*REPORT*

Rome,
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7-9 April
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# European Commission for the Control of Foot-and-Mouth Disease

## Thirty-third session

Food and Agriculture Organization of the United Nations

Meeting Report (AGA-701)

# REPORT

of the

# THIRTY-THIRD SESSION

of the

# EUROPEAN COMMISSION FOR THE CONTROL OF FOOT-AND-MOUTH DISEASE

Rome, 7-9 April 1999

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
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## CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations are as follows:

### FMD situation in Europe and in other regions

The Commission noted with satisfaction that Europe had remained free of FMD since October 1996, but recognised the existence of the continuing threat of infection from neighbouring countries and regions and the need to maintain constant vigilance.

FMD surveillance and control should be reinforced in the regions of potential risk to Europe (North Africa and the Middle East). The WRL should provide technical support and FAO/EUFMD and OIE financial support to facilitate the rapid collection of samples and the identification and characterisation of strains form this and other regions (particularly sub-Saharan countries).

The role of small ruminants in the dissemination of the disease in North Africa should be investigated.

Livestock in Algeria have not been routinely vaccinated in the recent past, except in certain border areas. General vaccination of all susceptible species (large and small ruminants with re-vaccination at 1 to 2 months post primary vaccination) is strongly recommended for Algeria. Annual revaccination should also be applied.

In view of the urgency of the situation, the provision of vaccine from the EU vaccine bank should be considered. The European countries at greatest risk are similarly encouraged to provide vaccine in the form of bilateral aid.

Vaccination and revaccination should be completed in Morocco and Tunisia as soon as possible. Vaccination coverage should also be verified by serosurveillance.

### Report on the activities of the Commission during 1997-1998

Collaboration with the other international organisations was encouraged.

The role of the Tripartite Groups should be reinforced. Although the Commission's sole responsibility must remain with FMD, the meetings of the tripartite groups can include the discussion of other diseases and be open to a larger number of countries, in accordance with regional priorities. In this context, the technical meetings and regional workshops organised by the member countries in the Balkans are to be encouraged and should be continued.

The procedures for the utilisation and reimbursement of the FAO/EC Trust Funds should be clarified between the organisations and the conclusions submitted to the Executive Committee (see point 12.2).

The safe disposal of carcasses following the application of stamping-out is a major concern for all European governments. A study of this subject should be conducted covering the various relevant aspects (technical, public health, environmental and other considerations) and be presented to the Thirty-fourth Session of the Commission.

**General report on the situation in Turkey**

The Commission noted with approval the progress made in the exchange of information between Turkey and the international organisations. The Commission was also pleased to note that there was no report of FMD in Turkish Thrace, but expressed its concern over the persistence of the disease in Anatolia and the necessity to improve the level of vaccination cover in Thrace and in Anatolia.

The Commission noted appreciatively that a laboratory for molecular epidemiology had been established at the SAP Institute.

The proposed cessation of all preventive vaccination against type A in Anatolia, as envisaged by Turkey from 1999, could represent a risk for Turkey in the medium to long term in view of the persistence of this type in neighbouring countries.

The continuation of the current policy of vaccination will not achieve a sufficient level of cover to prevent or significantly reduce the circulation of virus.

The Commission encouraged Turkey to press ahead with the development and production of oil vaccine at the SAP Institute and with the creation of the independent laboratory for the Quality Control of vaccines.

The activities initiated by the EC vis-à-vis Turkey should be reinforced. The independent assessment of the quality of the FMD vaccines produced by the two laboratories in Turkey as foreseen in Community Decision 98/64/EC should be implemented without delay.

The Technical Co-operation Project for the strengthening of surveillance and the improvement in the quality control of FMD vaccines as jointly proposed to FAO by Turkey and the Islamic Republic of Iran with FAO finance should be pursued.

Turkey should redefine its vaccination and control policy for FMD to establish precise, feasible objectives by zone and with timescales. European experts could assist in this definition if necessary. The ultimate aim should be the eradication of FMD.

The involvement of breed associations and of industry in putting in place measures for the control of FMD in general is encouraged.

An ongoing programme of sero-surveillance for FMD in cattle and small ruminants is recommended, especially for Thrace. This ongoing programme should have two objectives: to verify the level of vaccination cover, to provide assurance of the

absence of circulating virus in Thrace. The most recent serosurvey in Thrace should be finalised and the technology for the detection of antibodies to non-structural proteins should be transferred to the SAP Institute, so that objective (b) can be adequately attained.

Turkish Thrace continues to be regarded as a key area for the defence of Europe against the spread of FMD and vaccination has been used to create a protective buffer zone in the area. Formerly, decisions on vaccination policy and vaccine strains were taken in collaboration between Turkey, Greece and Bulgaria and with advice and funding from the OIE, EUFMD and EC. While vaccine policy is now exclusively administered by Turkey, it is recommended that policy decisions should continue to involve the relevant national and international organisations.

**FMD control in CIS countries**

The Commission noted the creation of a new Tripartite group on the control of FMD in the CIS countries.

The Commission accepted the interim reports from the Expert Groups' assessment missions to ARRIAH and the Caucasian countries and thanked them for their work. The final report will be distributed to member countries and the proposals for control measures for the medium and long term will be discussed by the Tripartite group in time for the Sixty-third Session of the Executive Committee.

The Commission endorsed the short term recommendation for the provision of bivalent vaccine for the creation of a barrier against the trans-caucasian spread of FMD and emphasised the urgency of implementation before the movement of livestock to summer grazing. The partial costs of these measures can be covered by the European Commission Trust Fund, up to a maximum of $340,000, and the Session requests that FAO makes the necessary arrangements for implementing this emergency programme by providing financial support for ARRIAH, Vladimir, through a letter of agreement.

The Commission endorsed the recommendation for a regional approach to the control of the disease, which would encompass Armenia, Azerbaijan, Georgia and Russia with co-ordination by the Vladimir Institute and collaboration with the three international organisations. There should also be collaboration with neighbouring countries, including the Islamic Republic of Iran and Turkey.

The Commission recommended that the long term measures as put forward by the expert missions should be examined by the Tripartite Group and that the buffer zone be re-established. The possibility of having the buffer zone or the long term measures financed by the EC TACIS programme should be investigated by the CIS and other countries concerned.

**Report on the activities of the Research Group and report of the FAO World Reference Laboratory for FMD during 1997 and 1998**

The Commission acknowledged the importance of the rapid recognition of variant strains and strongly recommended that samples should be regularly submitted to the WRL for this purpose. The need for further research on optimal methods of controlling variant strains by vaccination was also supported.

The Commission endorsed the recommendation that further research should be directed towards the development of new physico-chemical diagnostic tests of increased speed, simplicity, sensitivity and specificity. Collaboration in the development and validation of such tests should be extended to include laboratories not currently having membership of the Research Group.

The Commission approved the continuation of the standardisation exercise for FMD diagnosis to Phase XVI, noting that this would include the preparation and distribution of sera by the WRL to be used as primary reference standards. Individual laboratories were advised to create their own secondary and tertiary standards, calibrated against the primary standards. Laboratories wishing to participate in Phase XVI were requested to contact the Secretary of the EUFMD Commission or the WRL.

The Group considered that in most cases there was now sufficient data to allow the potency testing of existing, conventional FMD vaccines by the assay of neutralising antibody from vaccinated cattle in the absence of challenge. This opinion did not extend to new generation vaccines (such as sub unit vaccines) for which cattle challenge testing may well be necessary, at least in the developmental stages.

The Commission endorsed the recommendation for the preparation and distribution of antigen and antisera appropriate to the detection of type A Iran 96 related viruses. It was also noted that a reassessment was recommended for the most appropriate type A strain(s) for inclusion in vaccines utilised in Turkey.

**Progress in the Implementation of Contingency Plans in Member Countries**

It is essential that all member countries maintain a constant awareness of the risk of FMD in their veterinarians, Veterinary Services and other relevant groups who are involved in agriculture, trade or tourism.

It is recommended that validation of contingency plans by simulation exercises is a priority for all countries.

The secretariat should re-contact the countries who have not responded to the questionnaire to see what progress has been made since.

The secretariat should improve the questionnaire for future sessions so that it can better determine the indicators of good surveillance for FMD

**Guidelines for Awareness Campaigns on the Risks of introduction of FMD by Tourism and Transport**

Awareness campaigns should be targeted at tourists and migrant workers with the distribution of leaflets at the borders. A draft copy of the leaflets has been prepared, and assistance will be offered in translating it into other languages.

The meeting recommended that in view of the increasing difficulties experienced in the transhipment of diagnostic samples by some members with some airlines, the EUFMD Commission should pursue means to resolve the difficulties in consultation with OIE, WHO and IATA. EUFMD should work through the UN system to achieve this aim.

**Availability of vaccines for emergency vaccination in Europe**

The next questionnaire on vaccine availability should include questions on vaccine quality, the availability of vaccine for peripheral regions of Europe and on the response time for each vaccine bank and commercial supplier.

**Financial Matters: accounts for 1997 and 1998 and proposed budgets for 1999 and 2000**

The Session approved the accounts for 1997 and 1998 and the proposed budget for 1999 and 2000

The favourable and stable financial situation of the Commission was noted by the Session, despite the increase in its activities. It was also noted that few countries were in arrears and that these debts would be followed up by the Secretariat.

**Consideration of the position of Swine Vesicular Disease in relationship to its inclusion as an OIE List A Disease**

The EUFMD should ask the OIE to consider the re-classification of SVD and its possible removal from OIE List A.

**Use of the EUFMD-EC Trust Fund (911100)**

The Commission recommended that the procedure for authorising the release of monies from the EUFMD/EC Joint Trust Fund (9111000) and the replenishing of the fund, should be reviewed by the appropriate technical and financial services of the FAO, EC and the EUFMD with a view to improving the definition of the objectives of the fund and its functional procedures in the common interest of EUFMD and the EC.

**Operation of the EUFMD Secretariat**

The Commission recommended that the possibility of replacing the administrative personnel of the Secretariat should be studied as well as the possibility of allocating a budget for such administrative emergencies.

## Introduction

The Thirty-third Session of the European Commission for the Control of Foot-and-mouth Disease (EUFMD) was held at the headquarters of the Food and Agriculture Organisation (FAO) of the United Nations in Rome, Italy from 7 to 9 April 1999.

Dr A. Sawadogo, Assistant Director-General, Agriculture Department, FAO, opened the Session by welcoming all participants on behalf of the Director-General of FAO. He noted that 33 countries were currently members of the EUFMD Commission and that the majority of them were represented at this Session. He was particularly pleased to welcome observers from 8 other countries, including those from Algeria, Egypt, Estonia, Georgia, I.R. of Iran, Morocco, Russia (also representing the Commonwealth of Independent States (CIS)) and Tunisia.

He welcomed the representatives of the international organisations and expressed the appreciation of FAO for the continuing collaboration and support of the Office International des Epizooties (OIE) and the Commission of the European Communities (EC), in particular the financial support from the EU.

He noted that the Session would be addressing several important topics including: the continuing endemic status of FMD in Asiatic Turkey; the ongoing FMD outbreaks in North Africa; and the control of FMD in the Caucasian region, all of which posed threats for European livestock.

Dr Sawadogo stressed that the FAO was always open to constructive suggestions for increasing the relevance and efficiency if its operations. He concluded by wishing all participants an enjoyable and productive Session.

Dr R. Marabelli, Chairman of the EUFMD Commission, thanked Dr Sawadogo for his opening remarks. He welcomed all participants and was pleased to note the presence of Dr Y. Cheneau, Chief of the Animal Health Service in FAO, and also of Dr J. Blancou, Director General of OIE.

The period since the last biannual Session in 1997 had been eventful for the EUFMD Commission. It was pleasing to report that Europe was free of FMD, the last outbreak having occurred in Bulgaria in October 1996. However, the risk of infection persisted with the presence of FMD in neighbouring countries and regions, including Turkey, (where a new type A strain had been circulating), the Caucuses, and the current type O outbreaks in the Maghreb countries of North Africa. The ongoing hostilities in the Balkan region could also have implications for animal health.

Apart from the regular meetings of the Executive Committee and the Research Group of the EUFMD, there had been significant work in the organisation of training materials and workshops. Regular meetings of the Tripartite Group involving Bulgaria, Greece and Turkey had continued. A new Tripartite Group had been established between OIE, the EC, and the EUFMD Commission for the control of FMD in the countries of the Caucasian Region of the Community of Independent

States (CIS), namely Armenia, Azerbaijan, Georgia and the Federation of Russia. It was anticipated that some aspects of control in the Caucuses would receive financial support from the EC/FAO Trust Fund.

The Chairman expressed his thanks for the co-operation received from all the international organisations involved and also to Dr Y. Leforban and the EUFMD Secretariat for the organisation of the Session.

Fifty-four participants from 25 member countries attended the Session, and 18 representatives of countries and organisations in and around Europe. The member countries represented included Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Lithuania, Malta, Netherlands, Norway, Poland, Spain, Sweden, Switzerland, Turkey and the United Kingdom. Observers were present from Algeria, Egypt, Estonia, Georgia, I.R. of Iran, Morocco, Russian Federation, Tunisia, EC and OIE.

**Item 1 : Adoption of the agenda**

The provisional agenda was adopted as shown below, with a single addition concerning the consideration as to whether the current inclusion of Swine Vesicular Disease within the OIE List A classification was still appropriate. This discussion would be taken under any other business (Item 13).

Agenda

Item 1. Adoption of the agenda
Item 2. FMD situation in Europe and in other regions
Item 3. Report on the Commission's activities during 1997 -1998
Item 4. General report on the situation in Turkey
Item 5. FMD control in CIS countries
Item 6. Report on the activities of the Research Group during 1997 and 1998
Item 7. FMD Laboratories: Report of FAO World Reference laboratory for FMD
Item 8. Progress in the implementation of Contingency Plans in Member Countries
Item 9. Availability of emergency vaccination in Europe
Item 10. Financial matters: accounts for 1997 and 1998 and proposed budgets for 1999 and 2000
Item 11. Election of Chairman, Vice-chairmen, members of the Executive Committee / Members of the Research Group
Item 12. Any other business
Item 13. Adoption of the draft report

**Item 2 : FMD situation in Europe and in other regions**

**Item 2.1 General report on the situation in Europe and other regions**

Dr Y. Leforban presented his comprehensive report for the period, covering the Balkans, Turkey, the Middle East, North, West, East and Southern Africa, Latin America and Asia. (Appendices 1, 2 and 3).

**Item 2.2 National reports on the situation in North Africa and in Iran**

Individual country reports were presented from North Africa by Dr A. Bouhbal for Algeria (Appendix 4), Dr M.M. Bakkali for Morocco (Appendix 5), Dr S. El Bahri for Tunisia (Appendix 6) and Dr M.I. Allam for Egypt (Appendix 7). Dr M. Miskat presented the situation in Iran (Appendix 8). Dr A. I. Donaldson provided comments from the WRL on the investigation of strain relationships in North and West Africa.

