and data management.
   - Conduct strategy workshops with all sectors of the swine industry and farmers.
3. Ensure that the developed policies and control programme are facilitated by regional and international agencies as part of a regional initiative that is congruent with GF-TADs.
4. The regional initiative established should be supported by the harmonization of diagnostic laboratory analysis and prophylactic control.
   - Involve FAO, OIE and ASEAN to guide strategy development and facilitate data sharing.
   - Identify a regional diagnostic laboratory as a reference centre.
5. The aims of the CSF progressive control initiatives should be promulgated to all stakeholders and supported by economic data to raise awareness in the industry for a long-term commitment.
   - Analyse data and current losses caused by CSF for each country or production system.
   - Provide feedback to stakeholders (such as those with commercial interests and village farmers).

PHOTO: USDA

Dead pigs affected with acute CSF

6. Provide extensive training in field laboratory diagnosis together with quality assessment.
   - Hold technical workshops and proficiency trials among national and reference laboratories.
   - Develop links with the global network of laboratories involved in CSF diagnosis and research (such as Weybridge, United Kingdom; Hanover, Germany; Ibaraki, Japan, and others).
   - Funding agencies should consider the value of establishing an FAO World Reference Laboratory for CSF.
7. Epidemiological tools employed for FMD should be utilized to the maximum to provide added value by using the ASEAN/SEA-FMD network as a window to harmonize tests and prophylaxis and demonstrate efficacy to drive control and gain stakeholder investment.

Haemorrhagic septicaemia (HS)

1. Raise farmers' awareness of the disease by utilizing and improving national government information on HS occurrence and distribution.
2. The regional initiative to control HS should include:
   - the development and improved availability of a high-quality vaccine that provides long-term immunity, is acceptable to farmers in terms of price and has no negative effects at the site of injection;
   - the establishment of a vaccine bank in the event of disease emergency outbreaks;
   - the promotion of further study on the epidemiology and economic impact of HS;
   - the harmonization of prophylactic measures.
3. Contribute to regional FMD control initiatives in terms of promoting movement control, serosurveillance and public awareness.

Adopted recommendations of the South Asia consultation

Rinderpest

A regional initiative for the control of TADs should include rinderpest, ensuring that:

- early warning systems that involve effective surveillance and diagnostic confirmation are maintained at national and regional levels;
- in the event of reintroduction or resurgence, early reaction systems are in place;
- all countries achieve OIE accreditation of freedom from rinderpest infection by the end of 2007.

Peste des petits ruminants (PPR)

1. Any regional initiative for the control of transboundary animal diseases should include PPR.
2. Thorough epidemiological studies are required for the preparation of regional strategies.
3. Cross-cutting themes within a regional programme requiring support are:
   - quality assurance of vaccines and diagnostics with harmonization across the region;
   - infrastructure and human resource development, including producer awareness;
   - enhanced regional early warning and epidemiological understanding through sharing of disease information;

- an understanding of livestock movements and marketing practices to meet management and strategic goals.

4. Within a regional programme, Bhutan and Sri Lanka should be kept free from infection.
5. Local availability and production (including laboratory diagnostic reagents) of vaccine should be developed, using harmonized protocols.

