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EMPRES
EMERGENCY PREVENTION SYSTEM


V. MARTIN

Rift Valley fever surveillance in West Africa in 2004

Four years after the close of an FAO regional Technical Cooperation Programme project designed to improve the capacity of national veterinary services, the surveillance of RVF is still operational in the region. Activities were strengthened in 2004 in the Gambia, Mali, Mauritania and Senegal. These countries participated actively in the RVF surveillance programme by monitoring sentinel herds and searching for the disease in high-risk areas. These activities were financially supported by FAO in Mali, Mauritania and Senegal through letters of agreement with national veterinary laboratories.

Peste des petits ruminants in the Thrace region of Turkey

In October 2004, the General Directorate of Protection and Control of the Ministry of Agriculture and Rural Affairs of Turkey reported to the World Organisation for Animal Health that six outbreaks of PPR had occurred in September, including two outbreaks in the Edirne province. This was the first time that PPR had been reported in the Thrace region of Turkey.


D. SAMMIN

Haemorrhagic septicaemia: progress in vaccine research

Haemorrhagic septicaemia (HS) is an acute septicaemia disease of cattle and buffaloes caused by specific serotypes of the bacterium Pasteurella multocida. It is endemic in parts of Africa and Asia. The acute nature of most cases limits the efficacy of antimicrobial therapy, and vaccination appears to be an alternative effective control option. Some Asian countries have achieved success in the control of the disease by the use of alum-precipitated or oil-adjuvant vaccines. HS vaccine research concentrating on the selection of an appropriate adjuvant, ease of field application of vaccine, and cross protection against other serotypes of P. multocida, is ongoing.


M.C.L. DE ALWIS (1999)

AND...

Update on the avian influenza situation in Asia

Can a pandemic strain be predicted?

Avian influenza

One year has passed since the first outbreak of highly pathogenic avian influenza (HPAI), subtype H5N1, occurred in poultry in Asia. It was officially reported to the World Organisation for Animal Health (OIE) for the first time on 12 December 2003 by the Republic of Korea. The disease was progressively reported by nine Asian countries: Cambodia, China, Indonesia, Japan, the Lao People's Democratic Republic, Malaysia, the Republic of Korea, Thailand and Viet Nam. Human cases were reported in Cambodia, Thailand and Viet Nam.

S. DESVAUX

Ducks in a rice field, Cambodia

To respond to the crisis, FAO has implemented emergency assistance under its Technical Cooperation Programme (TCP) through a number of projects in countries that are affected or are at risk of infection. Currently three regional projects are being implemented in Asia to establish diagnostic laboratory and surveillance network coordination for the control and prevention of avian influenza (AI). FAO, with the collaboration of OIE and the World Health Organization (WHO), has assisted governments and farmers in the fight against AI. The FAO Emergency Centre for Transboundary Animal Diseases Operations (ECTAD) coordinates support in disease control and prevention, surveillance and epidemiological analysis, policy, environmental concerns, production, rehabilitation and marketing. Donors contributed in supporting FAO project activities to control the outbreak of HPAI in the region.

As of January 2005, HPAI H5N1 viruses have been officially declared as eradicated from three of the nine countries that reported disease in 2003–2004: China, Japan and the Republic of Korea. It may be extremely difficult to eradicate the disease from the remaining countries because of the various species of poultry populations and, possibly, because of the nature of the production and marketing sectors, in which seemingly normal birds harbour the virus.

Avian influenza situation in Asia, as of January 2005

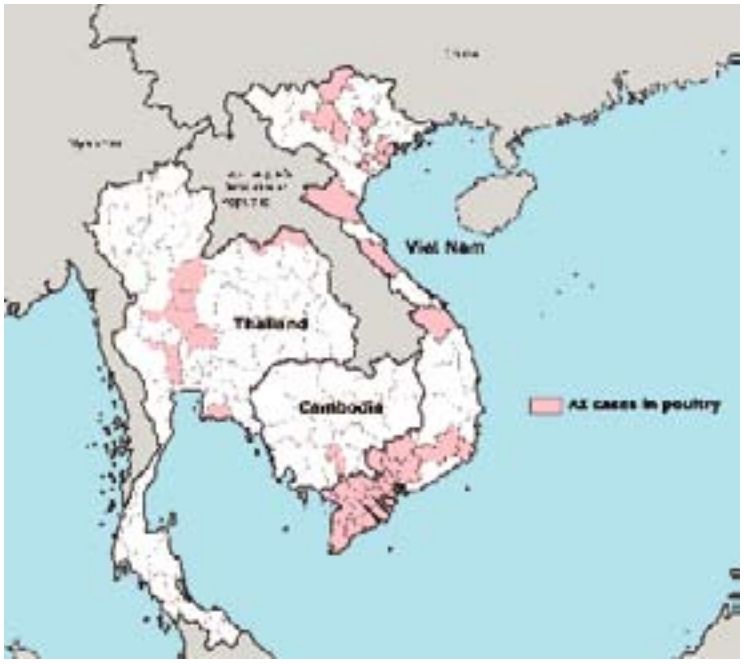
In Asia, the Lunar New Year, which falls on 9 February in 2005, is a time of extended celebration during which movement of poultry and poultry products increases in the region

Since December 2004, outbreaks of HPAI H5N1 in poultry have been reported in Cambodia, Thailand and Viet Nam, and cases affecting humans have been reported in Viet Nam. At the end of January 2005, a human case was confirmed in Cambodia – the first in that country since the HPAI crisis emerged in early 2004. In January 2005, AI virus subtype H5N1 was reported in herons in the Hong Kong Special Administrative Region of China.

In November 2004, outbreaks of HPAI subtype H7 were reported in unvaccinated chickens in Pakistan.

In the short term, it is important to manage the risks to human health and prevent spread of the viruses. Improved biosecurity, stamping out of known infection,

Provinces in Cambodia, Thailand and Viet Nam reporting avian influenza outbreaks in poultry from 1 January 2005 to 15 February 2005



vaccination and implementation of basic public health measures can help to achieve these objectives. Active surveillance systems, based on the FAO Guiding principles for highly pathogenic avian influenza surveillance and diagnostic networks in Asia (2004), must be implemented and sustained to support early detection of infection and effective disease management.

Improved biosecurity can help prevent spread of the AI virus

For more information:

FAO. FAO Avian influenza disease emergency (AIDE) news (available at: http://www.fao.org/ag/AGA/AGAH/EMPRES/tadinfo/e_tadAVI.htm).

FAO. 2004. Guiding principles for highly pathogenic avian influenza surveillance and diagnostic networks in Asia (available at http://www.fao.org/docs/eims/upload/164167/Guidingprinciples.pdf).