National Report from Algeria

The disease began in Grand Alger on 21 and 22 February in cattle purchased 3-4 days previously in a transit centre. From the beginning of the outbreak up to 5 April 1999, 164 holdings in 143 communes - out of a total of 1541 communes- were affected by the disease. It was mostly butchers' cattle that had been affected (90% of cases). The disease was mostly observed in the central Wilayates situated all around the capital (Tizi-ouzou, Blida, Boumerdes and Bouira) as these areas are situated on the main highway between Setif - Gouvernorate of Grand Alger - Blida. The outbreak evolved in three stages: an exponential stage until 18 March, a silent stage between 19 and 30 March and the third stage since the beginning of April corresponds to the re-appearance of isolated cases in animals which had not been vaccinated in 4 new Wilayates (Batna, Constantine, Tebessa, Saida). Cases in sheep were reported in the last two Wilayates.

Around 3,000 infected or in-contact cattle and 900 infected or in-contact sheep have been slaughtered. From the beginning of the outbreak up to the present, the vaccination campaign has covered 900,000 cattle from a total of 1.2 million head, and 300,000 sheep.

In the opinion of the Algerian representative, the postulated spread of disease from sub-Saharan Africa was not in accordance with the epidemiological findings. The zebu cattle in the Département du Sud in the south of Algeria had not been affected by FMD and neither had unvaccinated cattle in the large dairy farms in the region.

National Report from Morocco

For the Moroccan representative, the reappearance of the disease in his country has not taken on an explosive character because the bovine herd had been vaccinated

annually until December 1997. The serological survey taken at the time of the outbreak (in the non-infected zones) revealed a protective neutralising antibody level (greater than 1.9) in 60% of cattle.

The total number of cases detected in the eight outbreaks declared around the municipal abattoir of Oujda - a town close to the frontier with Algeria - between 27 and 14 March, rose to 14 cattle. The last case in Oujda appeared on 14 March 1999. In applying the necessary sanitary measures, 113 in-contact cattle were slaughtered.

A new outbreak in cattle appeared on 31 March 1999, in the Province of Khouribga in the zone of action of the ORMVA (Office Régional de Mise en Valeur Agricole), Tadla. Mass vaccination in a ring 10km around the outbreak and emergency vaccination of the rest of the province is underway. Investigations made by the ORMVA in Tadla in the province of Béni Mellal revealed another outbreak of FMD in cattle on 3 April 1999. It is important to underline that all the cases diagnosed to date have been in young cattle born after the last vaccination campaign that covered the entire national bovine herd in 1997. Only one case occurred in an adult bovine animal - this animal had not been vaccinated at the time of the national vaccination campaign in 1997.

Following the appearance of outbreaks outside the primary zone of infection in Oujda, it was decided to generalise the vaccination campaign immediately to include the entire national herd. To date more than 550,000 doses of vaccine have been distributed and 550,000 others will be distributed by 9 April 1999. The mass generalised vaccination campaign will be completed by 10 May 1999. This campaign will be followed by a national serological survey, to evaluate the protection acquired by the national bovine herd. A booster vaccination campaign will take place one month later and will focus on young cattle to consolidate their immunity following the primary vaccination.

National Report from Tunisia

Two outbreaks were confirmed on 2 and 12 March in Grombalia, Governorate of Nabeul and in Ghardimaou, Governorate of Jendouba. 22 cattle and 5 sheep were affected in the first outbreak out of a total of 28 cattle and 100 sheep present. In the second outbreak, 1 heifer and 3 sheep were affected out of the two cattle and 7 sheep present. All the susceptible animals in the two outbreaks were slaughtered. All the cattle and small ruminants whose vaccination went back more than 3 months were re-vaccinated. On 3 April, a total of 193,686 cattle (62%) and 1,083,628 small ruminants (52%) had been vaccinated out of a total of 313,960 cattle and 2,102,00 small ruminants. No new outbreak has been detected since 13 March 1999.

National Report from Egypt

Foot-and-mouth disease has been reported in Egypt for 50 years. The most serious episode of FMD took place in 1987 with more than 63,000 cattle 11,000 small ruminants and 230 pigs affected by FMD with mortality levels of 4%, 2% and 100%

respectively. In March 1993 the disease affected around 4000 large ruminants (cattle and buffalo) in 20 outbreaks covering 11 Governates. In November and December 1997, sporadic cases with less severe forms of FMD were observed. No cases were reported in 1998. In the event of an outbreak, quarantine measures are applied until 21 days after the recovery of the last case and in-contact animals and animals in the areas surrounding the outbreak are vaccinated.

The FMD vaccine is locally produced in the FMD Institute in Abbassia. Susceptible species (cattle, buffalo, sheep, goats and camels) are vaccinated every 6 months and milking cows are vaccinated every 4 months. There has been a notable increase in the number of animals vaccinated in the last 10 years, from 6,332,000 in 1990 up to almost 14 million in 1997 and 15 million in 1998.

Since 1995, serosurveillance is carried out to verify the immune status after the vaccination campaign. Between 2,500 and 5,000 serum samples are collected and the percentage protection figures for 1997 and 1998 were 86.4% and 86.1% respectively.

National Report from the Islamic Republic of Iran

Types O and A are currently endemic in the Islamic Republic of Iran with severe morbidity and also mortality, the latter especially in lambs and kids. Virus circulates throughout the country and is also introduced from neighbouring countries via illegal movements of livestock. Herd and flock incidence rates of 21.5% and 19% were recorded for FMD in 1998. Vaccination is practised using bivalent vaccine produced by the Razi Institute. However, there is insufficient production capacity to service all requirements and coverage is only 30% for cattle and 15% for sheep and goats. It was stressed that the I.R. of Iran would like to benefit from the experience of Europe in controlling FMD, and that Iranian needs were concerned with training, equipment and vaccine control.

Dr Y. Cheneau commented that FAO was involved in co-operation between the I.R. of Iran and surrounding countries in several areas, including in particular the control of Rinderpest. The I.R. of Iran was also a participant in EMPRES projects. The TCP prepared following the visit of Dr A. Garland to I.R. of Iran and Turkey and jointly submitted to FAO was being pursued with the objective of improving technical collaboration in the control of FMD in both countries.

**Item 2.3 General report on FMD in East Asia**

Dr A.I. Donaldson presented a summary of the 1997/98 epidemic of FMD in pigs in Taiwan Province of China (TPOC) (Appendix 9). This was the largest epidemic recorded in pigs since the Benelux epidemic of the 1960s. Initial diagnosis using the Polymerase Chain Reaction (PCR) in a local laboratory had been misleading. Spread in 1997 was explosive with 3 initial outbreaks in March escalating to 6,123 by the end of July. Recrudescence was linked with recycling of infected pig meat and sporadic

cases continued into early 1998. The epidemic involved over 180,000 porcine fatalities and the slaughter of 3.8 million pigs.

The causative virus was related to the Far Eastern grouping, including strains from Hong Kong and the Philippines, and probably circulating in China. It also showed a close relationship to the virus recovered from the 1995 Russian outbreak in a pig farm in the Moscow area, believed to have been caused by the import of infected pork meat from China.

He drew particular attention to the preferred use of ELISA for the diagnostic detection of FMD antigen, especially when good quality vesicular material was available. Specialised PCR methodology was not generally recommended for the primary diagnosis of FMD, although it was a valuable technique in other applications, such as for the detection of antigen in probang samples and for use in amplifying antigen for sequencing.

**General Discussion:**

Disease in the Balkans:

- Regarding the serological surveys following the 1996 outbreaks of FMD in the Balkans, (implemented in 1997-1998 with the participation of three EU laboratories and with EC finance ) the Secretary drew attention to the importance of recording the age of animals sampled in such exercises. The results indicated that no residual virus was circulating at the time of sampling and also demonstrated the usefulness of antibody assays for non structural viral proteins in the investigation of viral activity after vaccination and in the absence of clinical disease.

Disease in North Africa:

- Commenting on the genetic characterisation of the type O virus from the 1999 epidemic in North Africa, Dr A. I. Donaldson presented a dendrogram illustrating that the virus showed a 97% homology across the VP1 gene with strains isolated earlier in Ghana and the Ivory Coast. It was hypothesised that the strain had evolved over a six-year period in West Africa before spreading to Algeria, possibly via the Sahara desert. Recent samples from Tunisia were now undergoing sequencing and phylogenetic profiling at the WRL.

- In reply to Prof. U. Khim's query as to the relationship of the North African virus to existing vaccine strains, Dr Donaldson stated that it was antigenically related to but genomically different from the Middle Eastern type O grouping and that the O1 Manissa vaccine strain was appropriate.

- Prof. A. Engvall enquired as to the apparent clinical involvement of sheep in Tunisia but not in Algeria and Morocco. Dr Donaldson commented that FMD

was often clinically inapparent in small ruminants. The outbreak in Morocco, Spain and Portugal in the mid 1980s had featured clinical disease in cattle but, although serological surveys revealed widespread evidence of infection in sheep, there was no clinical disease in that species.

- Dr A. Bouhbal reported that sheep had shown clinical involvement of both mouths and feet in two very recent foci in Algeria.

- Dr J. Smak enquired as to whether the Maghreb countries' representatives considered that the disease was now under control in the three Maghreb countries. An overall affirmative reply was provided.

- Dr Bakkali replied to Dr Y. Leforban's enquiry on the origin of the new outbreak in Morocco, which was thought to involve the movement of slaughter stock.

- Summarising, Dr R. Marabelli stressed the danger of the spread of the disease from North Africa to Europe, particularly with the increased tourist traffic during the summer months, and the importance of controlling not only live animal movement, but also movement of people, vehicles and goods.

Disease in Taiwan, Province of China (TPOC):

- Commenting on vaccination in TPOC, Dr Donaldson noted that oil adjuvanted vaccine was required for pigs and that, although O1 Campos containing vaccines had been employed on a large scale, O1 Manissa and other Middle Eastern vaccine strains predominated later. The authorities in TPOC considered that vaccination had been very effective in the eventual control of the epidemic.

- In reply to Dr Y. Ivanov's query as to whether a live attenuated FMD vaccine might have been involved in the origination of the epidemic, Dr. Donaldson indicated that the possibility was being investigated.

- Dr E. Stougaard noted the exceptional difficulties facing many countries practising intensive livestock farming when faced with disposing of large numbers of infected carcasses in massive epidemics of FMD (and other diseases) in a safe and environmentally acceptable manner. He suggested that appropriate studies should be conducted and the Chairman proposed that the matter should be addressed by the relevant international organisations.

CONCLUSIONS

1. The Commission noted with satisfaction that Europe had remained free of FMD since October 1996, but recognised the existence of the continuing threat of infection from neighbouring countries and regions and the need to maintain constant vigilance.

2. The Commission took note of the reports presented by Algeria, Egypt, the I.R. of Iran, Morocco and Tunisia.

RECOMMENDATIONS

1. FMD surveillance should be reinforced in the three countries of North Africa (Algeria, Morocco and Tunisia).

2. FMD surveillance and control should be reinforced in the regions of potential risk to Europe (North Africa and the Middle East). The WRL should provide technical support and FAO/EUFMD and OIE financial support to facilitate the rapid collection of samples and the identification and characterisation of strains from this and other regions (particularly sub-Saharan countries).

3. The role of small ruminants in the dissemination of the disease in North Africa should be investigated.

4. Livestock in Algeria have not been routinely vaccinated in the recent past, except in certain border areas. General vaccination of all susceptible species (large and small ruminants with re-vaccination at 1 to 2 months post primary vaccination) is strongly recommended for Algeria. Annual revaccination should also be applied.

5. In view of the urgency of the situation, the provision of vaccine from the EU vaccine bank should be considered. The European countries at greatest risk are similarly encouraged to provide vaccine in the form of bilateral aid.

6. Vaccination and revaccination should be completed in Morocco and Tunisia as soon as possible. Vaccination coverage should also be verified by serosurveillance.

**Item 3: Report on the activities of the Commission during 1997-1998**

The Secretary presented his report for the period (Appendix 10). Europe had been free of FMD since October 1996. The Commission's activities had focused on Turkey and the CIS, and more recently on North Africa.

In 1997, the EU and Turkey agreed a three-year programme with joint funding to improve control measures, including animal identification, reinforcement of road checkpoints and disinfection at markets. Meetings were held to discuss measures to combat the spread of the A Iran 96 strain in Turkey, and as a result, Thrace was vaccinated in August 1998 with homologous vaccine donated by the EC. An FAO expert visited both I.R. of Iran and Turkey to advise on the control of this strain and a Technical Co-operation Proposal was prepared by the two countries and forwarded for consideration by FAO.

The Executive Committee met on three and the Research Group on two occasions. Reports were circulated from all these meetings and these are also available online on the EUFMD Web site. The Secretariat participated in numerous other meetings, seminars and training courses, 13 in all in both 1997 and 1998.

The Tripartite FAO-EUFMD/EC/OIE Group for the Balkan countries met on three occasions and a new OIE/FAO-EUFMD/EC Tripartite Group was established for the CIS countries. The new group held four meetings. EUFMD missions included visits to Turkey and joint missions along with OIE and EC were also organised to Russia (ARRIAH) and the Caucasian countries of Armenia, Azerbaijan and Georgia in 1999.

Extensive co-operation continued between the EUFMD and the WRL, including financial support, and also with national laboratories in Italy, Spain and Greece. Phase XV of the collaborative laboratory standardisation exercise (see item 6) was completed and Phase XVI started under a letter of agreement between the Institute of Animal Health's WRL and the EUFMD-FAO. This will involve the preparation and distribution of reference sera by Pirbright for use as primary standard reagents in participating laboratories.

A workshop in Pulawy Institute, Poland, was organised jointly by the Commission, The FAO EMPRES Programme, EC and OIE on Contingency Planning and Emergency Preparedness for the countries of Central Europe and the CIS.

A new EUFMD Web site is in preparation, based on an analysis of the response to a questionnaire circulated to member countries in 1999.

RECOMMENDATIONS

1. Collaboration between the EUFMD and the other international organisations was encouraged.

2. The role of the Tripartite Groups should be reinforced. Although the Commission's sole responsibility must remain with FMD, the meetings of the tripartite groups can include the discussion of other diseases and be open to a larger number of countries, in accordance with regional priorities. In this context, the technical meetings and regional workshops organised by the member countries in the Balkans are to be encouraged and should be continued.

3. The procedures for the utilisation and reimbursement of the FAO/EC Trust Funds should be clarified between the organisations and the conclusions submitted to the Executive Committee (see point 12.2).

4. The safe disposal of carcasses following the application of stamping-out is a major concern for all European governments. A study of this subject should be conducted covering the various relevant aspects (technical, public health, environmental and other considerations) and be presented to the Thirty-fourth Session of the Commission.

The Chairman welcomed Dr John Ryan who had been appointed as Associate Professional Officer to the EUFMD in October 1998. Dr Ryan's position would be funded by the Government of the Republic of Ireland for a period of two years.

The Chairman also thanked the Secretariat for their considerable efforts and all the member countries and international organisations for their continuing strong support.

**Item 4: General report on the situation in Turkey**

Dr Y. Leforban delivered the EUFMD report (Appendix 11) and Dr M. Aksin the country report on Turkey (Appendix 12).

FMD remained endemic in Anatolia, outbreaks being predominantly of type O with a lesser number of type A foci. The A Iran/96 strain had gained access early in 1998 causing 13 outbreaks, but there had been no reports of type A since July 1998. The annual bivalent type O1 and A 22 vaccination of Turkish Thrace which recommenced in 1997 had been associated with the continuing freedom of this area from FMD and had been supplemented by the supply of 900,000 doses of imported monovalent A Iran/96 vaccine funded by the EC EUFMD in 1998.