Foot-and-mouth disease

1. There is a need to initiate a regional programme for the progressive control of FMD to be implemented within each country within clearly defined and realistic time frames. The ultimate goal would be to have a well-defined zonal approach (freedom with vaccination/freedom without vaccination) to attain the FMD-free status.
2. For implementation of a control programme, there is a need to undertake a detailed epidemiological status survey for an understanding of FMD occurrence in different countries and in the region as a whole. Regional coordination will help define the primary endemic zones and address the priorities for control.
3. In order to generate the required resources, economic impact analysis of the proposed control initiatives at both country and regional levels would be advantageous.
4. Significant logistical difficulties are experienced in managing animal movement, currently unrestricted, within and between the countries in the region. These need to be addressed through regional collaboration including legislation, quarantine measures, border management of animals and animal identification schemes.
5. There is a need to share information about the prevalence, distribution, movement and emergence of the disease along internal and national boundaries, with early warning alerts to all partners.
6. Considering the limited resources and a large FMD-susceptible livestock population in different countries of the region, suitable vaccination strategies need to be identified. For example, monovalent type O vaccination could be used as it is the most prevalent serotype and selective vaccination could be undertaken for of certain species rather than others of less epidemiological significance.
7. An independent vaccine quality assurance agency to ensure uniformity in the quality of vaccine to be used in the control programmes would be an advantage for the region (as is done in South America through the PAHO/ Panaftosa Center).
8. To ensure authoritative and confirmatory FMD diagnosis in all countries in the region there is a need to establish a regional laboratory for FMD. This should ensure the availability of diagnostic reagents and knowledge to assist in the establishment or strengthening of appropriate laboratories where required; training of regional personnel; detailed characterization of field isolates; molecular epidemiological analysis; selection of suitable candidate vaccine strains for the region; maintenance of a regional repository of antigens; and collaboration with the FAO World Reference Laboratory (Pirbright, United Kingdom). The capabilities already available in India at the Project Directorate on FMD of the Indian Council of Agricultural Research (ICAR) could be utilized for this purpose.
9. The formation of a national commission for FMD control in each country under the overall umbrella of a South Asian regional commission for FMD control would be valuable. These national commissions may be under the auspices of APHCA or any other appropriate body agreed by all the member countries within the region.

10. For the successful implementation of FMD control programmes within each of the member countries or within the region as a whole, participation and involvement of all the stakeholders (farmer groups, traders and livestock breeders, milk cooperatives, allied industries and other agencies) are essential from the planning to the various implementation stages.

General sessions to discuss needs for the control of all TADs

A number of other sessions were organized to discuss needs for the control of TADs. The main overriding issues discussed were the requirements for strengthening veterinary services, promoting appropriate legislation for livestock trade, improving diagnostics and reagent availability and specific research needs. These are summarized below.

Strengthening veterinary services

1. Building of capabilities to harmonize the availability of trained personnel, especially for areas with highly productive livestock.
2. The need for extension services to focus on knowledge-based state-of-the-art techniques and tools to generate and promote economically viable farming models supported by appropriate facilities and infrastructure.
3. Delivery of certified standard inputs, genetic material (such as frozen semen and embryos), preventive vaccines, diagnostics, etc. Medicines for treatment to be chargeable, facilitated by a revolving fund at district and local government levels.
4. Country biological regulatory units harmonized for production as per guidelines for good manufacturing practices. Identification of specific production for self-sustaining production.
5. Evaluation of existing veterinary services by an independent agency.
6. The development of centres of excellence to support economically viable operations in the region.
7. The establishment of disease diagnosis laboratories at district level and a referral laboratory at state level.
8. The use of performance indicators to enhance success on goals identified.
9. Extension of the role of community animal health workers beyond the delivery of veterinary care, to become involved in disease reporting, abattoir records and farmer awareness.
10. The need for financial support for human resource development, training and animal health information system compilation and analysis.

Legislative approach to promote trade

1. Harmonize legislation in the region with special reference to vaccination coverage and a certification system to improve animal movement management.
2. Trade within the region should be free as per OIE guidelines where immunization and health certification by an accredited authority/agency are adopted.
3. Harmonize trade requirements following the sanitary and phytosanitary standards of the World Trade Organization and to maintain specific health protocols.
4. Oblige member countries in the region to maintain disease-free zones by ensuring transparent activities and record-keeping.
5. Establish a regional authority to supervise the implementation of the recommendations made to the livestock sector for regulatory purposes and establish mechanisms for such implementation.

6. Establish a methodology for disposing of unproductive and stray animals that may be of public health concern in the region.