Can a pandemic strain be predicted?

The current H5N1 virus has been circulating for about three years, having apparently emerged in Asian poultry in late 2001 or early 2002.[1] Infection with related H5N1

[1] Guan, Y., Poon, L.L.M., Cheung, C.Y., Ellis, T.M., Lim, W., Lipatov, A.S., Chan, K.H., Sturm-Ramirez, K.M., Cheung, C.L., Leung, Y.H.C., Yuen, K.Y., Webster, R.G. & Peiris, J.S.M. 2004. H5N1 influenza: a protean pandemic threat. PNAS, 101(21): 8156–8161.

V. MARTIN

Diagnostic laboratory, Anhui province, China

strains has also been reported in pigs. The likelihood that HPAI viruses in Asia will give rise to a pandemic strain cannot be calculated, and the risk continues to alarm international organizations and the community at large. Several studies that examine past pandemics and address the potential of HPAI H5N1 to convert into a pandemic strain have been published recently.[2]

It seems that the evolution of a pandemic strain does not occur easily, even when conditions are favourable. Reid and Taubenberger [3] (and Fanning) [4] review the state of knowledge regarding the development of pandemic strains of the influenza virus, indicating that, despite efforts to understand the process, it is still not clear how pandemic strains have emerged. The viruses of the 1957 and 1968 pandemics appear to have obtained HA and some other genes from avian viruses and adapted to reproduce in humans.[5]

A review recently published in Nature Medicine[6] provides a balanced appraisal of the current situation.

Webby et al.[7] have examined the requirements for the emergence of pathogens. For influenza viruses, requirements include the ability of the virus to bind to receptors on cells of the respiratory epithelium. Previous pandemic strains that have contained haemagglutinins of apparent avian origin have preferentially recognized human receptors (suggesting prior mutation), facilitating human-to-human transmission. Matrosovich et al.[8] report that avian and human influenza viruses attach preferentially to different cell types in cultured human respiratory epithelium – i.e. ciliated cells (avian strains) and non-ciliated cells (human strains), based on the different receptor types that these cells express. Matrosovich et al. also indicate that mucus contains receptors for avian viruses. It may be that the binding of avian influenza virus to mucus reduces the amount of virus reaching a cellular receptor, hence reducing the likelihood of disease in people exposed to these viruses.

Countries and regional/international organizations must continue monitoring avian, porcine and human populations for the emergence of influenza viruses

[2] Li, K.S., Guan, Y., Wang, J., Smith G.J., Xu, K.M., Duan, L., Rahardjo, A.P., Puthavathana, P., Buranathai, C., Nguyen, T.D. Estoepangestie, A.T., Chaisingh, A., Auewarakul, P., Long, H.T., Hanh, N.T., Webby, R.J., Poon, L.L.M., Chen, H., Shortridge, K.F., Yuen, K.Y., Webster, R.G. & Peiris, J.S. 2004. Genesis of a highly pathogenic and potentially pandemic H5N1 influenza virus in eastern Asia. Nature, 430(6996): 209–213.

[3] Reid, A.H. & Taubenberger, J.K. 2003. The origin of the 1918 pandemic influenza virus: a continuing enigma. J. Gen. Virol., 84: 2285–2292.

[4] Reid, A.H., Taubenberger, J.K. & Fanning, T.G. 2004. Evidence of an absence: the genetic origins of the 1918 pandemic influenza virus. Nat. Rev. Microbiol., 2(11): 909–914.

[5] Reid, A.H., Fanning, T.G., Janczewski T.A., Lourens, R.M. & Taubenberger, J.K. 2004. Novel origin of the 1918 pandemic influenza virus nucleoprotein gene. 2004. J. Virol., 78(22): 12462–12470.

[6] Palese, P. 2004. Influenza: old and new threats. Nature Medicine, 10: S82–S87.

[7] Webby, R., Hoffmann, E. & Webster, R. 2004. Molecular constraints to interspecies transmission of viral pathogens. Nature Medicine, 10: S77–S81.

[8] Matrosovich, M.N., Matrosovich, T.Y., Gray, T., Roberts, N.A. & Klenk, H.-D. 2004. Human and avian influenza viruses target different cell types in cultures of human airway epithelium. PNAS, 101(13): 4620–4624.

I. DOUGLAS

Pigs on a poultry farm, Bangli, Bali, Indonesia

An intriguing puzzle is why H9N2 influenza viruses have not developed into pandemic strains. These viruses are widespread in poultry in Southeast Asia.[9] They have been present in poultry throughout Asia for considerably longer than H5N1 viruses, and are far more likely to be found in poultry in markets than H5N1 viruses.[10] Serological studies have demonstrated antibodies to these viruses in humans,[11] and they have been isolated from pigs.[12, 13]

These findings demonstrate that a pandemic is not automatically generated even when AI viruses develop some of the capabilities to infect humans. Countries and regional/international organizations must continue monitoring avian, porcine and human populations for the emergence of influenza viruses to ensure the detection and characterization of new viruses in order to provide for early detection of recombination or other threatening changes in the nature of the viruses. No one can predict when the next pandemic strain of influenza virus, or even which strain of influenza, will emerge. It is therefore important that countries develop pandemic preparedness plans as recommended by WHO.

Inception workshop for project TCP/RAS/3007 (E)

The inception workshop for FAO Technical Cooperation Programme (TCP) project TCP/RAS/3007 (E), "Diagnostic laboratory and surveillance network coordination for control and prevention of avian influenza in East Asia", was held in Beijing, China, 27–29 October 2004. The workshop was attended by delegates of the four countries participating in the project, i.e. China, the Democratic People's Republic of Korea, Mongolia and the Republic of Korea, and representatives of OIE and WHO. The workshop provided a forum for representatives of laboratory and epidemiology centres in the four countries to discuss and agree upon minimum, standardized approaches to diagnosis and the collection and analysis of epidemiological

It is important that countries develop preparedness plans

[9] Li, K.S., Xu, K.M., Peiris, J.S.M., Poon, L.L.M., Yu, K.Z., Yuen, K.Y., Shortridge, K.F., Webster, R.G. & Guan, Y. 2003. Characterization of H9 subtype influenza viruses from the ducks of southern China: a candidate for the next influenza pandemic in humans? J. Virol., 77(12): 6988–6994.

[10] Kung, N.Y., Guan, Y., Perkins, N.R., Bissett, L., Ellis, T., Sims, L., Morris, R.S., Shortridge, K.F. & Peiris, J.S.M. 2003. The impact of a monthly rest day on avian influenza virus isolation rates in retail live poultry markets in Hong Kong. Avian Dis., 47(3 Suppl.): 1037–1041.