A study of past Turkish field isolates recently completed at the WRL by a visiting scientist from the SAP Institute had demonstrated that newly emerging type A strains usually displaced the preceding strain completely.

Vaccination coverage in all regions was sub optimal.

The results were presented of a serological survey undertaken in Thrace after vaccination with A/Iran vaccine. The samples were taken before vaccination, 28 days and 90 days after the vaccination. The results of the detection of antibody by ELISA showed type A neutralising antibody in 67.2% of cattle and 42.4% of small ruminants 3 months after vaccination (see Appendix 12).

The Turkish authorities have decided that vaccination of all ruminants will continue in 1999 in Thrace, using locally produced O1/Manisa, A22/ Mahmatli or A/Ankara vaccine (the latter being a locally adapted strain related to A Iran/96). Due to shortage of vaccine and the apparent recent absence of type A, the national campaign in Anatolia in 1999 will utilise only monovalent O1/ Manisa vaccine and will be confined to large ruminants. However, type A vaccine will be produced and stockpiled for use in any emergency.

The SAP Institute will complete the reconstruction of the air filtration system by June 1999. A new laboratory for molecular Epidemiology has been established at the SAP Institute. Oil adjuvanted vaccine is under development with assistance from a Brazilian expert.

The Ministry has also begun the installation of an independent vaccine control laboratory at Bornova (Izmir).

**Discussion:**

- Dr R. Marabelli noted that the Turkish authorities had made significant efforts to prevent the spread of disease to Thrace. There had also been a very good flow of information from Turkey to the international organisations. However, the endemic situation in Anatolia continued to be of concern and a timescale was required for the reduction and eventual eradication of the disease.

- Dr Y. Ivanov enquired as to the current vaccination coverage in Turkish Thrace and was informed that it stood at about 70%.

- In response to Dr A. Garland's enquiry, Dr Aksin confirmed the present intention to continue with the vaccination campaigns in Turkish Thrace beyond 1999.

- Dr M. Rweyemamu commented on the policy which had been successfully followed in South America to control emerging strains of type A virus, whereby the new strain was added to the A strain already incorporated in the existing polyvalent vaccine and utilised until the situation came under control.

- Dr A. I. Donaldson pointed out that the A Iran 96 strain was still present in Armenia, Georgia and I.R. of Iran and possibly in Azerbaijan and Iraq, constituting an ongoing threat to Turkey. There was therefore justification for maintaining vaccination against this strain throughout Anatolia.

- Dr Y. Leforban remarked that, unless the vaccination coverage improved, there was unlikely to be much improvement in the overall incidence of FMD. He proposed that the Turkish authorities should reassess the vaccination policy and suggested that assistance could be provided from the EC and EUFMD if necessary.

- The importance of sero-surveillance in Turkish Thrace was emphasised, not only to check vaccination coverage, but also to investigate the possibility of virus circulating in the absence of disease. The use of assays to detect antibodies to non-structural proteins of FMDV was recommended for the latter purpose and support from a European laboratory could be made available for the transfer of this technology to the SAP Institute.

- Dr E. Stougaard suggested that a cordon sanitaire could improve control in Eastern Turkey and that perhaps animals should only be allowed to move for slaughter. However, Dr. M. Aksin commented that these measures would be extremely difficult to enforce.

- Commenting on behalf of the EC, Dr. A. Fussel stated that the Community maintained a strong interest in the control of disease in Turkey. Although funds

for this purpose were limited, an EC visit was planned to assess various control measures in Anatolia, including the status of checkpoints and of cleansing and disinfection. The independent quality control testing of vaccines from the two Turkish manufacturers (SAP and Vetal) allowed for by the decision of the EC, has been delayed but should be realised in collaboration with the Turkish authorities.

- Dr Y. Leforban drew attention to the progress made in moving towards animal identification in Turkey. A seminar had been held in Istanbul in 1997 on this topic with EUFMD and EC support and a pilot scheme was successfully implemented in Edirne Province.

**Conclusions**

1. The Commission noted with approval the progress made in the exchange of information between Turkey and the international organisations. The Commission was also pleased to note that there was no report of FMD in Turkish Thrace, but expressed its concern over the persistence of the disease in Anatolia and the necessity to improve the level of vaccination cover in Thrace and in Anatolia.

2. The Commission noted appreciatively that a laboratory for molecular epidemiology had been established at the SAP Institute.

3. The proposed cessation of all preventive vaccination against type A in Anatolia, as envisaged by Turkey from 1999, could represent a risk for Turkey in the medium to long term in view of the persistence of this type in neighbouring countries.

4. The continuation of the current policy of vaccination will not achieve a sufficient level of cover to prevent or significantly reduce the circulation of virus.

**Recommendations**

1. The Commission encouraged Turkey to press ahead with the development and production of oil vaccine at the SAP Institute and with the creation of the independent laboratory for the Quality Control of vaccines.

2. The activities initiated by the EC vis-à-vis Turkey should be reinforced. The independent assessment of the quality of the FMD vaccines produced by the two laboratories in Turkey as foreseen in Community Decision 98/64/EC should be implemented without delay.

3. The Technical Co-operation Project for the strengthening of surveillance and the improvement in the quality control of FMD vaccines as jointly proposed to FAO by Turkey and I.R. of Iran with FAO finance should be pursued.

4. Turkey should redefine its vaccination and control policy for FMD to establish precise, feasible objectives by zone and with timescales. European experts could

assist in this definition if necessary. The ultimate aim should be the eradication of FMD.

5. The involvement of breed associations and of industry in putting in place measures for the control of FMD in general is encouraged.

6. An ongoing programme of sero-surveillance for FMD in cattle and small ruminants is recommended, especially for Thrace. This ongoing programme should have two objectives:
   a) to verify the level of vaccination cover,
   b) to provide assurance of the absence of circulating virus in Thrace.

   In order to meet these objectives, the most recent serosurvey in Thrace should be finalised and the technology for the detection of antibodies to non-structural proteins should be transferred to the SAP Institute, so that objective (b) can be adequately attained.

**Item 5: FMD control in the Commonwealth of Independent States (CIS)**

Dr Y. Leforban presented the report from EUFMD and Drs Y. Ivanov and M. Amadori the summaries of the interim report on the tripartite visits to the Caucasian region and the Vladimir (ARRIAH) Institute respectively (Appendix 13).

1. The Commission noted the epidemiological reports for FMD in Armenia, Azerbaijan and Georgia. The recent presence of a strain closely related to A Iran 96 in the North Western area of Armenia bordering on Turkey and Georgia was of particular interest. Type O had also been recently identified in Georgia, in the area bordering Turkey, and in Khazakhstan.

2. Consequential upon the break up of the Soviet Union in 1992, the former integrated policy for the control of FMD throughout the USSR ceased to operate. The maintenance of effective vaccination in the Caucasian and Asiatic Republics also came to an end. While disease in the Caucuses currently appears to be sporadic, the lack of control raises the threat of epidemic disease and its spread, not only throughout the region, but also north into Russia and west into Turkey, thereby threatening the totally susceptible livestock of Europe.

3. The Commission received the report from the Tripartite Group's expert visit to the Vladimir Institute in March 1999. The main findings were as follows:-

- FMD vaccination in the Trans-Caucasian countries is inconsistent in respect of regularity, coverage and geographical implementation.

- No serological surveillance is currently undertaken for FMD in these countries. It is recommended that ARRIAH - who possess the capability to organise and implement such surveillance - should be given this responsibility in conjunction with the National Veterinary Services of the four countries.

- The FMD buffer zone in the southern parts of Russia should be maintained and extended to the Trans-Caucasian countries. Vaccination should be at an appropriate level of coverage and, in the southern areas, include all susceptible species.

- An improved system should be implemented for the prompt supply of virus and serum samples and also epidemiological information from the entire Trans-Caucuses region to the Vladimir Institute. The system of delivery and disclosure of such information should also be greatly improved, including its provision to the international organisations.

- The Russian veterinary authorities should urgently consider the improvement of their vaccine production facilities to achieve compliance with current Good Manufacturing Practice (GMP).

- The creation of a vaccine bank for CIS countries that are free of FMD should be encouraged. The details should be discussed between potential members.

4 The Commission received the report from the Tripartite Group's expert visit to Armenia, Azerbaijan and Georgia in March 1999. The main findings were as follows:

- The state veterinary organisations, personnel and facilities of the three countries remain in place, including: The Central Service, the National, Regional and Local Diagnostic Laboratories, the National Research Institute and the National Control Institute. However, all resources are in very short supply. Privatisation has commenced, which is likely to reduce the number of state veterinarians.

- The former national, mass vaccination schemes against FMD are in abeyance due to lack of resources.

- Given adequate resources the veterinary services is capable of carrying out the required surveillance and the vaccination campaigns for FMD.

**Principal Recommendations from the Missions**

Short Term Recommendations

- An emergency vaccination zone should be created for all ruminants in the southern border zone of all four countries, commencing in April 1999, prior to the annual migration of susceptible animals to summer pastures.

- The vaccination should be funded partly from the FAO/EC Trust Fund and partly by Russia and the three Caucasian countries.

- Fully formulated, bivalent (A-1998 Armenia / O1) vaccine should be supplied from ARRIAH directly to the CVOs of the three countries.

- Practical identification of vaccinated animals should be enforced (e.g. by means of ear notching). Ear tagging would be premature at this stage.

- There should be random serum sampling of circa 500 animals of all species in each country before vaccination and after their return from summer pasture.

- Disease surveillance and reporting, including the notification of information to neighbouring countries and the international organisations, should be reinforced throughout these areas with co-ordination by the OIE Regional Reference Laboratory (ARRIAH).

- It was noted that Georgia had offered to co-ordinate the recommended activities locally for the three countries.

Medium and long term recommendations over a five year period

- A regional approach was advocated, involving Armenia, Azerbaijan, Georgia and Russia in association with I.R. of Iran and Turkey.

- Contingency plans for FMD should be developed and validated for each country.

- Veterinary legislation should be strengthened appropriately.

- Training in FMD diagnosis should be organised by ARRIAH for the countries involved.

- Diagnostic procedures and reagents should be validated in the three countries in accordance with OIE norms and standards. This exercise to be conducted by ARRIAH in association with the WRL and /or European National Laboratories.

- Training in basic Epidemiology should be organised for veterinary personnel to strengthen national capabilities for the control of FMD and other important infectious diseases (e.g. Rabies in Georgia and Tuberculosis and Brucellosis in all three countries.

- Means of communication such as fax and e-mail should be developed to facilitate efficient national and international reporting of information.

**Discussion**

- Dr V. Zakharov, Joint Director of ARRIAH, noted that Georgia had originally proposed the re-establishment of FMD barrier vaccination in the trans-caucuses with European support in 1996. ARRIAH and the national veterinary services in

the four countries had the necessary infrastructure, experience and expertise but lacked financial and other resources. A regional approach was essential and the need for vaccination was urgent, not only for the protection of the countries concerned, but also for the protection of European livestock.

- Dr G.V. Jikia, CVO Georgia, thanked the international organisations for their support and the Mission members for their endeavours. He offered the services of the Georgian Veterinary Service to act as the local co-ordinator for the Caucasian countries. He stressed the need for a regional approach, which should also involve I.R. of Iran and Turkey.

- Dr B. Nordblom enquired whether the necessary physical resources were in place to accomplish the recommended mass vaccination ahead of the seasonal animal transhumance. Mission members considered that these were available and that the campaign would take about one month to complete.

- Dr E. Liven queried what control measures other than vaccination were envisaged. These included: movement control, quarantine of infected animals, post quarantine surveillance of infected animals and ring vaccination. Culling of infected animals was not envisaged and pigs were not to be vaccinated in the proposed campaign.

- Dr A. Garland suggested, in view of the 68 million doses of vaccine presently stored in the various European banks, that consideration should be given to the possibility of supplying some vaccine of appropriate strains from these banks for use in the Caucuses.

- Dr Y. Leforban commented that the immediate campaign called for around one million bovine doses of bivalent vaccine. The precise requirement and allocation for each country had yet to be finalised. EC financial support in the region of $340,000 was under consideration.

- Prof. U. Khim asked whether the intention was for the campaign to be continued on an annual basis and whether sheep and goats were to be vaccinated. The Chairman clarified that the proposals referred to the emergency measures for 1999 only and that proposals for the medium and longer five-year term had yet to be considered. He noted that, in partially restoring the immune barrier, vaccine would be required not only for the three Caucasian countries but also for Russia.

- Dr A. Fussel explained that the original proposal of the CIS to the EC had been for the annual funding of 20 million bivalent doses of vaccine. Due to financial restrictions, this had had to be reduced to approximately 1 million doses for one year. The final amount would be determined by the balance between the available funds and the cost of the vaccine. There could be some reallocation of funds when the final report is reviewed. He added that many other development projects were already receiving financial support in these countries under the terms of the EC TACIS project, including much of the cost of maintaining the veterinary services.

The Chairman congratulated all those involved in organising, funding and carrying out the Missions. These had provided a clear picture of the current situation and also recommended practical measures towards the control of FMD to the benefit of the region and adjoining areas. He looked forward to the publication of the final report.

CONCLUSIONS OF THE SESSION

1 The Commission noted the creation of a new Tripartite group on the control of FMD in the CIS countries.

2 The Commission accepted the interim reports from the Expert Groups' assessment missions to ARRIAH and the Caucasian countries and thanked them for their work. The final report will be distributed to member countries and the proposals for control measures for the medium and long term will be discussed by the Tripartite group in time for the next Executive Committee Meeting of EUFMD.

RECOMMENDATIONS OF THE SESSION

1 The Commission **endorsed** the short term recommendation for the provision of bivalent vaccine for the creation of a barrier against the trans-caucasian spread of FMD and emphasised the urgency of implementation before the movement of livestock to summer grazing. The partial costs of these measures can be covered by the European Commission Trust Fund, up to a maximum of $340,000, and the Session requests that FAO makes the necessary arrangements for implementing this emergency programme by providing financial support for ARRIAH, Vladimir, through a letter of agreement.

2 The Commission **endorsed** the recommendation for a regional approach to the control of the disease, which would encompass Armenia, Azerbaijan, Georgia and Russia with co-ordination by the Vladimir Institute and collaboration with the three international organisations. There should also be collaboration with neighbouring countries, including I.R. of Iran and Turkey.

3 The Commission **recommended** that the long term measures as put forward by the expert missions should be examined by the Tripartite Group and that the buffer zone be re-established. The possibility of having the buffer zone and the long term measures financed under the EC TACIS programme should be investigated by the CIS and the countries concerned.

**Item 6 : Report on the activities of the Research Group during 1997 and 1998**

Dr Kris De Clercq, Chairman of the Research Group, presented his report (Appendix 14).

**Discussion**

- Dr I.G. Esteban stressed the importance of small ruminants in the epidemiology of FMD and believed that the vaccination of these species was essential for successful control. He recommended that the EUFMD should collaborate with the North African countries to develop their vaccination strategies. Dr A. Bouhbal confirmed that small ruminants would continue to be vaccinated in Algeria.