Diagnostics and reagent requirements

1. Promote the use of validated protocols following OIE standards in all reference and national laboratories in the region for the selected diseases.
2. Promote the standardization of diagnostic tests, reagents, protocols, testing pro-cedures and interpretation of results for harmonization based on equivalence.
3. Develop a system for proficiency testing and regional accreditation of laboratories performing the priority functions required for a regional GF-TAD initiative.
4. Identify a regional reference laboratory for FMD, PPR and RP that can provide training, reagents, confirmatory diagnosis and network support.
5. Develop a regional approach to sustain the selected reference laboratory (with specific requirements for qualified personnel and a sustainable budget).
6. Obtain country support for the selected reference laboratory location including a blanket import permit for the timely submission of samples and a blanket permit from the animal health department authorities to send the samples to other qualified laboratories.

Research needs

1. Development of improved vaccines for diseases as prioritized by countries in the region in terms of their economic importance:
   - Pilot study on the existing haemorrhagic septicaemia/Myanmar candidate vaccine.
   - Antigen and adjuvant combination formulations to stimulate long-term immunity.
   - Studies on route of administration to be evaluated for differential efficacies.
   - Studies on the appropriateness of bivalent vaccines (e.g. $FMD_{[1\text{-}3\ serotypes]}$+HS large-scale pilot study and studies on bivalent vaccines of FMD and PPR for small ruminants).
   - Studies on inducing immediate protection vaccine development.
   - Use of genetically modified organisms (GMOs) and their potential impact on trade.
   - Analysis of PPR isolates and vaccine seeds.
   - Development of thermostable PPR and FMD vaccines.
2. Development of rapid/field pen-side tests for common emerging or re-emerging diseases with reference to molecular tools and techniques.
   - PPR antigen detection.
   - FMD serotype antigen detection.
   - Non-structural FMD protein (NSP) antibody detection.
   - HS confirmation of positive cases and rapid biotyping.
   - Improved diagnostics for detecting FMD persistent infection states.
   - Molecular-based studies on selected pathogens in the region.
3. Greater emphasis on epidemiological studies in the region as well as disease forecasting models using new methodologies, including the Geographic Information System (GIS).
   - Mapping of virus topotypes/genotypes using GIS.
   - Search for FMD virus serotype C in the region.

4. Role of certain species in viral transmission and maintenance using current circulating viruses.
   - Role of water buffaloes and wildlife (FMD).
   - Role of sheep and goats in PPR including duration of colostral immunity, herd immunity dynamics in populations and approaches to protecting wildlife from PPR infection.
   - Active search and surveillance of PPR antigen and antibody occurrence in large ruminants, and how infection may be maintained between epidemics.

Regional cooperation

1. Strengthening of standards of veterinary services of countries in the region is a prerequisite for effective control of TADs.
2. Harmonization of legislation for the purpose of regional trade is desirable to implement uniform control programmes for TADs in the region.
3. Harmonization of diagnostic reagents/tests and standards, for mutual recognition of test results for trade purposes is needed.
4. More joint collaborative work among member countries in the region is required. These should include:
   - exchange visits of scientists and for field work joint operations;
   - research on FMD and PPR related to epidemiology, vaccines and diagnosis.

Controlling animal health risks: CIRAD-EMVT FAO Collaborating Centre on Epidemiology of Tropical Animal Health

Statement

Increased global trade, climate and ecological change, and new animal production practices have created an environment that favours the emergence and spread of infectious and parasite-borne diseases. In the tropics, the phenomenon has been exacerbated by inadequate animal health systems and a lack of information on certain epidemiological cycles. Epitrop, a group of researchers from various teams at CIRAD's Animal Production and Veterinary Medicine Department, was set up in 1998 to provide a more satisfactory response to requests from international organizations in terms of disease prevention and control. The epidemiological research being conducted at CIRAD is oriented towards monitoring, analysing and modelling the major tropical infectious and parasite-borne diseases: trypanosomiasis, contagious bovine pleuroneumonia, rinderpest, peste des petits ruminants, African swine fever, Rift Valley fever, bluetongue and others. The network is working with numerous scientific and technical organizations in both industrialized and developing countries. Its operations in 2003 concentrated on three diseases.