[11] Cheng, X., Liu, J., He, J. & Shan, F. 2002. Virological and serological surveys for H9N2 subtype of influenza A virus in chickens and men in Shenzhen city (in Chinese). Zhonghua Shi Yan He Lin Chuang Bing Du Xue Za Zhi, 16(4): 319–321.

[12] Peiris, J.S.M., Guan, Y., Markwell, D., Ghose, P., Webster, R.G. & Shortridge, K.F. 2001. Cocirculation of avian H9N2 and contemporary "human" H3N2 influenza A viruses in pigs in southeastern China: potential for genetic reassortment? J. Virol., 75(20): 9679–9686.

[13] Xu, C., Fan, W., Wei, R. & Zhao, H. 2004. Isolation and identification of swine influenza recombinant A/swine/Shandong/1/2003(H9N2) virus. Microbes Infect., 6(10): 919–925.

GUO F.

Participants at the inception workshop for project TCP/RAS/3007 (E), Beijing, China

information based on the FAO Guiding principles for HPAI surveillance and diagnostic networks in Asia (http://www.fao.org/docs/eims/upload/164167/Guidingprinciples.pdf).

Discussion

The workshop identified FAO's first priority as to optimize national performance in the early detection of infection, reporting and disease control. The second priority is to improve regional information sharing and analysis. For effective surveillance, there is a need to search out infection, especially in species that do not show obvious signs of infection. Discussion emphasized the tasks of demonstrating freedom after eradicating infection and demonstrating the absence of field virus in vaccinated flocks; the importance of using these measures in combination and maintaining close attention to disease surveillance; regional collaboration as an important underpinning of surveillance; and disease management and eradication.

Surveillance and laboratory networks can provide rapid access to high-quality technical information

Working groups

The meeting was divided into two working groups: (1) laboratory diagnostic issues and (2) surveillance and epidemiological analysis, which reviewed the FAO Guiding principles in detail. The working groups also discussed specific aspects of implementation and developed recommendations on the further guidance, advice and support required from FAO and other international organizations to ensure sustainability of the East Asia networks.

The laboratory group considered the following issues: diagnostic procedures; direct antigen testing; confirmatory testing; occupational health and safety of workers; characterization of isolates; serological testing; use of the DIVA (differentiating infected from vaccinated animals) technique; wild bird testing; and network implementation. The priority activities to support network implementation included information exchange (i.e. the provision of updated scientific information on a regular basis); building minimum capability (including the provision of supplies and consumables to some laboratories); the provision of training and support for technical collaboration; and technical assistance to the National AI Reference Laboratory (at the Harbin Veterinary Research Institute, China) to enable it to enhance current strengths in order to operate as a network reference laboratory. It was recommended that assistance be provided by an international reference laboratory working in collaboration with FAO and OIE.

The epidemiology group generally endorsed the FAO Guiding principles. Discussion focused on the expectations of participants of the surveillance network. The main needs addressed for implementation of the epidemiology network were support for contingency planning; enhancement of information systems; and training in

epidemiological analysis, at both basic and advanced levels. There is a strong need for help with the sharing of information and intelligence, particularly publications, the results of surveillance, and information about practical experience.

All countries confirmed the importance of the networks in helping to prevent a global pandemic of human influenza. The Ministry of Agriculture, China, and FAO's leadership of the network hubs is key for the implementation of sustainable networks.

V. MARTIN

Live bird market, Anhui province, China

Outcome

Participating countries generally agreed on the FAO Guiding principles, recommending as an additional requirement the maintenance of a virus bank (i.e. a stock of virus antigen) and a genetic sequence database for virus isolates, as an "ideal" capability for a national laboratory or as a "minimum" capability for a network reference laboratory. Delegates agreed on the benefit of sharing information (and committed to sharing information in accordance with the project); the need to strengthen some national laboratories to meet the minimum standards defined in the FAO Guiding principles; and the need to build the networks via a collaborative work programme that would include training for some laboratory scientists. They also agreed to share HPAI viruses isolated in the region with the network reference laboratory (Harbin Veterinary Research Institute, China) and to provide any new/different viruses to OIE/WHO influenza reference laboratories for full characterization and comparison.

Looking forward

Participants concurred that there are several diagnostic issues that require further study and the development of improved methods, such as the serological testing of waterbirds, the development of marker vaccines/diagnostic tests and the development of more economical methods for rapid antigen detection. They identified the need to pursue these matters with collaboration among participating countries and international laboratories.

All participants agreed that the networks can and should benefit participants by providing rapid access to high-quality technical information. The development and maintenance of a common regional database could best be managed by implementation of the FAO/EMPRES-i system. The participants also agreed upon specific needs and further support for the epidemiology networks, including facilitation of contingency planning at national and regional levels; assistance with improving and maintaining systems for data capture and analysis; and training in basic data collection/analysis, as well as advanced statistical and epidemiological analysis.

Rift Valley fever

Rift Valley fever (RVF) epizootics generally appear following an association of favourable conditions, including the combination of extreme climatic events such as El Niño, above average rainfall and changes in hydrological conditions (e.g. the construction of dams or changes in irrigation scheme). During the 1998 epizootic in West Africa, the disease was detected in the livestock population late, when fatal human cases were being reported and the disease had already reached epidemic proportions.

V. MARTIN

Sentinel herd monitoring in Senegal along the Senegal River basin

Improving the capacity of veterinary services

To control the disease and prevent its repeating occurrence in the future, in 2000 FAO funded the implementation of a regional disease surveillance system for RVF in Mali, Mauritania and Senegal through a regional Technical Cooperation Programme project (TCP/RAF/8931). The main objective of the project was to improve the capacity of national veterinary services to detect the disease early and take appropriate control measures.

Rift Valley fever surveillance in West Africa in 2004

RVF surveillance using sentinel animals has been, and must continue to be, active in high-risk areas of West Africa

Four years after the project's close, surveillance of RVF is still operational in the region. Activities were strengthened in 2004 in the Gambia, Mali, Mauritania and Senegal. These countries participated actively in the RVF surveillance programme through the monitoring of sentinel herds and the active search for the disease in high-risk areas. These activities were financially supported by FAO in Mali, Mauritania and Senegal through letters of agreement established with national veterinary laboratories.

Gambia

The International Trypanotolerance Centre of Banjul, the Gambia, monitored small ruminants (sheep and goats) in the region of Kenieba in September 2004.

142 animals were sampled, and sera were tested for the detection of RVF antibodies, using a seroneutralization (SN) test and enzyme-linked immunosorbent assay (ELISA) immunoglobulin M (IgM) test. Thirty-seven animals were found positive (N=142, X=37) by SN. However, no IgM antibodies were detected.