- Dr E. Stougaard reminded the meeting that the EU operated a control policy for FMD that is based on stamping out and which currently excluded vaccination in member countries. The Chairman added that emergency vaccination was appropriate outside the EU and that ongoing research was valuable to establish optimal approaches to emergency vaccination.

- Prof. P. Weber commented on the Research Group recommendation that the potency testing of existing, conventional FMD vaccines could now be performed by the assay of neutralising antibody from vaccinated cattle in the absence of challenge. He pointed out that the potency testing of novel vaccines - such as sub unit preparations - could not currently be reliably ascertained without challenge.

- Dr A. I. Donaldson agreed that the recommendation referred to conventional aluminium hydroxide-saponin and oil adjuvanted vaccines where satisfactory correlations had been established between levels of neutralising antibody and protection against challenge in cattle. He added that more research was required on the potency testing of vaccines in pigs and in small ruminants.

- Dr J. Husu-Kallio congratulated the Group on its valuable work in the development and application of assays for antibodies to the non-structural proteins of FMD. She also enquired as to the status of possible development of marker vaccines against FMD, which could facilitate the differentiation of vaccinated, vaccinated but infected and asymptomatic carrier animals. The group knew of no research to develop FMD marker vaccines at the present time.

The Chairman thanked the Research Group warmly for their contribution and noted the great importance of having this independent, expert body to advise the Commission.

**Conclusions**

1. The Commission endorsed the ongoing work of the Group in formulating proposals for the revision of the FMD Monograph in the European Pharmacopoeia vis-à-vis the replacement of the in vivo innocuity test by in vitro methods and the requirement for the evaluation of alternative potency methods, including those in different target species.

2. The recent evidence for strains of virus exhibiting marked species specificity formed the basis for the recommendation that diagnostic laboratories should

employ tissue cultures derived from a range of different species to maximise the possibility of detecting such strains. Further work was also recommended on the determinants of strain adaptation.

3. The Reverse Transcriptase Polymerase Chain Reaction (RT-PCR) merited particular attention, but it should be applied in conjunction with other conventional diagnostic laboratory techniques and in association with clinical examination. Monoclonal antibody panelling continues to be useful in the characterisation of new field isolates. The Isotype Specific Assay (ISA) permits the identification of FMDV antibody in milk following vaccination or infection.

4. The Commission noted the increasing evidence for the important role of sub-clinically infected sheep in the epidemiology of FMD and supported the recommendation that the validation of new diagnostic methods should include their application to small ruminants whenever possible.

5. The Commission approved the progress made towards the development of proposals for Quality Assurance for veterinary diagnostic laboratories and for laboratory accreditation. It was noted that the Standards Commission will present a proposal for consideration during the OIE General Session of May 1999. In the meantime, individual laboratories should continue to proceed with implementation, preferably in collaboration with their national accreditation organisations and in compliance with existing OIE Guidelines for Proficiency Testing.

6. The Commission noted the progress made in the development of the various tests for antibodies against the non structural proteins (NSP) of FMD virus, and the finding that they could be used to identify infected animals, whether or not they had been vaccinated and irrespective of the clinical outcome of infection. It is recommended that such assays should be routinely included in serological surveys for the detection of past or present infection in vaccinated animals. However, it was noted that not all vaccinated, infected animals develop NSP antibody, so that testing should be carried out on herd or flock basis. Measurement of antibody to more than one NSP can improve the reliability of the detection of infection. The development of a fully validated test method was seen as a priority in a suitably robust form for widespread distribution to diagnostic laboratories. It is important to note that the test is <u>not</u> suitable for the determination of an animal's carrier status.

7. In respect of sero-surveillance, the Commission noted the recommendation for the development of a standardised surveillance system, especially for the Balkans. The replacement of A5 and O1 Europe strains by the more relevant A22 and O1 Middle East strains was also recommended, especially for import testing.

8. While stressing that the EU control policy for FMD rested primarily upon stamping out without vaccination, the Commission acknowledged the value of emergency vaccination in specific circumstances. In this context, the principle of Regionalisation should be accepted at an international level. Whenever

emergency vaccination was practised, it was necessary for individual countries to co-ordinate with their neighbours.

9. The Commission agreed with the conclusion of the Group that the preparation of viral strains adapted for vaccine production fell outside the remit of the WRL.

**Recommendations**

1. The Commission acknowledged the importance of the rapid recognition of variant strains and strongly **recommended** that samples should be regularly submitted to the WRL for this purpose. The need for further research on optimal methods of controlling variant strains by vaccination was also supported.

2. The Commission **endorsed the recommendation** that further research should be directed towards the development of new physico-chemical diagnostic tests of increased speed, simplicity, sensitivity and specificity. Collaboration in the development and validation of such tests should be extended to include laboratories not currently having membership of the Research Group.

3. The Commission **approved** the continuation of the standardisation exercise for FMD diagnosis to Phase XVI, noting that this would include the preparation and distribution of sera by the WRL to be used as primary reference standards. Individual laboratories were advised to create their own secondary and tertiary standards, calibrated against the primary standards. Laboratories wishing to participate in Phase XVI were requested to contact the Secretary of the EUFMD Commission or the WRL.

4. The Group considered that in most cases there was now sufficient data to allow the potency testing of existing, conventional FMD vaccines by the assay of neutralising antibody from vaccinated cattle in the absence of challenge. This opinion did not extend to new generation vaccines (such as sub unit vaccines) for which cattle challenge testing may well be necessary, at least in the developmental stages.

5. The Commission **endorsed the recommendation** for the preparation and distribution of antigen and antisera appropriate to the detection of type A Iran 96 related viruses. It was also noted that a reassessment was recommended for the most appropriate type A strain(s) for inclusion in vaccines utilised in Turkey.

**Item 7: FMD laboratories: Report of the FAO World Reference Laboratory for FMD**

Dr A. I. Donaldson reported highlights from the period 1997 and 1998 (Appendix15).

- In 1997, the WRL identified the presence of a variant type A strain in samples derived from I.R. of Iran in 1996. The A Iran 96 strain spread widely in I.R. of

Iran and penetrated into Turkey during 1998. The strain differed both genomically and antigenically from other known A strains, including vaccine strains available at the time outside I.R. of Iran. Several homologous vaccine strains had since been developed. Although there appeared to be no further spread of the strain in Turkey after July 1998, it would be unwise as yet to assume that it should no longer be considered a threat to Turkey, I.R. of Iran and neighbouring countries. Interestingly, recent studies on a collection of Turkish isolates at Pirbright had demonstrated that emerging type A strains tended to displace pre-existing strains totally.

- 1996 saw the beginning of the catastrophic epidemic of type O virus in Taiwan Province of China (TPOC), which caused extreme morbidity and mortality in pigs through 1996/97, and which continued to cause outbreaks at a much lower frequency in 1998. Some 4 million pigs died or were destroyed during the epidemic and the rate of disposal attained 200,000 per day at peak times. Approximately 13 million doses of monovalent type O oil vaccine were deployed. While this epidemic was caused by a highly porcotrophic virus, there is also evidence of a cattle adapted strain circulating in the South-East Asia area.

- In the Far East viruses appeared to be associated with particular species and the use of tools such as Neighbour Joining Trees had demonstrated relationships between a group of strains from Hong Kong, Vietnam, Cambodia and TPOC which were strongly adapted to pigs. Porcine and bovine strains circulating in Vietnam and Cambodia were also under investigation.

- Characterisation of strains involved in the current outbreaks in North Africa and their comparison with other viruses in the WRL collection showed 97% homology with strains isolated earlier from West Africa. An important possible implication was that the Sahara desert, which has traditionally been considered as a virtually impenetrable barrier to the spread of FMD, may on occasions be breached.

- The substantial WRL involvement in international training programmes both at Pirbright and overseas, continued as a principal activity throughout the period. A significant proportion of this work was funded under the EU TACIS programme for the upgrading of capabilities in Eastern Europe. Serum surveillance programmes also figured prominently.

- Pirbright hosted a successful joint meeting with the Research Group in 1998, celebrating the 40th anniversary of the designation of the laboratory by FAO as the World Reference Laboratory for FMD.

**Recommendation**

Turkish Thrace continues to be regarded as a key area for the defence of Europe against the spread of FMD and vaccination has been used to create a protective buffer zone in the area. Formerly, decisions on vaccination policy and vaccine strains were taken in collaboration between Turkey, Greece and Bulgaria, and with advice and

funding from the OIE, EUFMD and EC. While vaccine policy is now exclusively administered by Turkey, it is recommended that policy decisions should continue to involve the relevant national and international organisations.

**Discussion**

- Dr Y. Ivanov asked why type C virus appeared so rarely. Dr Donaldson replied that the reasons were not fully understood, but were probably related to the relative antigenic stability of type C as compared with types O and A viruses and the fact that high potency vaccines were generally easier to prepare against this type.

- Dr D. Panagiotatos commented that although Greece had not vaccinated against FMD for 15 years there had been continuing surveillance and that this - when combined with vaccination in Turkish Thrace - had resulted in effective control of the disease in the region.

The Chairman thanked Dr Donaldson for the valuable ongoing WRL contribution and emphasised the importance of the laboratory in the global control of FMD.

## Item 8: Progress in the Implementation of Contingency Plans in Member Countries

### Item 8.1: Progress in the implementation of Contingency Plans in Member Countries

Dr John Ryan presented the findings of a questionnaire designed to assess the status of member countries' Contingency Plans, as requested by the 32nd Session of the Commission (Appendix 16).

In general, the response rate was good, especially in the EU countries, but in the non-EU countries many did not respond or supply a copy of their plans. Most Veterinary Services have the necessary legal powers to perform all aspects of disease control. The weakest powers relate to provisions for compensation to farmers.

As comparing financial provisions is difficult as the costs and implications of outbreaks vary considerably between countries, it was suggested that the important financial considerations were rapid availability of funds in a crisis and the development of compensation funds for farmers.

A direct chain of command exists in almost all countries but the structure of national and regional disease control centres varies. It was emphasised that no structure was ideal but that what is important is that the limitations of each structure are known and that there is clear leadership in a crisis.

As procedures for sampling varied significantly between countries it was again suggested that the method is not as important as the result which should be: rapid sampling by well-equipped competent vets or technicians in the field followed by rapid and early diagnosis and characterisation of virus strain by a competent laboratory and/or WRL.

Training programmes were not a strong enough feature in the plans.

It was argued that the level of reporting of suspicious cases is linked to the general level of awareness of the disease, if this is correct then the awareness in some countries is very low as no suspicions of vesicular disease have taken place for some time.

Awareness campaigns also varied considerably and as all services have limited resources, it was suggested that long-term strategic use should be made of them to increase the general awareness in the population.

Provisions for Emergency Vaccination varied also across countries so it was suggested that all countries examine their information and decision-making system and whether they have access to the necessary equipment and vaccine bank.

Constraints mentioned in the questionnaire were: lack of funds, lack of personnel, lack of co-operation of other ministries and the industry, the role of private veterinary practitioners, access to vaccine banks, no outbreaks of FMD for many years, difficulty in getting priority for FMD and environmental issues regarding the disposal of the carcasses.

Suggestions on the role of EUFMD were very varied also. The most popular roles identified were to inform and co-ordinate, to disseminate information, to organise meetings and training courses and to promote regional co-operation. There was some support for the roles of advising on contingency plans, assistance in getting access to vaccine banks, preparation of guidelines and provision of equipment. Specific support was requested for: regional co-operative ventures; technical advice; training and simulation exercises; teams of experts; helping non-EU countries; direct grant aid; publicity and disease awareness. It was suggested that the variation in responses reflects the different economic, political and disease status and therefore needs of member countries.

It was concluded that the questionnaire was a useful exercise and that it should be repeated regularly to track improvements or slippages in Contingency Planning. It is hoped for a better response from non-EU countries and an increase in the number of plans submitted. It was reiterated that assistance would be given by EUFMD in the preparation or validation of contingency plans. It was confirmed that a small stock of non-perishable equipment had been purchased by EUFMD for Rome, including equipment for sampling, syringes, needles and protective clothing, for use in emergency situations.

**Discussion**

- Dr. L. Hallet thanked the Secretariat for their valuable work. He voiced concern about using the low number of instances of suspicious cases cited in some responses to the questionnaire, as an indicator of weaknesses in surveillance. He suggested that future questionnaires should include a definition of Suspicious Cases and draw a distinction between cases deemed suspicious simply on clinical grounds and ruled out before being formally reported and those suspicions which are formally reported and involve laboratory investigation.

- Dr. Leforban agreed that these suggestions would be incorporated in subsequent follow-up questionnaires.

- Dr. E. Stougaard requested that EUFMD should follow up on the countries that had not responded to the questionnaire and /or the countries that currently did not have a contingency plan. Dr Y. Leforban undertook to so do.

The Chairman thanked all respondents to the Questionnaire and Dr Ryan for his analysis of the results.

**Recommendations**

1. **It is essential** that all member countries maintain a constant awareness of the risk of FMD in their veterinarians, Veterinary Services and other relevant groups who are involved in agriculture, trade or tourism.

2. **It is recommended** that validation of contingency plans by simulation exercises is a priority for all countries.

3. The secretariat should re-contact the countries who have not responded to the questionnaire to see what progress has been made since and improve the questionnaire for future sessions so that it can better determine the indicators of good surveillance for FMD

**Item 8.2: Guidelines for Awareness Campaigns on the Risks of introduction of FMD by Tourism and Transport**

Dr Yves Leforban presented a qualitative analysis of the risks to Europe from tourists, travellers and transport (Appendix 17).

The report stressed the risks from food and other products of animal origin, and suggested tighter controls at all border crossings and a focus on transport companies dealing with infected countries. It also suggested a focus on areas at risk such as free port facilities or other zones or situations where goods are not under the jurisdiction of the national veterinary authorities.

Dr. Leforban indicated that awareness campaigns should be targeted at tourists and migrant workers with the distribution of leaflets at the borders. A draft copy of the leaflets has been prepared, and assistance will be offered in translating it into other languages.

**Discussion**

- Dr A. Garland complimented the Secretariat on their practical approach. He emphasised the risk of the spread of several infectious diseases via waste food from mercantile and aviation traffic, and reminded the meeting that the 1975 outbreak of FMD in Malta had almost certainly been caused by the feeding of infected airport waste to pigs.

- Dr I. Esteban added his compliments and confirmed that all the recommended measures were in place in Spain. He informed the session that for the previous 4 weeks, reinforced awareness measures had been put in place in his country in relation to the situation in North Africa and the potential risk of FMD introduction to the Iberian Peninsula. He stressed the importance of these measures for other countries as the peak of the tourist season approached.

- Prof. Engvall made known to the session the difficulties encountered in getting airline companies to accept samples of potentially virulent material for transport.

- A number of queries were raised concerning the safe shipment of diagnostic samples. The Secretary emphasised that there were international guidelines and legal requirements in this respect and responsibilities for both despatching and receiving countries. Both export and import licences might be required along with notifications and it is recommended that the necessary administrative documents are prepared in advance.