Bluetongue

Bluetongue surveillance has been stepped up in Corsica and in mainland France. Predictive models are currently being developed. Surveillance is based on entomological, serological and virological monitoring. Bluetongue is a viral disease, spread by midges of the genus *Culicoides* (Diptera: Ceratopogonidae), and more precisely by *Culicoides imicola* in the Mediterranean region. It is a major disease that can have serious economic consequences. Bluetongue has been

Subacute/chronic bluetongue: torticollis caused by degeneration of the neck muscle
PHOTO: University of Pretoria, South Africa: J.A.W. Coetzer; R.C. Tustin.

considered an emerging disease in the Mediterranean since 1998, although serious outbreaks occurred on the Iberian peninsula in the 1950s and on several Mediterranean islands. After the epizootic in Corsica in 2000, the Food Products Division of the French Ministry of Agriculture set up a surveillance system with scientific and technical support from CIRAD, the French national reference laboratory for bluetongue, which, as such, works closely with AFSSA, the French food safety agency.

Predictive models are currently being developed in partnership with the UK Institute for Animal Health Pirbright Laboratory and the University of Oxford in the United Kingdom, using satellite data (vegetation indexes, temperature, etc.) and entomological data gathered from surveillance operations in Corsica and on the mainland. These models were validated using entomological data obtained by *Culicoides* spp. trapping operations in 2002. The correlation between predictions of the vector *C. imicola* and bluetongue foci actually recorded in Corsica validated the accuracy of the model used.

In addition, statistical models have been used to draw up a map predicting *C. imicola* abundance in the Mediterranean basin, and thus the risk of disease establishment or spread. The map shows large numbers of insects in many zones recently affected by bluetongue. It suggests that certain regions around the Mediterranean and several zones in southeastern and southwestern France will be at considerable risk in the near future. Global climate change has favoured the spread of zones propitious to the development of vector insects, which may be one of the reasons for the spread of the disease. These results show that it is vital to step up epidemiological surveillance operations in France and possibly elsewhere and pinpoint the priority zones of risk. This work has strengthened the relations between CIRAD and its European partners and should also, in the medium term, lead to new links with Mediterranean countries, particularly in the Maghreb region of North Africa.

Peste des petits ruminants and trypanosomoses

While monitoring rinderpest in wildlife under the Pan African Programme for the Control of Epizootics (PACE), CIRAD also tested for the presence of peste des petits ruminants (PPR). This programme is run by the African Union and largely funded by the European Union. PPR is spreading rapidly in the tropics and, as analyses of samples have shown, the multiplicity of hosts receptive to the virus among the local wildlife could prove to be a major obstacle in controlling the disease. It is therefore essential to establish its epidemiology, notably through molecular epidemiology and modelling studies.

The surveys were undertaken in Kenya, Ethiopia, Uganda, Democratic Republic of the Congo, Central African Republic, Benin and Chad. The Table shows evidence of the circulation of the PPR virus in West Africa while the only zone in East Africa showing positive animals was Kenya. The results of PPR serum virus neutralization tests (VNTs) have significantly higher titres than those of rinderpest VNTs. But, in the herds examined in Kenya, there was epidemiological and virological evidence that rinderpest infection was the cause of the antibody by cross-reactivity (R. Kock, PACE, personal communication). The survey results demonstrated that buffaloes are useful as sentinels for PPR also; they are already the top species for rinderpest serosurveillance.

Number of PPR positive animals by location and species (total number = 251)

Species/Countries	Buffalo	Bushbuck	Waterbuck	Warthog	Redunca
Chad	3		1	1	
Benin	1				1
Central African Republic	4	1			
Democratic Republic of the Congo	1				
Kenya	3				

Several years' work in conjunction with the International Centre for Animal Husbandry Development and Research in Subhumid Regions (CIRDES) has resulted in the development of targeted control methods against trypanosomoses that can be practised by animal farmers in developing countries. CIRAD is currently working with CIRDES on the epidemiology of trypanosomoses in West Africa, and particularly on the transmission of tsetse vectors, the mechanism involved, and the identification of zones in which the diseases are spreading. CIRAD is continuing to supplement its expertise in epidemiology. It is working to transfer tools and methods to partners in developing countries – evaluation of the efficacy of surveillance networks, risk analysis and management, emergency intervention capacity – and to develop new research topics – analytical and molecular epidemiology, spatial analysis and modelling. Since 2002, it has been looking at how to structure these operations so as to increase their efficiency and clarity.