Serological results for RVF antibodies in small ruminants in the Gambia, September 2004

	Number tested	Results (positive SN)
Ovine	69	21
Caprine	73	16
Total	142	37

Guinea

In November and December 2004, sera were taken and seropositivity was observed in 80 small ruminants in Guinea. This result confirms the presence of RVF virus in the region of Dubreka.

Mali

Several field missions were organized in Mali in March and April 2004 (Kangaba, Mopti, Nara, Sélingué and Yanfolila), and 926 sera were tested for RVF. Only one serum sample was found to be IgM positive, while 17 were immunoglobulin G (IgG) positive (Mopti, Sélingué and Yanfolila). As in the case of Mauritania (see below), these findings demonstrate a low-level viral circulation in areas at risk.

V. MARTIN

Free vaccination of small ruminants is provided to farmers who participate in the surveillance for RVF

Mauritania

Two missions were organized between August and November 2004 in the Senegal River valley of Mauritania and in the southwest regions of the country. During the first mission (August 2004–September 2004), IgM antibodies were observed in 5 out of 298 sera tested (1.67 percent). The localities where IgM antibodies were found were: Kankossa (one IgM positive), Kiffa (one IgM positive) and Tidjikdja (three IgM positive).

A follow-up mission (September 2004–November 2004) confirmed the presence of IgM antibodies in Tidjikdja, where two serum samples were found positive.

It is important to note that no clinical signs such as abortions or stillbirths were observed in the herd where IgM antibodies were detected (July 2004–November 2004). These results indicate low-level viral circulation, as observed every year.

Senegal

In Senegal, four field missions were organized in March, April, July and October 2004, and 789 samples were collected and tested for the presence of RVF antibodies. No viral circulation was detected.

Serological results for RVF IgG and IgM in small ruminants in Mali, March–August 2004

Village	Geographical coordinates (latitude; longitude)	Number of serum samples tested	Number IgG positive	Number IgM positive
Nara	N15.18094; W07.28225	270	0	0
Mopti	N14.18094; W04.18378	319	5	1
Kangaba	N11.93932; W08.42991	93	0	0
Sélingué	N11.61910; W08.24104	136	7	0
Yanfolila	N11.170121; W08.15905	108	5	0
Total		926	17	1

Serological results for RVF IgM in small ruminants in Mauritania, September–November 2004

Region	Locality (sentinel herd location)	Samples taken	Number IgM positive
Hodh Ech Chargui	Néma (pond)	Not sampled	
	Diguenni (pond)	Not sampled	
Hodh El Gharbi	Kobenni	30	0
	Tintane	30	0
Assaba	Kiffa (Oumchagar)	Not sampled	
	Kankossa (pond)	Not sampled	
Tagant	Tidjikdja (pond)	30	2
Guidimaka	Selibaby (Senegal River valley)	Not sampled	
Gorgol	Mbout (pond)	Not sampled	
Brakna	Boghe (Senegal River valley)	30	0
Trarza	Keur Macène (Senegal River valley)	30	0
Total	5 sentinel herds visited out of 11	150	2

V.MARTIN

Sentinel herd, Mali

In November 2004, a farmer reported abortions and dystocia in a herd of small ruminants. Veterinary services visited the farm and investigated the case. An absence of young animals (less than six months old) in the herd was also noticed. On 18 November 2004, 30 serum samples were tested at the Laboratoire National de Recherches Vétérinaires in Dakar, Senegal, and RVF antibodies were detected. Sixteen animals were identified as IgG positives, and three as IgM positives. The diagnosis was confirmed by a second field investigation mission: serum was taken for a second time in the same herd, and the presence of IgM antibodies was confirmed (2 positive animals out of 30). This outbreak of RVF was the only one reported and confirmed in 2004 in Senegal.

Conclusion

In 2004, there was only one isolated outbreak of RVF detected, in Senegal; a low level of RVF viral circulation was observed in neighbouring countries. Active surveillance must continue in this region, during the rainy season (June to October), to improve the understanding of the epidemiology of the disease and allow early detection in the event of an epidemic.

Serological results in small ruminants presenting clinical signs compatible with RVF in the low valley area of Ross-Bethio, Senegal, November 2004

Number	Clinical signs	ELISA[1] IgM (PP)[2]	ELISA IgG (PP)	SN[3] (titre)	Conclusions
1	Weakness	1.93	136.48	160	IgG positive
2	Weakness, scabies	0	100.18	160	IgG positive
3	Weakness	-0.77	2.54	40	Negative
4	Rough hair coat	-1.16	4.36	< 40	Negative
5	Weakness	8.50	200	160	IgM and IgG positive
6	Weakness, rough hair coat	1.16	11.62	40	IgG positive
7	Abortion	2.71	113.61	160	IgG positive
8	Abortion	10.05	117.60	160	IgM and IgG positive
9	Abortion	2.71	187.66	160	IgG positive
10	Rough hair coat, dystocia	0.77	5.08	40	Negative
11	Weakness	2.32	0.73	40	Negative
12	Weakness	0.77	-0.36	< 40	Negative
13		3.09	214.88	160	IgG positive
14		1.16	11.62	< 40	IgG positive
15		1.55	1.09	< 40	Negative
16		1.55	145.55	160	IgG positive
17	Recent abortion	8.89	198.91	160	IgM and IgG positive
18	Recent and frequent abortion	3.86	164.07	160	IgG positive
19		2.71	27.23	< 40	IgG positive
20		1.93	178.22	160	IgG positive
21	Recent and frequent abortion	3.09	3.27	< 40	Negative
22		0	2.54	< 40	Negative
23		1.55	13.07	160	IgG positive
24		-0.77	0.73	< 40	Negative
25		2.32	0.73	40	Negative
26		0.77	2.18	< 40	Negative
27		3.48	5.44	40	Negative
28		-2.32	-0.73	< 40	Negative
29		3.48	137.21	160	IgG positive
30		-2.32	0.73	< 40	Negative
Total		3 IgM+	16 IgG+	13 SN+	

[1] ELISA: enzyme-linked immunosorbent assay
[2] PP: positivity percentage
[3] SN: seroneutralization
Notes: The threshold for the IgM positivity test was ovine: >= 8; caprine: >= 9.5
The threshold for the IgG positivity test was ovine: >= 11.1; caprine: >= 18.1
The threshold for the SN positivity test was ovine and caprine: titre >= 160

Peste des petits ruminants

FAO mission to follow up outbreaks of peste des petits ruminants (PPR)

Background: outbreaks reported in the Thrace region of Turkey

Turkey first reported outbreaks of peste des petits ruminants (PPR) in 1999. On 12 October 2004, the General Directorate of Protection and Control (GDPC) of the Ministry for Agriculture and Rural Affairs (MARA) of Turkey reported to the World Organisation for Animal Health (OIE) that six outbreaks of PPR had occurred in September, two of which were in the province of Edirne. This was the first occasion that PPR had been reported in the Thrace region of Turkey, and because the province of Edirne borders Greece and Bulgaria, FAO considered the event of significance for the regional animal health situation.