- Dr A. I. Donaldson explained the procedure to be followed in sending samples to the WRL. The laboratory had an open UK import license from the Ministry of Agriculture for this purpose. Problems had been experienced using couriers in the past. The WRL now operated a strict procedure whereby samples must only be despatched by airfreight to the London airports of Heathrow and Gatwick. Collection and clearance of samples is exclusively by WRL personnel. The OIE Manual contains specific recommendations for the safe transhipment of FMD samples, including advice on packaging and labelling in accordance with IATA recommendations. It was useful to stress that FMD samples posed no risk of human infection.

- Dr J. Scudamore explained that strict new procedures for the transport of samples, in particular by post, and based on UN guidelines, had been imposed by the UK Postal Services. Special packaging was required to comply with the new rules. This packaging is expensive but readily available.

- Dr Y. Leforban stated that the EUFMD kept a small stock of sampling equipment and sample transport containers for emergency use. Sample transport kits, which complied with IATA regulations, were also available commercially from: Air Sea Containers LTD, Staniford Building, 318 New Chester Road, Birkenhead L42 1LE, Merseyside, England; tel: + 44 151 645 0636; fax: + 44 151 644 9278; E-mail sales@air-sea.co.uk ; product reference code 289, LM-2 medium Thermal control unit - Polystyrene box in fibreboard case, internal 215x215x185, external 350x350x360.

- The representative of the OIE reminded the Commission of the OIE rules regarding the shipment of FMD samples, particularly Chapter 1.5.6 (international transfer and laboratory containment of animal pathogens) and other relevant provisions of the OIE International Animal Health Code, of the World Reference Laboratory for FMD, of other United Nations agencies and of prevailing regulations of the International Air Transport Association.

**Recommendation**

The meeting recommended that in view of the increasing difficulties experienced in the transhipment of diagnostic samples by some members with some airlines, the EUFMD Commission should pursue means to resolve the difficulties in consultation with OIE, WHO and IATA. EUFMD should work through the UN system to achieve this aim.

**Item 9: Availability of vaccines for emergency vaccination in Europe**

Dr. John Ryan presented a paper (Appendix 18) that updated the situation as regards the availability of emergency vaccines in member countries from the situation reported by Dr Tony Garland at the Thirty-second Session in 1997.

The paper examined changes in the antigen banks that are of relevance in a European context - The International Vaccine Bank and the European Union Vaccine Bank. There were no changes in the International Vaccine Bank. The European Union Vaccine Bank added 2 new serotypes (2,500,000 doses of both Asia1 and C1) at its designated storage repository at the IZS, Brescia, Italy, and increased its holdings of A22 Iraq to 3.88 million doses at CNEVA Lyon. The IVB differs form the EUVB in having the capacity to formulate and fill vaccine, whereas the EUVB relies on private companies for these functions.

The status of national governmental vaccine/antigen banks and emergency vaccination arrangements was surveyed by questionnaire. There was a 100% response rate from member countries to the questionnaire. Six countries have made no arrangements for the supply of emergency vaccine. Seventeen countries have made an arrangement for the supply of emergency vaccine - either through a national vaccine bank, through a contract with a commercial supplier, or as a member of an international vaccine bank. Ten countries have made more than one type of arrangement for the supply of emergency vaccine.

There were 9 countries who changed some aspect of their arrangements for emergency vaccination. Most of the changes were changes in national vaccine or antigen banks and these reflected trends towards diversifying the number of serotypes held, increasing the quantity of vaccine held and holding more inactivated antigen than formulated vaccine.

In all there is vaccine or antigen equivalent to 68.3 million doses.

**Discussions**

- Dr E. Stougaard commented that, although the Danish laboratory in Lindholm no longer produced FMD vaccine, the plant was maintained in a state of readiness and tissue culture cells were revived and propagated twice a year in order to retain the capability.

- Dr M. Amadori drew attention to the fact that the EU Vaccine bank could not legally formulate and fill vaccines, whereas the International Vaccine Bank Pirbright was able to so do. The EU bank depended on the antigen producer for formulation and filling of its antigens.

- Dr B. Vallat suggested that existing stocks of formulated vaccine could be made available from the vaccine banks to assist the Maghreb countries. He stated that 700,000 cattle doses could be made available for this purpose from the French national bank. He asked the EUFMD to co-operate in this matter and to liase between France and other countries that might be able to assist.

- Dr A. Bouhbal stated that Algeria had already submitted a request for vaccine to the EU. Dr A. Fussel confirmed that a request for 1 million cattle doses had been received in Brussels and was being considered. The main difficulty was in funding this request.

- Dr Y. Ivanov enquired as to the procedure for joining the International Vaccine Bank. Dr J. Scudamore explained that countries wishing to join the International Vaccine Bank should apply in writing to the Chairman, currently Mr Scudamore himself. The next meeting of the management group would be in May 1999.

- Dr R. Marabelli suggested that the next questionnaire should include questions on vaccine quality, the availability of vaccine for peripheral regions of Europe and on the response time for each vaccine bank and commercial supplier.

**Item 10: Financial Matters: accounts for 1997 and 1998 and proposed budgets for 1999 and 2000**

The Secretary presented the financial reports included as Appendix 19, which had been prepared by the FAO Finance Division and by the Secretariat.

The Secretary tabled detailed statements for the Commission's three Trust Funds, numbers TF904200 (European Commission for the Control of FMD); TF909700 (non-EC Trust Fund for FMD Emergency Aid Programmes) and TF911100 (EC Trust Fund for FMD prevention in south-eastern Europe) showing balances of US$ 165,612; US$58,250 and US$955,829 respectively as of 31 December 1998.

The Finance Division statement number 1 showed the balance of funds held by FAO on behalf of the EUFMD Commission Trust Fund TF904200 as of 31 December 1998 was US$165,612. Contributions from member countries for 1998 amounted to US$337,940, including annual subscriptions, arrears and advance contributions from Denmark and Norway. Details were also provided of individual members' contributions. Of the 33 members, all but 4 were up-to-date in their payments for 1998. For 3 countries the arrears of less than US$50 correspond to exchange charges. The account had earned interest at US$13,543 while administrative costs amounted to US$321,975. Accommodation and facilities provided without charge by FAO have been estimated at US$50,000.

Details of the EUFMD Commission budgets and expenditure for 1997 and 1998 were also tabled, together with proposed budgets for 1999 and 2000. Support to the WRL had been increased from US$30,000 to US$35,000 and the contribution for phase XVI of the FAO collaborative study covering the years 1999 and 2000 amounted to US$22,400

The Session **approved** the proposed budgets for 1999 and 2000 as follows:

| | 1999<br>US$ | 2000<br>US$ |
|---|---|---|
| Total for TF904200 | 322,439 | 323,906 |
| TF909700 | 59,400 | - |
| TF911100 | 629 850 | - |

**Discussion**

- The favourable and stable financial situation of the Commission was noted by the Session, despite the increase in its activities. It was also noted that few countries were in arrears and that these debts would be followed up by the Secretariat.

- Dr Y. Cheneau pointed out that the accounts did not include the salary and the other expenses incurred for Dr J. Ryan, which were met by Ireland from a special fund.

- Dr A.I. Donaldson expressed the thanks of the WRL for the increased level of financial support from EUFMD from $ 30,000 to $ 35,000. He also acknowledged FAO funding ($20,000) which was in addition to the EUFMD contribution.

- Dr Y. Cheneau confirmed that FAO had received a request from the WRL to increase the level of contract support. However, this could prove difficult in view of the reduction of 5% that was being experienced in the FAO budget every two years.

**Item 11 : Election of Chairmen, Vice-Chairmen, Members of the Executive Committee / Members of the Research Group**

**Executive Committee**

Dr Y. Cheneau, Chief, Animal Health Service, FAO, reminded delegates of the constitutional requirements and of the accepted practice which has evolved towards achieving a balanced representation of the different regions and EU, non-EU countries in the membership of the eight members of the EUFMD Executive Committee. Dr Cheneau then reviewed the membership of the Executive Committee elected in 1997.

Dr Bakken confirmed that due to his new position he would be standing down from the Executive Committee.

Dr Vallat noted the constant representation of France in the Committee for more than 10 years and expressed the wish to leave his place to another country and to provisionally withdraw from the Committee.

The Commission was then requested to vote for the designation of one Chairman, two Vice-Chairmen and five members of the Committee.

Dr R. Marabelli was unanimously elected to the position of Chairman.

Dr L. Celeda was elected as first Vice Chairman and Dr W. Zwingmann as second Vice Chairman both unanimously.

For the election of members of the Executive Committee the following persons were proposed and seconded: Drs. E. Liven (Norway); T. Balint (Hungary); N. Aslan (Turkey); D. Panagiotatos (Greece); L. Hallet (Belgium).

The membership of the Executive Committee for the period 1999 - 2000 was confirmed as:

| | | | **Proposed** | **Seconded** |
|---|---|---|---|---|
| Dr R. Marabelli | (Chairman) | Italy | Germany | Malta and Sweden |
| Dr L. Celeda | (First Vice-Chairman) | Czech Republic | Malta | Hungary and Germany |
| Dr W. Zwingmann | (Second Vice-Chairman) | Germany | Denmark | Ireland and Czech Republic |
| Dr G. Liven | (Member) | Norway | Finland | Hungary & |

| | | | | |
|---|---|---|---|---|
| | | | | Netherlands |
| Dr T. Balint | (Member) | Hungary | Germany | France and Bulgaria |
| Dr N Aslan | (Member) | Turkey | Cyprus | France and Greece |
| Dr D. Panagiotatos | (Member) | Greece | Spain | Ireland and Norway |
| Dr B. Hallet | (Member) | Belgium | Austria | UK and Netherlands |

In thanking delegates for the honour of being renominated as Chairman, Dr Marabelli looked forward to continuing the work of the Commission with the support of the other members of the Executive Committee, the Research Group, and the support of the secretariat

Dr Cheneau concluded by expressing his satisfaction for the consensus of the Delegates on the designation of the new Committee.-

**Research Group**

Dr Cheneau explained the current composition of the Research Group and its rationale. He informed the session that Dr Schuller had taken a new position and had withdrawn from the Group. At the suggestion of the Chairman of the Group, he proposed that he be replaced by Dr C. Griot from Switzerland. These proposals were accepted by the delegates

Dr Marabelli thanked the Research Group for the excellent support that they had provided, and Dr De Clercq who had given outstanding service as Chairman. He stated that he was sure that the exemplary collaboration between the Committee and the Research Group will continue.

The membership of the Research Group for the period 1999-2000 was **confirmed** as:

| | |
|---|---|
| Dr M. Amadori | (Italy) |
| Dr S. Barteling | (Netherlands) |
| Dr M. Danes | (Romania) |
| Dr K. DeClercq | (Belgium) |
| Dr C. Griot | (Switzerland) |
| Dr I. Gurhan | (Turkey) |
| Dr P. Have | (Denmark) |
| Dr B. Haas | (Germany) |
| Dr Y. Ivanov | (Bulgaria) |
| Dr J. Sanchez-Vizcaino | (Spain) |
| Dr H. Yadin | (Israel) |
| Dr A. Donaldson | (WRL, Pirbright, United Kingdom, Ex Officio) |

In conclusion, Dr Stougaard reminded the Commission of the role of the Group, which is to bring scientific answers to the questions raised by the Committee. The Research Group will elect a Chairman from among their members at their next meeting.

**Item 12: Any other business**

**Item 12.1: Consideration of the position of Swine Vesicular Disease in relationship to its inclusion as an OIE List A Disease**

Dr L. Hallet introduced the topic of whether the classification of Swine Vesicular Disease (SVD) as an OIE List A disease should now be reviewed. He recounted the Netherlands experience of SVD in 1992. There had been a "serological outbreak" of this disease in that clinically healthy pigs had been found to be sero-positive to SVD. The animals were quarantined and closely examined. However, despite the application of stress, no clinical disease was ever observed and no virus was excreted. Eventually the animals were slaughtered and samples were examined for SVD but with negative results.

The Netherlands declared the outbreak based on the initial serological results and in accordance with OIE norms and national and international regulations. As a consequence, Holland suffered two years interruption in trade and serious economic losses. The Netherlands considered that SVD had to be controlled, but that its importance had been exaggerated.

Validated laboratory techniques were now available for the differentiation of FMD and SVD within 24 to 48 hours of the receipt of samples. It therefore appeared to be timely to review the classification of SVD and to consider its removal from the OIE list A disease grouping.

The Netherlands therefore requested that the topic should be addressed by technical experts and considered by the OIE for reclassification.

**Discussion**

Dr A. I. Donaldson confirmed that the classification of SVD was kept under constant review by the OIE. He reminded the meeting that one of the most important aspects of SVD was that it was impossible to differentiate it from FMD on clinical grounds and that laboratory diagnosis was essential. Non virulent strains of SVD were often associated with subclinical infection. He agreed that a further review of its OIE classification would now be appropriate.

Dr R. Reichard, OIE, reported that the FMD and Code Commissions of the OIE had been working on a revised system of classification for animal diseases for some three years, but as yet no alternative to the A and B listing had emerged.

Dr R. Marabelli reported that the EU had also been considering the classification of animal diseases in the context of international trade.

**Recommendation**

The EUFMD should ask the OIE to consider the re-classification of SVD and its possible removal from OIE List A.

**Item 12.2 Using the EUFMD-EC Trust Fund (911100)**

The Secretary explained the practical difficulties in the functioning of the EUFMD/EC Trust Fund (911100).

These are as follows:

1. the necessity of obtaining, on a case by case basis, a written agreement from the EC to use the fund, even for very small amounts and for the activities decided by the Executive Committee - even though these meetings are attended by representatives of the EC.

2. The absence of an established procedure for the replenishment of the amounts dispensed by EUFMD from this fund.

To offset these difficulties and make the functioning of this fund easier and more coherent at the same time for EUFMD and the EC, the Secretary suggested that a framework should be established to define the expenses that can be covered by the fund and that a letter should be addressed by the Commission of EUFMD to the EC requesting that a specific meeting should take place between the financial and technical services of FAO and the EC for this purpose.

**Recommendation**

The Commission **recommended** that the procedure for authorising the release of monies from the EUFMD/EC Joint Trust Fund (9111000) and the replenishing of the fund, should be reviewed by the appropriate technical and financial services of the FAO, EC and the EUFMD with a view to improving the definition of the objectives of the fund and its functional procedures in the common interest of EUFMD and the EC.

**Item 12.3 Operation of the EUFMD Secretariat**

The Secretary explained that the Secretariat of the Commission had only two permanent members of staff - the Secretary and the Administrative Assistant (plus a new, temporarily appointed, Associate Professional Officer). The prolonged absence through illness of one of the members of staff during a period of high activity such as

the organisation of missions or the preparation of the General Session - which was the case during the months preceding the Thirty-third Session and corresponded with the missions in Caucasia and Vladimir - created great difficulties in the functioning of the Secretariat at the administrative level and this was in spite of the important technical support of the Associate Professional Officer and the limited support provided by the Animal Health Service.

To prevent a similar situation from re-occurring, the Secretary suggested that a procedure should be put in place for the temporary replacement of the administrative personnel of the EUFMD Secretariat in cases of prolonged absence.

**Recommendation**

The Commission recommended that the possibility of replacing the administrative personnel of the Secretariat should be studied as well as the possibility of allocating a budget for such administrative emergencies.

**Item 12.4: Next session of the Executive Committee**

The Chairman thanked Dr. D. Panagiotatos for the offer to host the Sixty-third Session of the Executive Committee in Greece in November 1999. The exact date and venue would be finalised later.