PHOTO: P. L. ROEDER

Goats affected by peste des petits ruminants

Further information can be obtained from the Epidemiology and Health Environment Units, Animal Production and Veterinary Medicine Department, CIRAD-EMVT (Web site http://epitrop.cirad.fr; e-mail françois.roger@cirad.fr, genevieve.libeau@cirad.fr and stephane.de_la_rocque@cirad.fr).

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NEWS

IN BRIEF ...

Rinderpest

In July 2003, the OIE declared Bangladesh, Kuwait and Qatar "provisionally free" from rinderpest. In October 2003, Chad, Djibouti and Yemen were also declared "provisionally free" from the disease. Finally, Burundi was declared "provisionally free" from rinderpest as well, in November 2003.

Since the last *EMPRES Bulletin* (No. 23 – 2003), outbreaks of EMPRES priority diseases have been reported to OIE or FAO in different regions around the world from July 2003 to December 2003 (see Table below).

Disease	Country and/or area	Date	Location	Agent characterization
Foot-and-mouth disease	Argentina	September 2003	– Tartagal, province of Salta	virus serotype O
	Bolivia	July 2003	– Hernando Siles province, Chuquisaca department (19° 48′ S - 64° 04′ W) – Cornelio Saavedra province, Potosí department (19° 33′ S - 65° 26′ W)	virus serotype O
		August 2003	– La Paz department (17° 12′ S - 67° 48′ W and 16° 14′ S - 68° 13′ W)	virus serotype O
		September 2003	– San Antonio, Chuquisaca department (19° 06´ S - 64° 45´ W) – Ocuri-Khara Khara, Potosí department (18° 47´ S - 65° 42´ W) – Sopachuy, Chuquisaca department (19° 29´ S - 64° 29´ W) – Torrecillas, Tarija department (21° 31´ S - 64° 44´ W) – Morros Blancos, Tarija department (21° 35´ S - 64° 49´ W)	virus serotype O
Contagious bovine pleuropneumonia	Zambia	June 2003	– Nakawamba (14.89° S - 23.99° E), Kalwalo (14.45° S - 23.55° E)	
	Namibia	October 2003	– (Linyanti, Eastern Caprivi) 18.19° S – 23.94° E	
African swine fever	Nigeria	October 2003	– Niger state	
	Tanzania, United Rep. of	October 2003	– Ngarenaro Arusha district; Olerian Arusha district; Sombetini Arusha district; Olosiva Arumeru district; Kimnyaki Arumeru district	
	Zambia	September 2003	– Lusaka (15° 50′ S - 28° 30′ E)	
	Burkina Faso	September 2003	– Kompienga district, in Kompienga province, bordering Benin	
Classical swine fever	Slovakia	November 2003	– Prievidza district, in the central part of the country	
		December 2003	– Bánovce nad Bebravou district – Prievidza district	
	Luxembourg	August 2003	– Locality of Buschrodt, county of Redange (central-western part of the country)	
	Italy	September 2003	– Ardara district, Sassari province, Sardinia region	
Rift Valley fever	Mauritania	October 2003	– Keur Macene, Kobeni and Kankossa	
	Senegal	November 2003	– Saint-Louis department, Dagana, Podor department department, Saint-Louis region – Matam department, Matam region – Bakel department, Tambacounda region	
Rinderpest	Kenya	October 2003	– Ruga (Jarajilla), Garissa district	