As incursions of any exotic disease into the Thrace region may indicate a risk of foot-and-mouth disease (FMD) incursion, GDPC provided further information to the European Commission for the Control of Foot-and-Mouth Disease (EUFMD) Secretariat on the outbreak locations and on the control measures being applied in the region. Training and diagnostic support for early detection of PPR in Thrace region was provided by FAO through the ongoing Technical Cooperation Programme project TCP/RER/2903, "Strengthening active surveillance for FMD and other exotic diseases in the Thrace region", and the EUFMD Secretariat offered expert help to assess what further action could be undertaken to ensure the control of PPR in this region.

Turkey has reported that there were six outbreaks of PPR in the Thrace region in September 2004

PPR outbreak locations and the extent of the surrounding vaccinated zone

Area surrounding the Thrace region

Incursions of any exotic diseases into the Thrace region may indicate a risk of FMD incursion

Findings of the follow-up mission

Under project TCP/RER/2903, an expert team led by Dr John Anderson (Head, FAO World Reference Laboratory for Morbilliviruses, Institute for Animal Health, Pirbright, United Kingdom) was assembled in the Edirne province from 24 to 29 October 2004. The team, which included Drs Mustafa Tufan (GDPC), Şirin Gulsum Cizmeci (Central Veterinary Control and Research Institute, Etlik, Ankara [the "Etlik Institute"]) and Dónal Sammin (EUFMD Secretariat; Animal Health Service, FAO), met with local veterinary authorities to discuss disease control measures that had been undertaken since the outbreak was reported, to plan further surveillance activities and to visit the outbreak locations.

A serosurvey for FMD, bluetongue (BT) and PPR had been conducted in the Thrace region in June 2004 with FAO support under TCP/RER/2903. Two to three months before the first reporting of PPR, sera had been collected from 100 villages in the Thrace region, including 17 villages in Edirne province. Twenty-four small ruminants and twenty-four cattle had been sampled in each village, and sera had been divided between the Şap (FMD) Institute, Ankara, and the Etlik Institute to be tested for antibodies to the FMD, BT and PPR viruses.

Serological testing for antibodies to PPR virus had only recently been completed when the FAO follow-up mission was conducted. An initial interpretation of these serosurvey results was attempted to provide a "snapshot" of the regional disease situation. In

Healthy newborn lambs in a flock at one of the outbreak locations. Seropositive sheep were identified in this flock, and all sheep were subsequently vaccinated

D. SAMMIN

FAO provided training workshops for laboratory personnel and commercial testing kits, which greatly assisted laboratory diagnosis of PPR during the outbreak

Edirne province, 5.4 percent of cattle and 15.7 percent of small ruminants were seropositive for PPR virus. Significant clusters of seropositive animals were identified in three villages in the Enez district (near the border of Greece), and a further cluster was identified in a nearby village in the neighbouring Keşan district.

Although most of the seropositive cattle were more than two years old, and many were old enough to have been vaccinated with rinderpest vaccine before its use was discontinued in 1998, the majority of the seropositive small ruminants in these villages were less than one year old.

D. SAMMIN

Clinical surveillance involves hands-on examination of randomly selected animals

The chronology of events surrounding the PPR outbreaks in the Thrace region suggests that clinical PPR was most probably present in the first affected village from mid- to late August 2004 and was probably at first misdiagnosed by a veterinary practitioner as clostridial enterotoxaemia. The source of infection was not identified. The disease spread to a second affected village, and transmission may have been associated with the movement of veterinary technicians between the villages (clinically affected animals were vaccinated against clostridial diseases in the first village, and two days later, two flocks of sheep in the second village were vaccinated by the same personnel using the same equipment). Control measures, e.g. killing affected animals, vaccination of infected flocks and emergency ring vaccination of all small ruminants in neighbouring at-risk villages (Map, page 12) with a homologous PPR virus vaccine produced at the Etlik Institute, were undertaken. No further evidence of disease was reported in affected or vaccinated villages (Photo, page 13).

Conclusions and recommendations

Epidemiology of PPR in the Thrace region

Although flock sizes are generally small, the common practice of communal grazing greatly increases group size (to more than 1000 animals in the present case). However, even this population size is unlikely to be sufficient to maintain circulation of PPR virus for long periods. Clustering of PPR-seropositive animals in many of the villages sampled during the 2004 Thrace serosurvey and the relatively small size of groups of susceptible animals in each village (in the absence of significant animal movement between villages) would suggest that the virus is being reintroduced constantly by sheep brought in from areas of eastern Turkey where PPR is endemic.

Post-vaccination PPR surveillance

PPR vaccine is extremely thermolabile and requires careful handling in the field to ensure that it retains its potency. Therefore, follow-up serosurveillance was recommended to ensure both the efficacy of emergency vaccination in vaccinated villages and the absence of virus circulation in villages adjacent to the vaccination zone.

A trial run was undertaken by the expert team and local veterinarians in which two villages were visited, one within and the other immediately outside the vaccinated

zone. In each village, a random sample of 60 small ruminants was selected; the animals were examined for clinical signs of PPR (Photo, page 14); and serum was collected to test for antibodies to PPR virus.

Excellent detective work was done at the district level

It is important to note that serological tests that are currently in use do not allow for discrimination between vaccinated and infected animals. Therefore, it was suggested that, within villages where PPR vaccination has been applied in small ruminants, cattle in close contact with sheep/goats could be considered sentinel animals and could be sampled for evidence of seroconversion. Furthermore, as vaccination interferes with the interpretation of all PPR serosurveillance data, every effort should be made to introduce some form of permanent marking for vaccinated sheep and goats.

Raising awareness of the disease

Awareness of the clinical signs of PPR is essential for rapid diagnosis and early warning. An excellent manual on the clinical diagnosis of PPR, with photographic illustrations and text in Turkish, was published by GDPC in 2001. If redistributed to practising veterinarians throughout the region it would greatly help to raise awareness of the disease.

Continuation of multinational surveillance activities in the Thrace region

The FAO-funded project (TCP/RER/2903) for active surveillance of foot-and-mouth disease, bluetongue, PPR and sheep and goat pox in the Thrace region will end in early 2005. This project provided training workshops for laboratory personnel and commercial testing kits, which greatly assisted laboratory diagnosis of PPR during this outbreak. As it is unreasonable to expect Turkey to bear the brunt of funding animal disease control measures from which all neighbouring countries benefit, the expert group believes that support should be given to continue transboundary animal disease surveillance in the Thrace region. At the time of writing, FAO is negotiating an agreement with the European Commission to support continued serosurveillance in 2005.