**Item 13: Adoption of the Draft Report**

The draft report was adopted with the reservations that the agreed amendments would be made and that points 11, 12 and 13 would be distributed to the delegates for approval and/or amendment immediately after the session.

**Closure of the Session**

Dr. Y. Cheneau noted that the Session had been productive. Europe found itself in a favourable situation but it was necessary to look beyond the borders to the improvement of FMD control in other countries, which in turn increased the security of Europe. Successful missions had been carried out, including those to the Caucuses and to Turkey and I.R. of Iran, while there had also been a prompt response to the epidemic in North Africa. He was optimistic that aid could be forthcoming for Algeria within the next few days. The Session had demonstrated the quality of the work carried out by the Executive Committee and the Research Group. FAO favoured the consensual approach, which was plainly evident in the collaboration between the EC, FAO, WRL and EUFMD. He thanked all the participants and looked forward to the thirty-fourth Session in 2001.

The Chairman thanked FAO for having acted as hosts for the Session. He echoed Dr. Cheneau's comments on the high quality of the work of the Executive Committee and the Research Group during a particularly busy period. Important projects continued within Europe and in Turkey, I.R. of Iran and North Africa while the current collaboration in the Caucuses represented a new frontier with important implications for Europe. He paid tribute to the participation and the contributions of the representatives and observers from all countries and the international organisations who had attended the thirty-third Session.

He gave special thanks to Dr E. Stougaard, the CVO of Denmark, who was retiring this year after serving with the EUFMD for 22 years, including the position of Chairman of the Commission during the period 1991 to 1993. He had made a most valuable contribution and Dr. Marabelli hoped that he would be able to continue to contribute from time to time in the future. Dr Stougaard thanked the Chairman for his kind remarks and wished the Commission well for the future.

On behalf of all the participants, the Chairman thanked the Secretariat for the efficient organisation of the Session and Dr. Tony Garland, rapporteur for the Session. Finally he gave his personal thanks for having been re-elected as Chairman and he wished all participants a safe journey home.

**Annex 1**

## FMD situation in Europe and in other regions in 1997, 1998 and in first quarter of 1999.

### Introduction

No outbreaks had occurred in the European territory since the end of November 1996, when one outbreak due to type O was reported in the village of Malko Sharkovo, Bulgaria at the border with Turkey.

However the threat of introduction of FMD into Europe from Turkey and the Middle East persists. The virus continued to be present in Middle East, in Turkey and sporadic cases are reported the Caucasian region from time to time.

This paper is intended to review the situation in theses regions where virus persists and continues to threaten Europe .

### Serosurvey in the Balkans

During the period May-August 1996 an epizootic of foot-and-mouth disease type A occurred in the Balkan region, affecting Albania, the Former Yugoslav Republic of Macedonia (FYR of Macedonia) and the Federal Republic of Yugoslavia (FRY). The epizootic was brought under control by either a slaughter policy alone (FRY) or by a slaughter policy combined with vaccination (Albania and FYR of Macedonia). The European Union provided assistance to the control program through the supply of vaccine and expert advice. In July 1997 the Commission of the European Communities passed Commission Decision 97/432/EC providing assistance to the three countries involved to carry out a serological survey with the following objectives

- to assess the level and distribution of antibodies to FMD virus type A resulting from previous infection and/or vaccination.
- to determine the geographical extent of past or present infection with FMD virus type A.
- to determine whether or not FMD virus continued to circulate in the region.
- to evaluate under field conditions newly developed ELISA's which measure antibody to the non-structural (NS) proteins of FMD virus. Antibody to NS proteins can be used as an indirect marker of infection with FMD virus, irrespective of whether or not animals have been previously vaccinated.

The conclusion of the serosurvey are as follows:

- The survey detected no evidence of the circulation of FMD virus in the FYR of Macedonia since 1996 and in Albania since 1997.
- There was no evidence in either country of virus activity during the course of the surveys.
- In the FR of Yugoslavia no evidence was found for FMD viral activity, either present or past.
- NS protein antibody tests were useful for the detection of viral activity in vaccinated populations. Their use is recommended as part of future serological surveys for FMD.

- In surveys to detect viral activity following outbreaks, it is important that the age of the animals sampled is recorded since accurate ageing is essential to enable a full interpretation of the results.

**Turkey** (see item 4)

**Middle East**

The uncontrollable movement of livestock between countries of the middle east - in particular the herds and flocks of the nomadic people - make it difficult for any country in isolation to control FMD effectively. With the exception of Israel, FMD control is sporadic and directed mainly towards dairy herds.

Saudi Arabia

Saudi Arabia annually imports approximately 6.5 million live animals (mainly sheep and goats) from many countries including African and Asian countries that are not free of FMD. These animals bring in their own strains which then spread to local herds and flocks. Within Saudi Arabia, there is a highly sophisticated dairy industry with imported dairy cows of high productivity. Despite regular vaccination, sometimes every 10 weeks with up to 7 strains, vaccinated herds are from time to time severely affected with FMD. The policy is now one of preventing entry of the virus to the farm by strict security measures, with a reliance on vaccine as a second line of defence. Type O was isolated in 1997 and 12 strains of virus, all of type O have been isolated in 1998.

Israel

The last outbreak of FMD in Israel was in July 1996. No outbreak of FMD was reported in 1997 and 1998. Two outbreaks linked together and due to virus type O1 has been reported in January 1999 in Akko and Tsefat districts, in the north of the country in a herd of 90 grazing beef cattle and in a 10 month old heifer previously vaccinated in November 1998.

The present policy of the Veterinary Service is to vaccinate annually all cattle above the age of 3 months during October to December with a trivalent vaccine (O1, A22, Asia 1) . Booster vaccination is carried out in cattle younger than 18 months, 8 to 12 weeks after their initial vaccination. Calves born after the general vaccination period are vaccinated when 3 month old within a secondary scheme. Vaccination also covers the entire national sheep and goat population with a monovalent (O) vaccine without a booster. Based upon the antigenic analysis of past isolates, the O component of the vaccine used includes the O Manisa and O Geshur Strains. Since 1998, strain A Iran 1996 is also incorporated in the vaccine together with A22 strain.

The effectiveness of the vaccine used is evaluated by the results of the ongoing monitoring programme which has been operational since 1992. It includes six dairy farms scattered throughout the country. On each farm , 30 animals in three age-groups are sampled twice a year for a SNT evaluation of their immunity against current Middle Eastern strains of A22, O and Asia 1. In 1997, sheep were added to

the acquired immunity monitoring programme. It is carried out 3 months post vaccination, in sheep flocks located in 4 districts. 10 sheep from each flock are serologically tested for the current regional FMD O strain. This monitoring is planned to be continued. Vaccination is compulsory and liable to State fees paid by the owners. In 1997, 400 823 vaccinations of cattle with a trivalent vaccine were carried out, as well as 398,717 monovalent (O) vaccinations in small ruminants.

Jordan

Foot and Mouth disease has been endemic in cattle and small ruminants in Jordan for many years. Intensive cattle are vaccinated 2 to 3 times annually. 50380 cattle and 200 000 sheep and goats were vaccinated in 1997. No outbreaks were reported in 1997.

The first reported suspect cases of FMD for 1998/9 were on November 23 in Irbid Governorate situated close to the Syrian and Israeli borders. Since then more than 20 outbreaks were reported by the State veterinarians. All these outbreaks have been north and east of Amman as well as around the city. Animals on 16 farms with clinical lesions consistent with FMD were submitted to Kimron Veterinary Institute, Israel. Samples from 8 farms were positive for O1 type FMD and included both cattle and small ruminants. Losses were high in calves ,lambs and kids, but very few adult animals were lost. Control measures included ring vaccination, (using in stock vaccine), isolation of clinically affected animals, disinfection and general advice to farmers on preventing young animals from suckling. Media publicity was also undertaken. Following an emergency declaration, an additional 1 million doses of vaccine were purchased by the Ministry of Agriculture and distributed to affected areas.

Lebanon

A significant number of live animals (up to 300,000 head of cattle and 1 million head of small ruminants) are imported every year for slaughter from different countries not all of which are free of FMD and therefore FMD is permanently reintroduced. The disease affects mainly the imported livestock of different origins that are kept together before slaughter. The population of local livestock is estimated to be 45,000 cattle – mainly dairy- and 750,000 small ruminants. It is partially vaccinated and rarely infected. Dairy cattle are vaccinated twice a year: 17,926 cattle and 30,437 small ruminants were vaccinated in 1997 using a trivalent O, Asia 1, A22 vaccine.

Gulf countries, Arabic peninsula

FMD continues to be endemic in **Kuwait**. 21 outbreaks due to type O were reported in cattle in 1997. One outbreak of type O has been reported in May 1998 in a dairy herd and in sheep despite recent vaccinations. In July 1998 it was reported that FMD had moved from Iraq to Kuwait ( and to Saudi Arabia as there is a great deal of nomadic movements across the Saudi-Koweit border). In majority of FMD outbreaks clinical disease was preceded by movement of sheep onto the farm. 7 FMD outbreaks were reported in **Qatar** in1998. Types O and A were isolated in **Yemen.** 170 cases of FMD were clinically diagnosed in **Barhain** in December 1998 in three separate outbreaks in cattle and sheep.

Iraq

Iraq has contacted FAO in December 1998 to report that FMD had occurred since the beginning of November 1998 and that they urgently needed to vaccinate. Due to the political ban imposed by the UN, the provision of vaccine to Iraq is authorised only after acceptation of the sanction committee and FAO is arranging for a vaccination campaign.

Foot and Mouth Disease (FMD) infected several governorates in Iraq including the Northern and Western Governorates (Governorate of Anbar at Al-Rutba District located near the borders of Jordan and Saudia Arabia).15 outbreaks were initially reported (of 2000-5000 head/herd), i.e. a total of 30000-75000 animals involved.

The disease then spread to the rest of the country. The mortality rate was 10-15% among young lamb. The morbidity rate reported for sheep in the Central and Southern Iraq was approximately 11% and the mortality rate was 0.53%. However, the morbidity rate recorded for cattle was 3.2% and the mortality rate was 0.24% 80% of the introduced cattle was found infected and 50% mortality among young lamb in Dohuk and Erbil governorates. This is the first record of manifestation of this disease in Iraq as related to sheep and goats.

The last figure of 10 January 1999 indicated that 50,678 cattle and 982,309 small ruminant have been infected in 13 Governorates with a mortality of 3832 (7,5%) and 48089 (4.9%) respectively. There is a high risk of spread to other Governorates and neighbouring countries.

Iran

Types A and O are regularly isolated. A new variant of type A was identified in 1996. Pirbright FMD World Reference Laboratory indicated that type A 22 vaccine offered no cross protection against this new variant. Iran started to produce vaccine against the new variant in 1997. In 1998 similar type A strains have been identified in Turkey and in Armenia

369 outbreaks were reported in Iran in 1997 including 297 outbreaks in cattle and 72 outbreaks in sheep and goats from different parts of the country in unvaccinated

herds. In April 1998, 17 outbreaks of FMD were reported in 10 of the 26 Provinces of Iran.

Dairy cattle are vaccinated preventively and sheep and goats are vaccinated when there are outbreaks. The quantity of vaccine produced does not meet the needs for the country. In total, 4,534,736 large ruminants and 11,162,582 small ruminants were vaccinated in 1997 with bivalent locally produced vaccine.

In April 1998 17 outbreaks of FMD has been reported in 10 of the 26 Provinces of **Iran**

## COMMUNITY OF INDEPENDENT STATES

(see item 5)

## AFRICA

### North Africa

SITUATION UP TO 1999

Morocco

The last case was reported in September 1992 in Settat Province (Central region). 1.265.000 cattle (51% of the total population) were vaccinated in 1997 with a monovalent type O vaccine. A serosurvey carried out in 1997 demonstrated that there was no circulation of FMDV in small ruminants. Therefore Morocco can be considered as free of disease. Based on these results vaccination has been abandoned since 1998.

Algeria

No FMD has been reported since December 1992. 54 and 34 type O outbreaks were reported respectively in 1991 and 1992. Preventive vaccination continue to be carried out in the border areas considered to be at risk. 8 931 cattle and 107 098 small ruminants have been vaccinated in 1997.

Tunisia

FMD has not been reported since August 1994. Susceptible animals are vaccinated yearly, small ruminants with monovalent type O vaccine and large ruminants with trivalent (O, A, C types) vaccine. 296,229 cattle, 3,378,284 small ruminants and 7,976 camels have been vaccinated in 1997.

Libya

Two type O outbreaks were reported in 1994. FMD affected small ruminants with high mortality in new-born lambs - two to four weeks old - in January in the Eastern

part of Lybia (Ejdabia area). Preventive vaccination of bovine herds twice a year is practised since 1996. 70,000 head of cattle were vaccinated in 1997.

Egypt (see Annex 7)

Type O is predominant. Sporadic cases of mild forms of FMD appeared in 5 Governorates in 1997. There is a policy of vaccination of dairy animals every 4 months and fattening steers every 6 months using locally prepared O type vaccine. In 1997, 4 609 987 large ruminants and 5 162 353 small ruminants and 180 626 camels were vaccinated against FMD. Surveillance is done to assess the immune status after vaccination campaigns. The main problem is the quantity of the vaccine. A new quality control laboratory ($ 2.2 Million) has been completed with the support of EU in Abasia. Modern technology including molecular biology (PCR, nucleic acid probes and synthesis of nucleotide primers) is used.

1999 EPIDEMIC IN MAGHREB

An outbreak of foot-and-mouth disease, type O, has been developing in North Africa since the 20th February 1999. The disease was first reported in Algeria where it spread quickly from the east to the west of the country. Isolated outbreaks of the disease have also occurred in Tunisia and Morocco. Until now, the disease has mainly affected cattle (more particularly beef cattle) and vaccination campaigns organised within the three countries should prevent its spread. Genetic characterisation carried out by the FAO/OIE World Reference Laboratory for FMD in Pirbright, UK, has shown a close relationship between the strain isolated during this outbreak and strains previously isolated in Côte d'Ivoire and Ghana, indicating that the virus is most likely of West African origin. A meeting of the CVOs of the three countries concerned has been held in Tunis on 9 March 1999 with the participation of FAO, OIE, EC and the WRL. ( see Item 2 : Foot-and Mouth Disease situation in North Africa as of 29th March 1999).

**West Africa**

FMD type A has been isolated by the WRL from samples received Mali, Mauritania and Senegal In 1997. The isolates from Senegal are genetically different of other recent isolates in Africa. Type O has been identified in Côte d'Ivoire. In 1998, type A was isolated in Gambia

**East Africa**

SAT2 virus has been isolated in **Rwanda** in 1997. FMD type O has been reported **Uganda** in Zebu in February 1998, type A and SAT 2 in **Eritrea** in December 1997 and January 1998. In 1998 Type O was isolated in **Tanzania and Rwanda.**

**Southern Africa**

In 1997, one outbreak due to SAT2 occurred in cattle in **Zimbabwe** in a zone adjacent to Buffalo game park despite a double fence. The same strain of virus was isolated from buffaloes and it is likely that antelopes crosses the fence and transported the virus from Buffalo to cattle. One outbreak due to SAT1 type was reported in Impala in Kruger and adjacent game parks in June in **South Africa** in 1998. The origin is also Buffalo. These two individual outbreaks did not prevent South Africa, and Zimbabwe to continue to have a favourable situation of FMD together with Namibia and Botswana.