Peste des petits ruminants	Israel	July 2003	– Turan, Yizreel district	
Highly pathogenic avian influenza	Hong Kong SAR	September 2003		strain H5N1
	Korea, Rep. of	December 2003	– Eumsung district, Chungcheong-buk province, in the central part of the country	strain H5N1
Bluetongue				under investigation
	Taiwan Province of China	August 2003	– Kinmen Prefecture – Pingtung Prefecture	
	Italy	September 2003	– Cagliari province of Sardinia	virus serotype 4
	Reunion	October 2003		under investigation
	France (Corsica)	October 2003	– Cognocoli Monticchi district, South Corsica (Corse-du-Sud) department	
	France (Corsica)	November 2003	– South Corsica (Corse-du-Sud) department: – Cognocoli Monticchi district – Figari district, – Pianottoli-Caldarello district – Sollacaro district, – Sartene district	bluetongue virus (BTV) serotype 4
	Spain (Balearic islands)	October 2003	– Sant Lluis district, Minorca (Menorca) island	under investigation
		November 2003	– Sant Lluis district, Minorca (Menorca) island	unknown
		November 2003	– Es Castell district, Menorca island – Mahon district, Menorca island	
		December 2003	– San Lluis district, Menorca island	

Farewell to Yves Cheneau

Dr Samuel Jutzi, Director of the FAO Animal Health and Production Division, joined colleagues and friends in wishing Dr Yves Cheneau well on the occasion of his farewell party organized last November. Dr Cheneau joined FAO in 1992 as Chief of the Animal Health Service. Among his many duties, he took on the challenge of setting up the EMPRES-Livestock Programme with exemplary commitment and technical knowledge, and was instrumental to incorporating the Global Rinderpest Eradication Programme (GREP) into EMPRES-Livestock. Dr Cheneau retired from FAO on 28 November 2003, after almost 12 years of dedication and professional commitment to the Animal Production and Health Division and world animal health.

PHOTO: W. AMANFU

Dr Yves Cheneau receiving recognition from Drs Louise Fresco (Assistant Director-General) and Samuel Jutzi (Director, FAO Animal Production and Health Division)

Arrival of Joseph Domenech

Dr Joseph Domenech, who took up his duties on 1 December 2003, succeeds Dr Cheneau as Chief of the Animal Health Service. He comes to FAO from CIRAD, France, where he worked for seven years. He is a Doctor of Veterinary Medicine, Toulouse Veterinary School (1970), and has a Ph.D., as well as specialized degrees in Bacteriology, Virology, Immunology and Epidemiology, from the Pasteur Institute (Paris) and from the Faculty of Medicine in Toulouse, France. His experience is mainly in the field of the development of animal production in developing countries: vaccine production, diagnosis and research on animal diseases (Ethiopia, 1972–76; Chad, 1976–80; New Caledonia, 1981–85; Côte d 'Ivoire, 1986–92); reorganization of Veterinary Services and rinderpest eradication campaign (Nairobi, Kenya, PARC Programme of OAU-IBAR, 1992–96). He subsequently was in charge of External Relations at the Centre national d'études vétérinaires et alimentaires, Maisons-Alfort, France. From 1997 to 2003, he was

Director of CIRAD-EMVT (Department of Animal Production and Veterinary Medicine, Montpellier, France), where he was devoted to research and development components in the fields of animal production, animal health and natural resources management, including livestock and environment interactions.

Publications

Several new titles have been added to the growing list of FAO Animal Health manuals.

FAO Animal Health Manuals

1 The diagnosis of rinderpest, 1996
2 Bovine spongiform encephalopathy, 1998
3 Epidemiology, diagnosis and control of helminth parasites of swine, 1998
4 Epidemiology, diagnosis and control of poultry parasites, 1998
5 Recognizing peste des petits ruminants - A field manual, 1999
6 The preparation of national animal disease emergency preparedness plans, 1999
7 The preparation of national rinderpest contingency plans, 1999
8 Livestock disease surveillance and information systems, 1999
9 Recognizing African swine fever - A field manual, 2001
10 Participatory epidemiology - Methods for the collection of action-oriented epidemiological intelligence, 2001
11 The preparation of African swine fever contingency plans, 2001
12 Procedures for disease eradication by stamping out, 2001
13 Recognizing contagious bovine pleuropneumonia, 2001
14 Preparation of contagious bovine pleuropneumonia contingency plans, 2002
15 Preparation of Rift Valley fever contingency plans, 2002
16 Preparation of foot-and-mouth disease contingency plans, 2002
17 Recognizing Rift Valley fever, 2003