Recognition of the role played by the local veterinary services

The local veterinary authorities in Edirne province deserve recognition for the excellent job they have done in rapidly controlling the PPR outbreaks. In particular, excellent detective work was done at the district level, which highlighted the possible role of veterinary technicians in transmitting the disease from the primary outbreak location and led to the identification of another "infected" village. Neighbouring countries should be reassured by their prompt, efficient action.

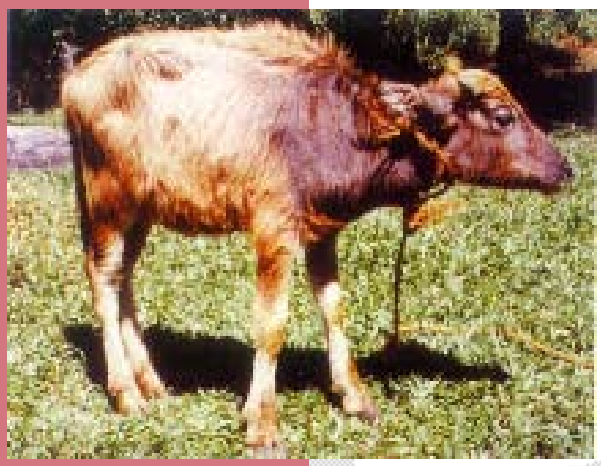
The authors also wish to acknowledge MARA staff in Edirne province and Uzunkopru district for their friendly cooperation, assistance and hospitality.

John Anderson, Institute for Animal Health, Pirbright, United Kingdom, and
Dónal Sammin, EUFMD Secretariat, FAO

Communication

Update on Haemorrhagic septicaemia and progress in vaccine research

Haemorrhagic septicaemia (HS) is an acute, fatal, septicaemic disease of cattle and buffaloes caused by specific serotypes of the bacterium Pasteurella multocida. Serotype classification of P. multocida is based on the presence of capsular and somatic antigens. To date, five capsular groups – A, B, D, E and F – have been identified by indirect haemagglutination test using heat-labile antigen preparations (Carter, 1967).



M.C.L. DE ALWIS (1999)

Buffalo calf clinically affected with HS

Numerous serotypes of P. multocida are associated with a variety of animal disease syndromes affecting a wide range of domestic and feral species. In many instances, P. multocida plays a secondary role in the pathogenesis of these diseases or acts in combination with other agents. HS, on the other hand, is a primary pasteurollosis and is reproducible in susceptible host species using pure cultures of the causative organism alone.

Epidemiology

Although HS has never been reported in a few countries, such as Australia and the United Kingdom and some other European countries, it has a wide global distribution. In most African and Asian countries, the disease is endemic. Indeed most Asian countries rank HS as one of the most economically important diseases.

HS occurs commonly in cattle and buffaloes; buffaloes are more susceptible than cattle. In both species, young animals and young adults are more susceptible than older animals. The two common serotypes of P. multocida associated with the disease in these species are types B:2 (in Asia) and E:2 (in Africa). The Asian B:2 serotype has also been associated with sporadic septicaemic disease in pigs.

The acute nature of most cases of HS limits the efficacy of antimicrobial therapy of sick animals

In Egypt and the Sudan, the presence of both E and B serotypes has been reported (Shigidi and Mustafa, 1979). The African form of HS occurs sporadically. Outbreaks are usually limited in extent and tend to be associated with stress conditions (Bastianello and Nesbit, 1994). The Asian form of HS occurs in countries with high seasonal rainfall and is usually endemic in marshy zones or along river deltas.

Because HS is primarily a bacterial disease, it should theoretically lend itself to effective antibiotic therapy. However, treatment is constrained by a number of factors. The acute nature of most cases of the disease limits the efficacy of antimicrobial therapy of sick animals. Vaccination, therefore, appears to be an alternative effective control option. A solid, long-lasting immunity is conferred on animals that recover from the natural disease and is more persistent than that induced by vaccination.

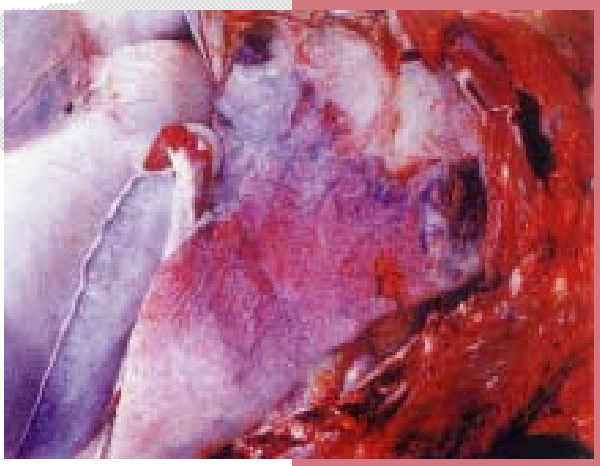
HS vaccines

Some Asian countries have achieved success in control of the disease by immunizing buffaloes and cattle with alum-precipitated or oil-adjuvant vaccines (Carter and De Alwis, 1989). Immunity is, however, of short duration – lasting 6 to 9 months in primary vaccination and 12 months after secondary vaccination. Large-scale vaccination of cattle against HS is not practised in many countries of Africa. An outbreak of HS in Zambia in 1979 was controlled by using a formalinized vaccine obtained from the Sudan (Francis, Schels and Carter, 1980).

Vaccination appears to be an alternative effective control option

Despite the fact that the alum-precipitated vaccine is known to provide immunity of short duration, it is still the most common vaccine in use, as it is the easiest vaccine to inject. Oil-adjuvant vaccines, though known to be highly potent, are difficult to inject because of their high viscosity.

A considerable amount of research aimed at producing oil-adjuvant vaccines of low viscosity has been done during the past decade in South Asia (De Alwis, unpublished). Indonesia and Sri Lanka have successfully used lower levels of lanoline, an emulsifying agent, to reduce viscosity. Malaysia has used the alum-precipitation technique to concentrate broth cultures in order to reduce the dose volume of the oil-adjuvant vaccine, which is believed to facilitate injection (De Alwis, unpublished). India achieved the same objective by using an agar-grown bacterin, but the production process was found to be too laborious to be feasible on a large-scale basis. Scientists in India, Pakistan and Thailand have used recently developed oil adjuvants and succeeded in reducing the viscosity considerably, but only in Thailand is a vaccine developed by this process used routinely. The double-emulsion vaccine has been used in India and Malaysia on an experimental basis.