FMD has been reported in November 1998 **Malawi** where it spread from a neighbouring country where it was reported in August 1998

**Situation in Latin America**

The situation in South America continued to improve in 1998. Last case of FMD was reported in 1990 in Uruguay, in October 1994 in Paraguay. Argentina and Paraguay have remained free (with vaccination) and the southern two states of Brazil have been recognised free ( with vaccination). In 1997 FMD type O and A were reported in Bolivia, Brazil, Columbia, Ecuador but the number of outbreaks diminished in comparison with previous years There has been generally a large reduction in reported outbreaks in other South American countries. Argentina has announced that they will cease vaccinating against FMD at the end of April 1999.

**Vesicular diseases outbreaks in South America in 1997 (FMD and Vesicular Stomatitis)**

| **Country** | Outbreaks (infected herds) in 1997 |
|---|---|
| Bolivia | 27 ( FMD) |
| Brazil | 197 (FMD) |
| Colombia | 698 (FMD+VS) |
| Ecuador | 148 (FMD+VS) |
| Peru | 25 (FMD+VS) |
| Venezuela | 51 (FMD+VS) |
| **Total** | 1146 |

**Asia** (see Annex 9)

A severe FMD epizootic due to type O has hit the pig industry in Taiwan Province of China during 1997 with important economic losses. The disease which had not been reported since 1930 was introduced in March 1997 probably through the illegal import of live pig or pork products by fishing boats. 6 156 outbreaks were reported between March and July, only in pigs. A generalised vaccination campaign has been carried out

and all animals of susceptible species have been destroyed in the infected farms. 9 additional outbreaks were reported in December 1997.

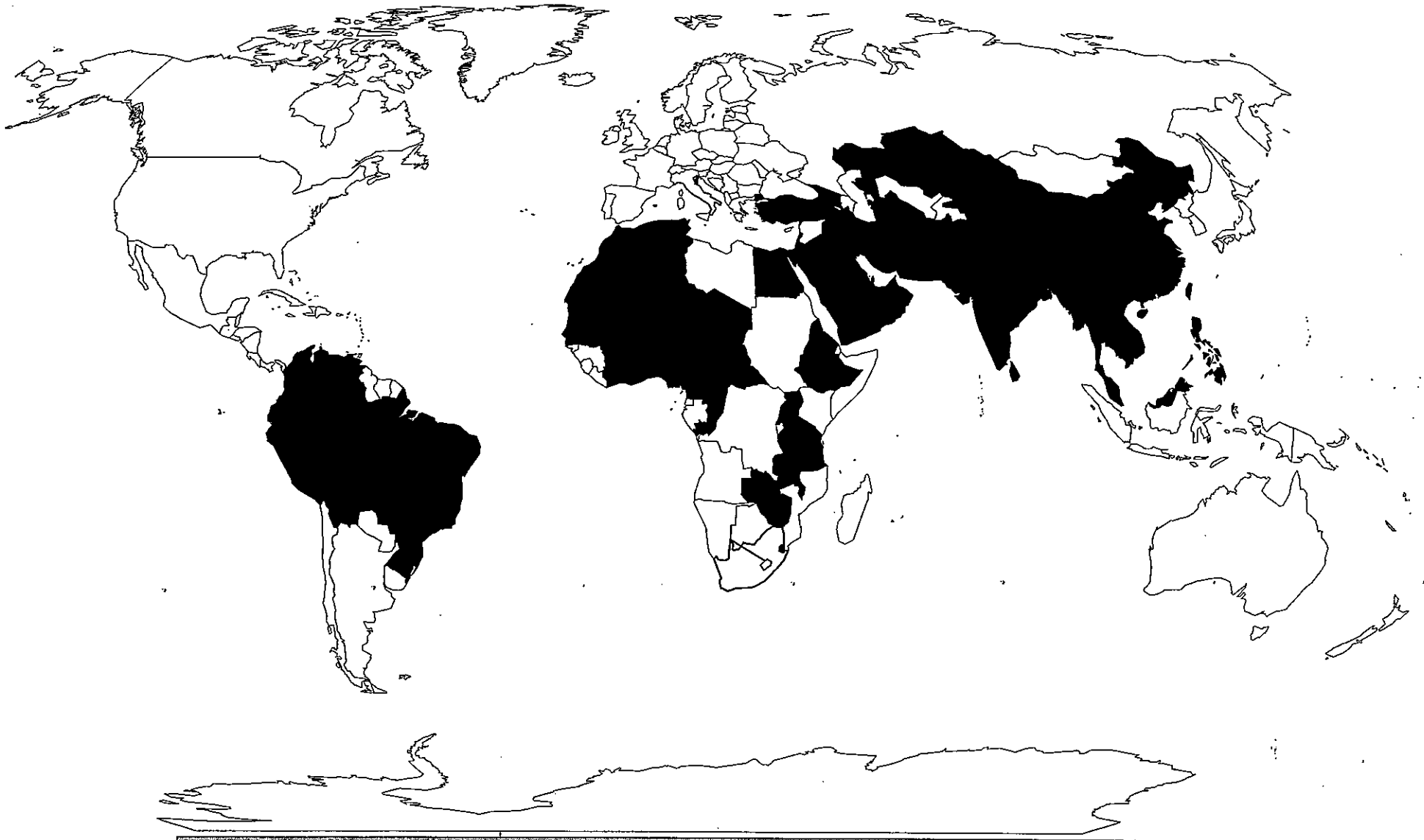
In 1997 FMD was endemic in Bengladesh, India, Myammar, Laos, Cambodia. Type O has been isolated in Afghanistan, Bangladesh, Hong Kong, India, Malaysia, Nepal, Pakistan, Philippines. Type A has been isolated in India and Peninsular Malaysia and Asia1 in India, Malaysia and Nepal. A control programme in South East Asia is in progress. Disease continue to be endemic and progress are slow despite the efforts of international organisation in the region. The recent isolates from Cambodia and Vietnam have been characterized by the WRL. The group of isolates form a genetically distinct group , different from type O from Thailand and Malaysia and from pig adapted strains from Taiwan and the Philippines.

In 1998 Type A was reported In Malaysia from January to May and in Thailand in October. Type O was reported in Myanmar, Thailand, Laos, Vietnam and Philippines, Asia 1 in Myanmar, Thailand and Laos. Myammar, Laos and Cambodia currently undertake little FMD control activities. In Vietnam, most of the control activity appears to be along the border with Cambodia. Malaysia appears to have controlled the incursions of FMD by vaccination. The situation in Philippines is characterized by the presence of the pig adapted strain in the areas around Manila. In the rest of Asia, Type O was isolated by the WRL from Bhutan, Hong Kong, Nepal, Pakistan, Taiwan Province of China, type Asia1 from Pakistan.

**Annex 2**

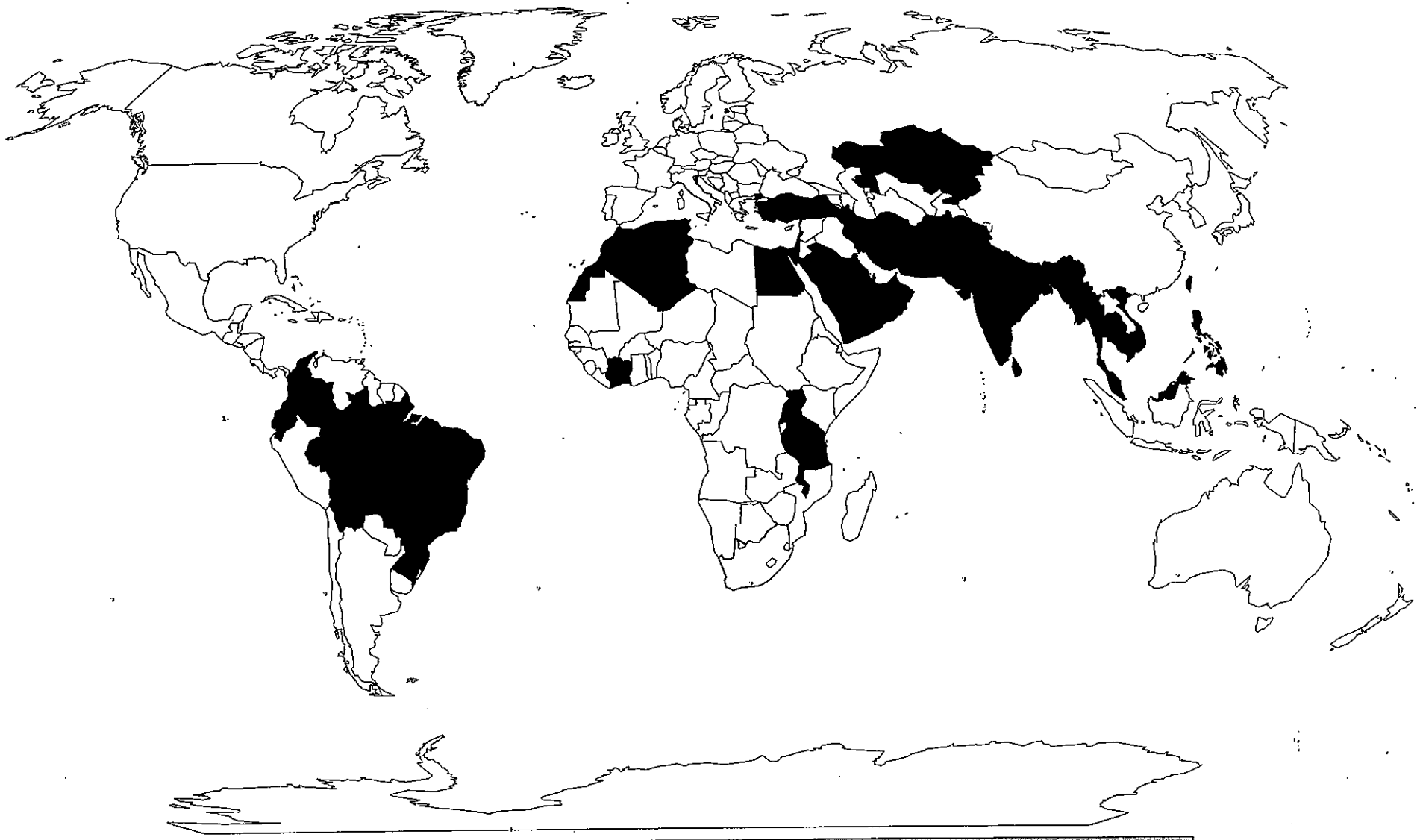

OIE Status as of March 1999
Free without Vaccination (52)
Free with Vaccination (2)
Free Zone with Vaccination (1)
Free Zone without Vaccination (4)

# FMD outbreaks 1997-1999



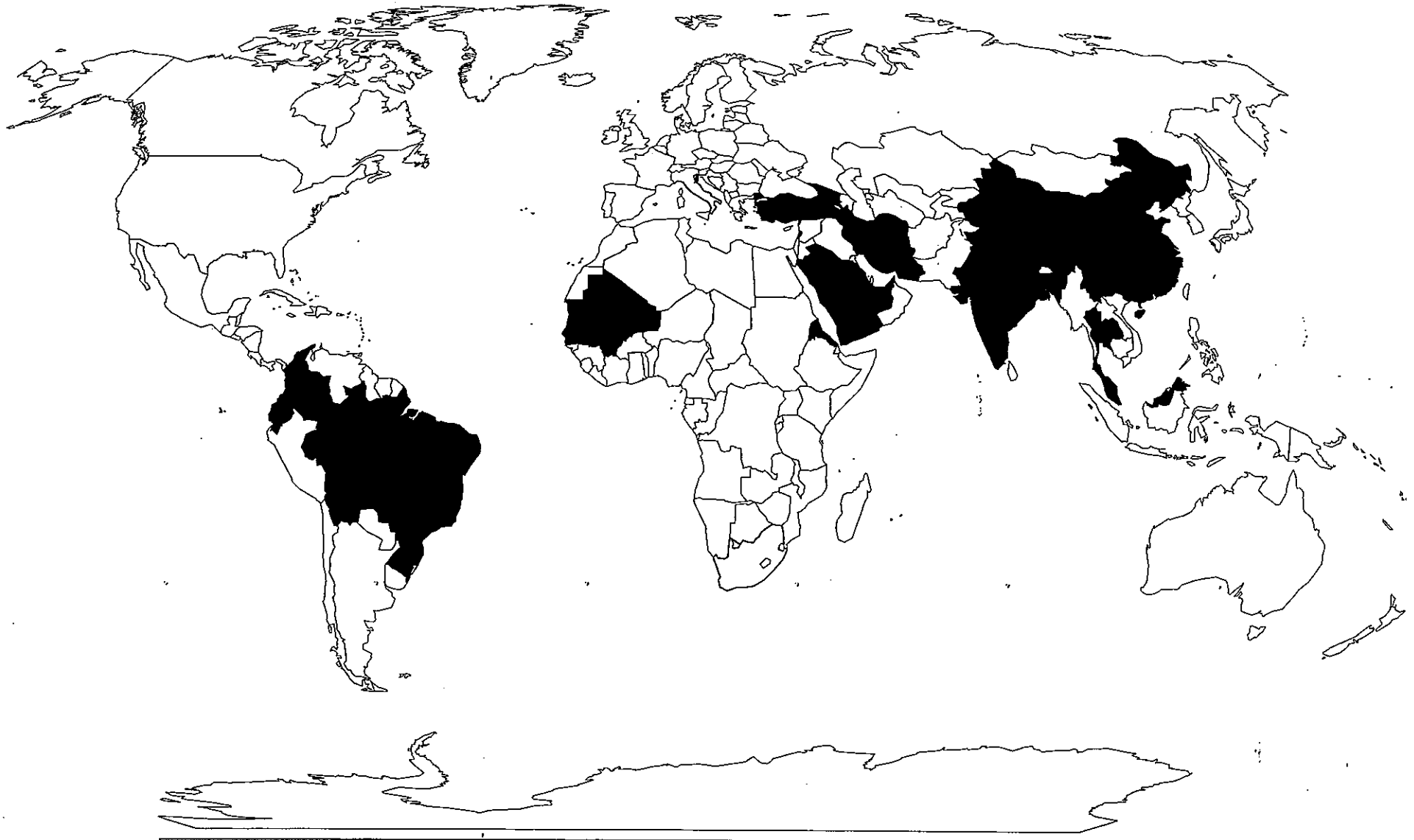
All serotypes as officially reported (OIE,WRL,FAO)