Manuels FAO de santé animale (French version)

5 Reconnaître la peste des petits ruminants, 1999
9 Identifier la peste porcine africaine, 2001
13 Reconnaître la péripneumonie contagieuse bovine (édition révisée), 2003
15 Préparation des plans d'intervention d'urgence pour la fièvre de la Vallée du Rift, 2002

These and other FAO documents can be purchased through FAO sales agents. A complete list of publications, prices and agents is available at www.fao.org/catalog/inter-e.htm, or contact:

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EMPRES Bulletin awarded FAO Agriculture Department publication prize for 2003

An annual prize is awarded for the best publication in the Agriculture Department (AG) produced by one or more AG staff members. All categories of publications can be considered, but the emphasis this year was on publications with a demonstrated use and outcome linked to the objectives of FAO's Agriculture Programme. In 2000, AG rewarded scientific publications, in 2001 electronic publications and in 2002 publications for the non-specialist reader.

On 16 December 2003, the Agriculture Department publication prize for the year 2003 was awarded to the *EMPRES Bulletin*. Dr Louise O. Fresco, Assistant Director-General, Agriculture Department, presented the prize to the EMPRES group during the informal departmental end-of-year gathering.

The EMPRES group thanks all contributors and readers who made this possible. Recognition of the prize should also be extended to all the FAO officers, administrative staff, reference laboratories and collaborating centres who, since 1994, have contributed significantly to the success of the *EMPRES Bulletin*.

PHOTO: FAO

Dr Louise O. Fresco (Assistant Director-General, Agriculture Department), awards the prize to Juan Lubroth (Senior Officer, Infectious Diseases, EMPRES Group, FAO, Rome)

PHOTO: FAO

Drs Fairouz Larfaoui, Peter Roeder and Juan Lubroth (not present were Drs Vincent Martin and William Amanfu, technical officers who are part of the EMPRES team devoted to the* EMPRES Bulletin *success)

CONTRIBUTIONS FROM FAO REFERENCE LABORATORIES AND COLLABORATING CENTRES

FAO/OIE World Reference Laboratory for FMD, Pirbright, UK

Report for July to October 2003

Country	No. of samples	FMD virus serotypes							SVD[1] VIRUS	NVD[2]
		O	A	C	SAT 1	SAT 2	SAT 3	Asia 1	(a)	(b)
Burundi	7	5	–	–	–	–	–	–	–	2
Hong Kong SAR	7	3	–	–	–	–	–	–	–	4
Italy	3	–	–	–	–	–	–	–	–	–
TOTAL	17	8	–	–	–	–	–	–	–	6

[1] Swine vesicular disease virus.
[2] No foot-and-mouth disease, swine vesicular disease or vesicular stomatitis virus detected.
Twelve out of 19 positive samples tested as original suspension were typed by enzyme-linked immunosorbent assay.

Report for November to December 2003

Country	No. of samples	FMD virus serotypes							SVD[1] VIRUS	NVD[2]
		O	A	C	SAT 1	SAT 2	SAT 3	Asia 1	(a)	(b)
Italy	3	–	–	–	–	–	–	–	–	–
Pakistan	60	16	3	–	–	–	–	3	–	39
Turkey	10	4	3	–	–	–	–	–	–	3
TOTAL	73	20	6	–	–	–	–	3	–	42

[1] Swine vesicular disease virus.
[2] No foot-and-mouth disease, swine vesicular disease or vesicular stomatitis virus detected.

FAO/OIE World Reference Laboratory for RP and PPR, Pirbright, UK

Report for July 2003 to December 2003

Country	Species	Disease	Diagnosis technique	Result
Kenya	Bovine	RP	PCR	Positive
Mauritania	Warthog (2/38)	RP and PPR	C-ELISA	Positive
United States	Buffaloes and cattle	RP and PPR	C-ELISA	Negative

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