M.C.L. DE ALWIS (1999)

Lateral view of the thoracic and abdominal viscera of a buffalo calf that died of HS

A live heterotypic vaccine made with P. multocida serotype B:3, 4 isolated from a fallow deer in the United Kingdom (Jones and Hussaini, 1982) protected cattle against a serotype B:2 challenge and conferred immunity against HS for one year in cattle vaccinated subcutaneously (Myint, Carter and Jones, 1987). FAO provided funds through its Technical Cooperation Programme to the Government of Myanmar to standardize this vaccine and subject it to further field tests. However, the overall adoption of the intranasal HS vaccine outside Myanmar, where it was developed, has been poor.

Recently, the safety, efficacy and cross-protectivity of a live intranasal HS vaccine containing P. multocida serotype B:3, 4 were tested in young cattle and buffaloes in Myanmar (Myint, Jones and Nyunt, 2005). In this study, the administration of 100 times the recommended dose to 50 cattle and 39 buffalo calves was innocuous. Seven months after vaccination, three out of three buffaloes were protected, and twelve months after vaccination, three of four buffaloes were protected, against a

P. ROEDER

A slice of affected cardiac lobe of the lung of a buffalo calf that died of HS

subcutaneous challenge with serotype B:2. The vaccinated cattle developed serum antibodies detectable by the passive mouse protection test. The serum of vaccinated cattle cross-protected mice against infection with P. multocida serotypes E:2, F:3, 4 and A:3, 4.

This finding could offer the possibility of further studies in parts of Africa, perhaps in Egypt and the Sudan, where both serotypes B:2 and E:2 have been isolated.

The use of a cross-protecting B:3, 4 deer strain of P. multocida in intranasal vaccination trials could be carried out to assess its efficacy on a pilot scale. The various etiologic types of HS strains could be mapped out in parts of East Africa where the disease is of particular significance.

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Workshops

TADinfo training workshop in Windhoek, Namibia

A workshop was held in a suburb of Windhoek from 22 November to 3 December 2004 under the FAO Technical Cooperation Programme project TCP/RAF/3006A, "Strengthening disease control through the improved Transboundary Animal Disease Information System (TADinfo)". This was the first training course on the Java version of TADinfo. Fifteen veterinarians and technicians from Burkina Faso, Ghana, Lesotho, Morocco, Mozambique, Namibia, Nigeria, Tunisia, Uganda and the United Republic of Tanzania attended the ten-day workshop. The objectives of the workshop were to familiarize epidemiologists from the participating countries with the network use of the TADinfo Java version and to train participants so that they, in turn, could train their national staff.

TADinfo training workshop near Windhoek, Namibia

The workshop was opened by Mr M.F. Mokati, FAO Representative to Namibia. Dr O. Huebschle, Chief Veterinary Officer of Namibia, encouraged participants to maximize this training opportunity. Dr F. Musisi, FAO Regional Emergency Livestock Officer, gave a talk on FAO emergency projects, their outlines and functions.

During the training course, FAO staff gave lectures on the overall basic structure of TADinfo and its Serosurveillance, Census and Vaccination modules, and discussed system configurations, installation of the programme, and data back-up. Many of the lectures were followed by intensive exercises. Dr C. Bamhare, Namibia, and Dr F. Sudi, United Republic of Tanzania, gave an introductory lecture on the Field Observations, Abattoir Observations and Farm Visit modules. Dr Sudi presented the advanced functions of a GPS (global positioning system) and further data analysis in ArcView. Dr Bamhare organized a discussion on the Southern African Development Community (SADC) regional epidemiological data reporting system and its future coordination within the region.

A. KAMATA

Participants at the TADinfo training workshop near Windhoek, Namibia

A 15-minute country presentation was made every day featuring: current disease problems and distribution; the country's top ten priority diseases in terms of importance, economic loss and food insecurity; diseases of which the country is at risk; routine surveillance and disease reporting systems in the country; methods of information capture for the country's databases and reporting format; the approximate number of data acquired per month; and the country's expectations of TADinfo.

All participants received a certificate for the completion of the training course.

News

In brief…

Since the publication of the last EMPRES Bulletin (No. 26), outbreaks of EMPRES priority diseases in different regions around the world have been reported to the World Organisation for Animal Health (OIE) or FAO.

Outbreaks reported, October 2004–January 2005

Disease	Country	Reporting date	Location	Agent characterization
Contagious bovine pleuropneumonia	Kenya	November 2004		
		December 2004		
	Nigeria	December 2004	State of Kano (northern Nigeria)	
Lumpy skin disease	Senegal	December 2004	Velingara (13º 02′ N – 14º 07′ W)	
Rift Valley fever	Senegal	December 2004		
Peste des petits ruminants	Israel	December 2004	North district, Nazareth subdistrict, Ilut locality	
	Mali	November 2004	Koulikoro region, Niamina district	
		January 2005	Koulikoro region, Niamina district	
Goat pox	Viet Nam	January 2005	Cao Bang, Bac Giang, Lang Son and Ha Tay provinces	
Bluetongue	Croatia	November 2004	Dubrovačko-Neretvanska (Dubrovnik) county	In sentinel animals without clinical signs, serotypes 9 and 16
	Morocco	October 2004	Ben Slimane, El Hajeb, Kénitra, Khémisset, Khouribga, Larache, Meknès, Rabat, Sefrou, Sidi Kacem, Taounate and Taza provinces	
		November2004	Meknès, Rabat, Sidi Kacem, Taounate, Taourirt and Taza provinces	
		December 2004	Taza province	
	Portugal	November 2004	Alentejo region, Beja, Elvas and Évora districts	
		December 2004	Alentejo region, Burtualhas–Sta. Eulàlia, Évora and Portalegre districts Beira Interior region, Castelo Branco district	
		January 2005	Alentejo region, Alcaidinho–St. Maior district	
	Spain	October 2004	Andalusia autonomous community, Cádiz and Málaga provinces Extremadura autonomous community, Cáceres province	
		November 2004	Andalusia autonomous community, Cádiz, Ceuta, Huelva, Málaga and Sevilla provinces Extremadura autonomous community, Badajoz and Cáceres provinces	Serotype 4
		December 2004	Andalusia autonomous community, Cádiz, Huelva, Málaga and Sevilla provinces Extremadura autonomous community, Badajoz province	Serotype 4
		January 2005	Andalusia autonomous community, Cádiz, Huelva, Málaga and Sevilla provinces Ceuta autonomous city, Ceuta province Extremadura autonomous community, Badajoz and Cáceres provinces	Serotype 4

Outbreaks reported, October 2004–January 2005 (cont.)

Disease	Country	Reporting date	Location	Agent characterization
African swine fever	Burkina Faso	November 2004	Kadiogo province, Ouagadougou district (central Burkina Faso)	
	Eritrea	November 2004	40 km south of Asmara, subzone of Dekemhare	
	Namibia	December 2004	Okahandja district, Osona (22° 04′ S – 16° 57′ E)	
		January 2005	Okahandja district, Plot No. 27 (21° 57′ S – 16° 56′ E)	
	United Republic of Tanzania	January 2005	Mwanza region, Nyamagana district, Pamba village	
Classical swine fever	Russian Federation	December 2004	Vladimir region, Suzdal district, Novoe Selo village	
		January 2005	Moscow region, Domodedovo district, Mayak garden fellowship	
			Komi republic, Pechora district, Puteets village	
	Slovakia	November 2004	Lučenec district, Lučenec locality	
Highly pathogenic avian influenza	South Africa	November 2004	Eastern Cape province, Ikwezi municipality	H5N2
		December 2004	Eastern Cape province, Camdeboo municipality	H5N2
Newcastle disease	Bulgaria	December 2004	Kargali administrative region, Dgebel municipality, Ridino village	
	Cyprus	November 2004		
	Greece	January 2005	Arcadia prefecture, Peloponnese region	
	Japan	December 2004	Fukuoka prefecture	
	South Africa	September 2004	KwaZulu-Natal province, Camperdown and Richmond districts	

Highly pathogenic avian influenza reported in Asia, October 2004–January 2005, by last known case suspected and/or confirmed

Country	Date of first official reporting to OIE dd/mm/yy	Virus subtype	Latest information[1]		
			Last known case suspected and/or confirmed	Source of information	OIE declaration
Pakistan	28/01/04	H7N3	November 2004	Government, FAO[2]	
Indonesia	06/02/04	H5N1	December 2004	Media Web sites	
China[3]	26/01/04	H5N1	January 2005 (heron)	Government, media Web sites	Yes
Thailand	23/01/04	H5N1	January 2005	Government, FAO, media Web sites	Yes
Viet Nam	08/01/04	H5N1	January 2005	Government, FAO	Yes

[1] Official (OIE) and non-official information (ProMED, press agencies, FAO tracking systems, etc.)
[2] FAO: FAO representative in concurrence with government sources
[3] Hong Kong Special Administrative Region

Contributions from FAO reference laboratories and collaborating centres

FAO/OIE World Reference Laboratory for Foot-and-Mouth Disease, Pirbright, United Kingdom

Country	No. of samples	Virus isolation in cell culture/ELISA[1]									RT-PCR[2] for FMD (or SVD) virus (where appropriate)		
		FMD virus serotype							SVD virus	NVD[3]	Positive	Negative	Not tested
		O	A	C	SAT-1	SAT-2	SAT-3	Asia 1					
Eritrea	31	5	-	-	-	-	-	-	-	26	5	26	-
Iran, Islamic Republic of	12	2	-	-	-	-	-	1	-	9	5	7	-
Italy	4	-	-	-	-	-	-	-	4	-	4[4]	-	-
Pakistan	8	-	-	-	-	-	-	2	-	6	4	4	-
Philippines	12	12	-	-	-	-	-	-	-	-	11	1	-
Tanzania, United Republic of	21	6	-	-	-	5	-	-	-	10	12	9	-
Viet Nam	6	4	2	-	-	-	-	-	-	-	6	-	-
Total	94	29	2	-	-	5	-	3	4	51	47	47	

[1] FMD or swine vesicular disease (SVD) virus serotype identified following virus isolation in cell culture and antigen detection enzyme-linked immunosorbent assay (ELISA)
[2] RT-PCR: reverse transcription polymerase chain reaction for FMD (or SVD) viral genome
[3] NVD: no FMD, SVD or vesicular stomatitis virus detected
[4] Positive by RT-PCR for SVD but not FMD viral genome

FAO/OIE World Reference Laboratory for Rinderpest and Peste des Petits Ruminants, Pirbright, United Kingdom

Report from the FAO World Reference Laboratory for Morbilliviruses, October 2004–January 2005

Country	Species	Sample	Disease	Test	Results
Pakistan		Tissue culture Vaccine	Rinderpest	Virus titration	5 pass, 2 fail
Sudan	Bovine	Tissue	Rinderpest/MCF[1]	RT-PCR	Negative
	Bovine	Swab	Rinderpest/MCF	RT-PCR	Negative
	Bovine	Serum	Rinderpest/PPR[2]	C-ELISA[3]	Negative
United States of America	Bovine	Serum	Rinderpest	C-ELISA	Negative

[1] MCF: malignant catarrhal fever
[2] PPR: peste des petits ruminants
[3] C-ELISA: competitive enzyme-linked immunosorbent assay

Stop the press

June 2005

The information presented about transboundary animal diseases (TADs) in this Bulletin reflects conditions reported from October 2004 through January 2005 and is based on data available at the time of the Bulletin's preparation.

Since January 2005, the following information has been reported: outbreaks of foot-and-mouth disease (FMD) Asia 1 in the East Coast and northwestern regions of China; FMD type A (A24 Cruzeiro) in Colombia; Newcastle disease in Greece, Israel and Japan; and African swine fever in the United Republic of Tanzania.

Another wave of avian influenza broke out in Asia around the Lunar New Year. New cases in poultry were reported in Cambodia, China, the Democratic People's Republic of Korea, Indonesia, Thailand and Viet Nam, and in wild birds in mainland China and the Hong Kong Special Administrative Region of China. Human cases of H5N1 were reported both in Cambodia and Viet Nam in the first half of 2005.

The Second FAO/OIE Regional Meeting on Avian Influenza Control in Asia, with the collaboration of the World Health Organization, was held in February in Ho Chi Minh City, Viet Nam. The final report is available at http://www.fao.org/ag/againfo/subjects/documents/ai/AI_2nd_RegMtg_HoChiMinhCity_Rep.pdf

An EMPRES Expert Consultation was held in Rome in June. Experts gathered from developing and developed countries to recommend that FAO strengthen its role in fighting TADs by improving early warning systems and the capacity for effective response. The final report and recommendation will be issued shortly.

New staff

Dr Sophie von Dobschuetz

Dr Sophie von Dobschuetz joined the EMPRES group of the Animal Health Service as an Associate Professional Officer in October 2004. After having graduated in Veterinary Science at the Free University of Berlin, Germany, in 1998, Dr von Dobschuetz worked for the Tropical Animal Health Department of the university until 2001, completing her doctoral thesis on the animal reservoir of human African trypanosomiasis. During the three years prior to her appointment at FAO, she worked as a small animal surgeon in private veterinary practices in London and Northampton, United Kingdom.

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