# FMD Type O outbreaks 1997-1999



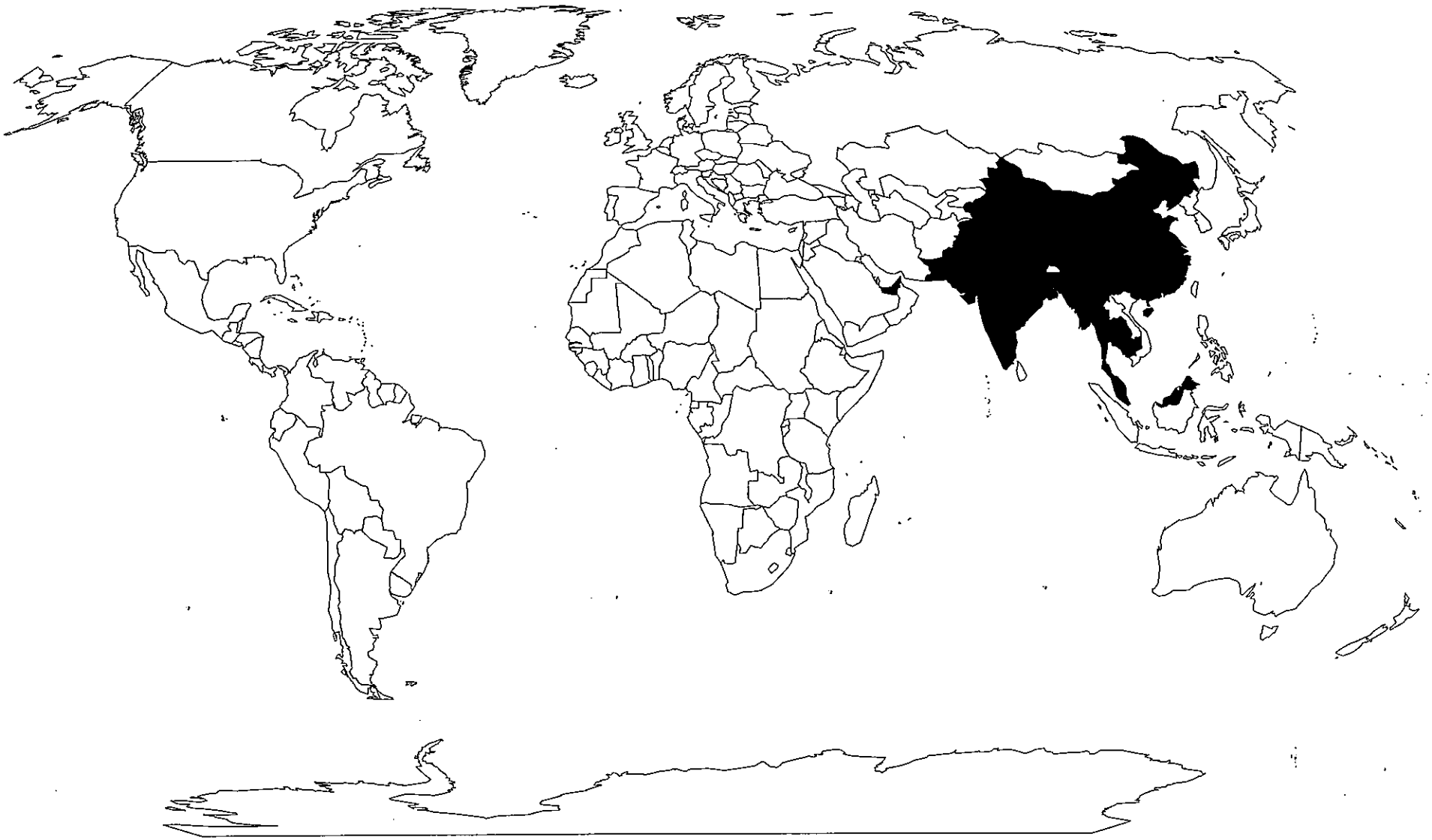
FMD Type O as officially reported (OIE,WRL,FAO)

# FMD Type A outbreaks 1997-1999



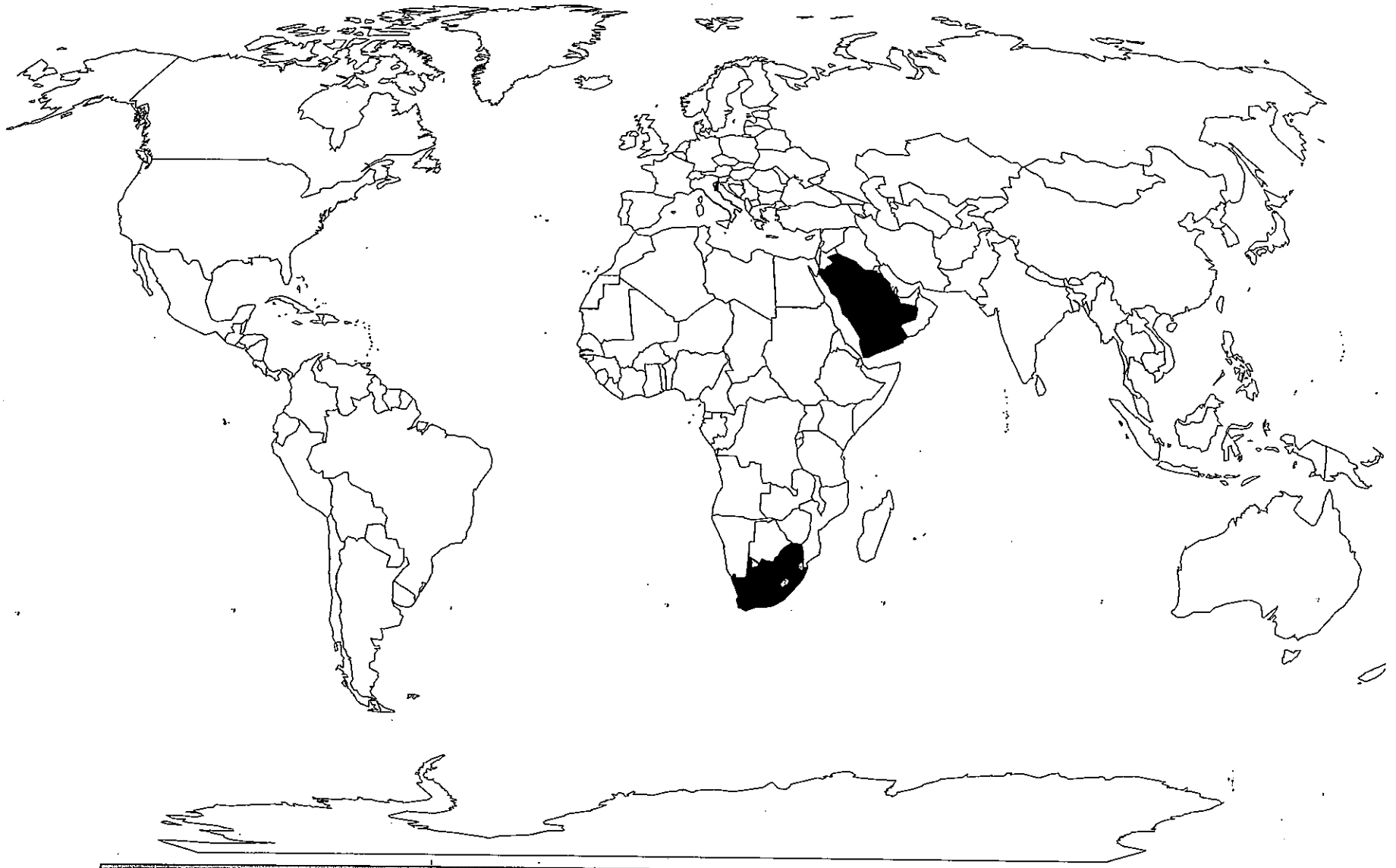
FMD Type A as officially reported (OIE,WRL,FAO)

# FMD Type Asia1 outbreaks 1997-1999



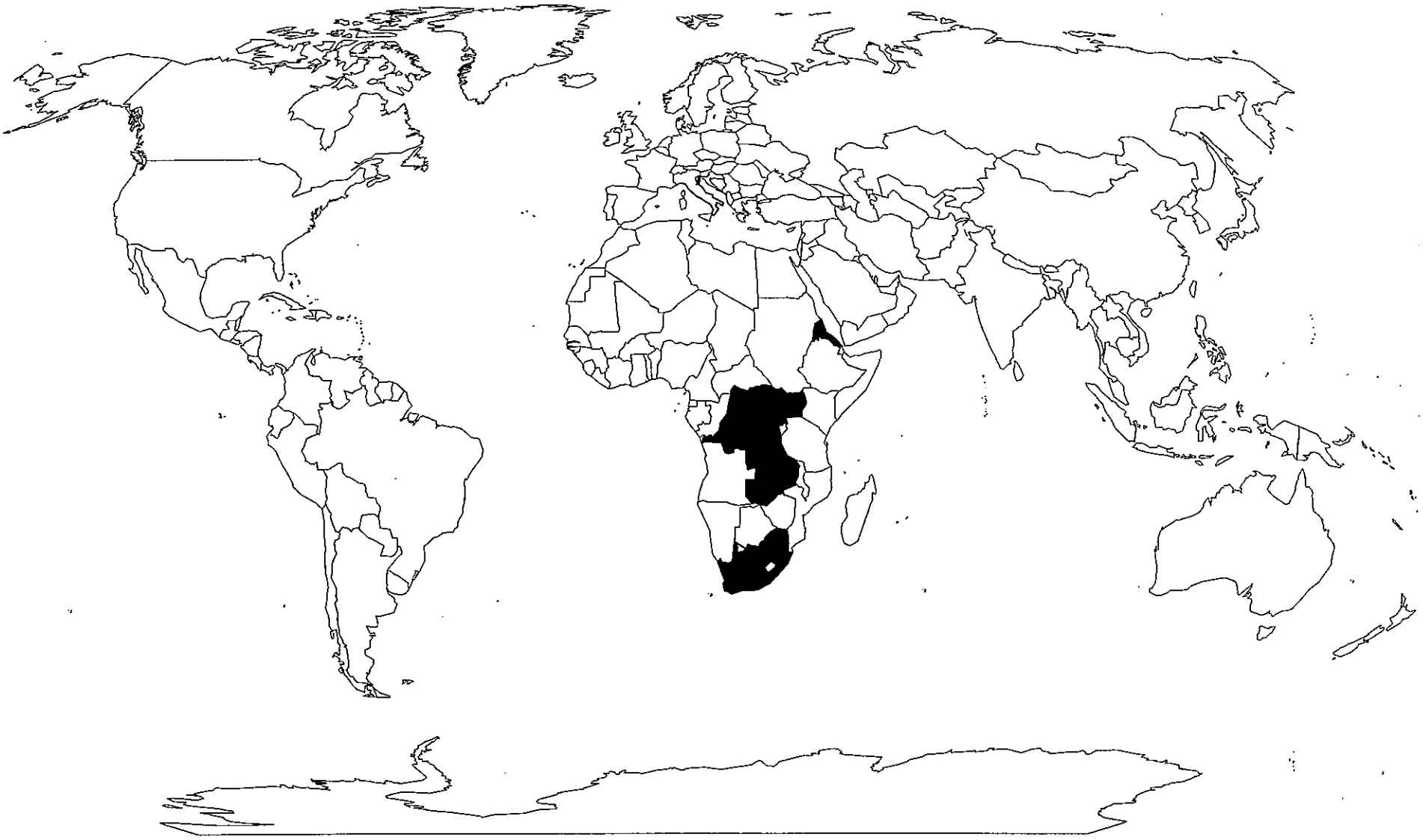
FMD Type Asia 1 as officially reported (OIE,WRL,FAO)

# FMD Type SAT1 outbreaks 1997-1999



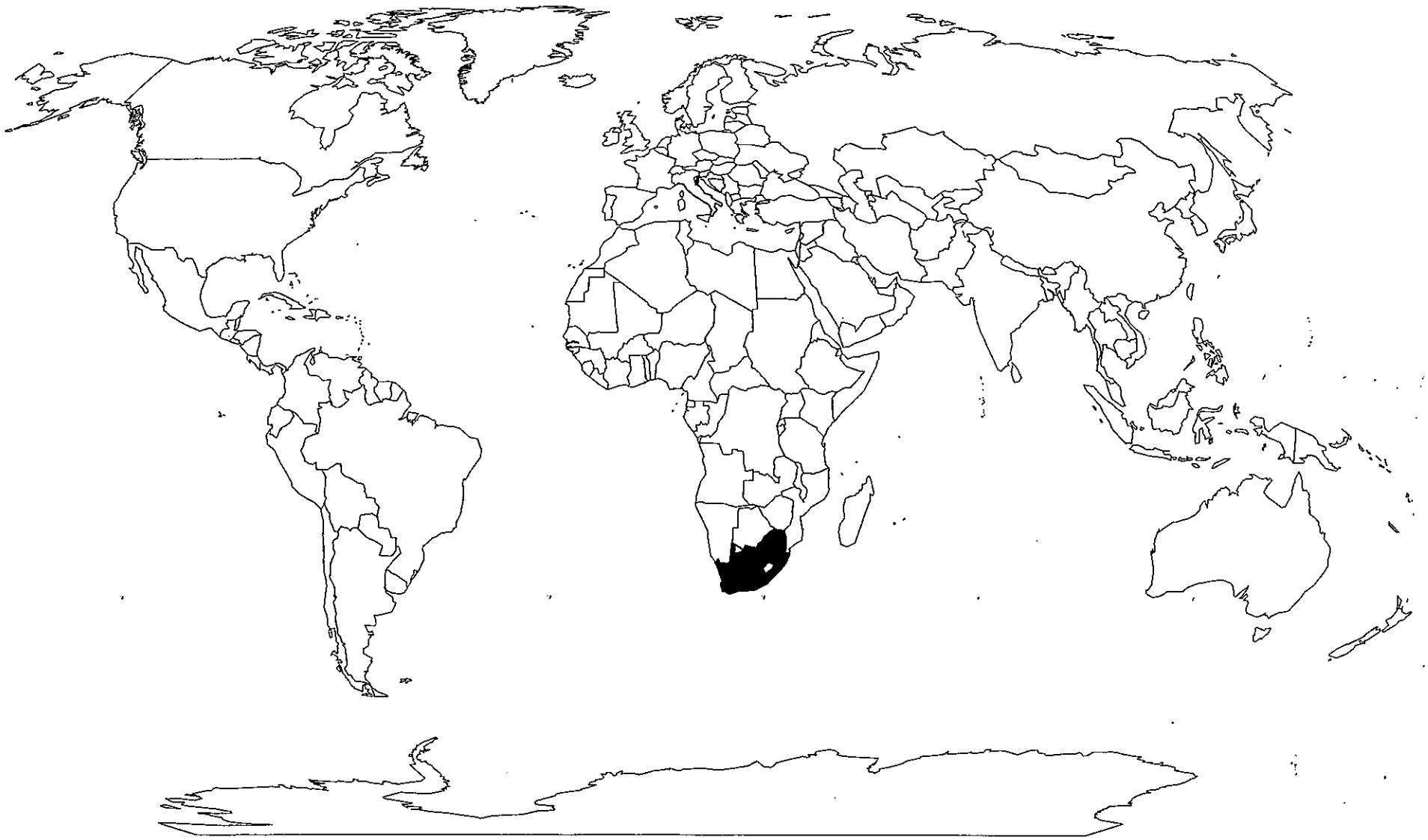
FMD Type SAT 1 as officially reported (OIE,WRL,FAO)

# FMD Type SAT2 outbreaks 1997-1999



FMD Type SAT2 as officially reported (OIE,WRL,FAO)

# FMD Type SAT3 outbreaks 1997-1999

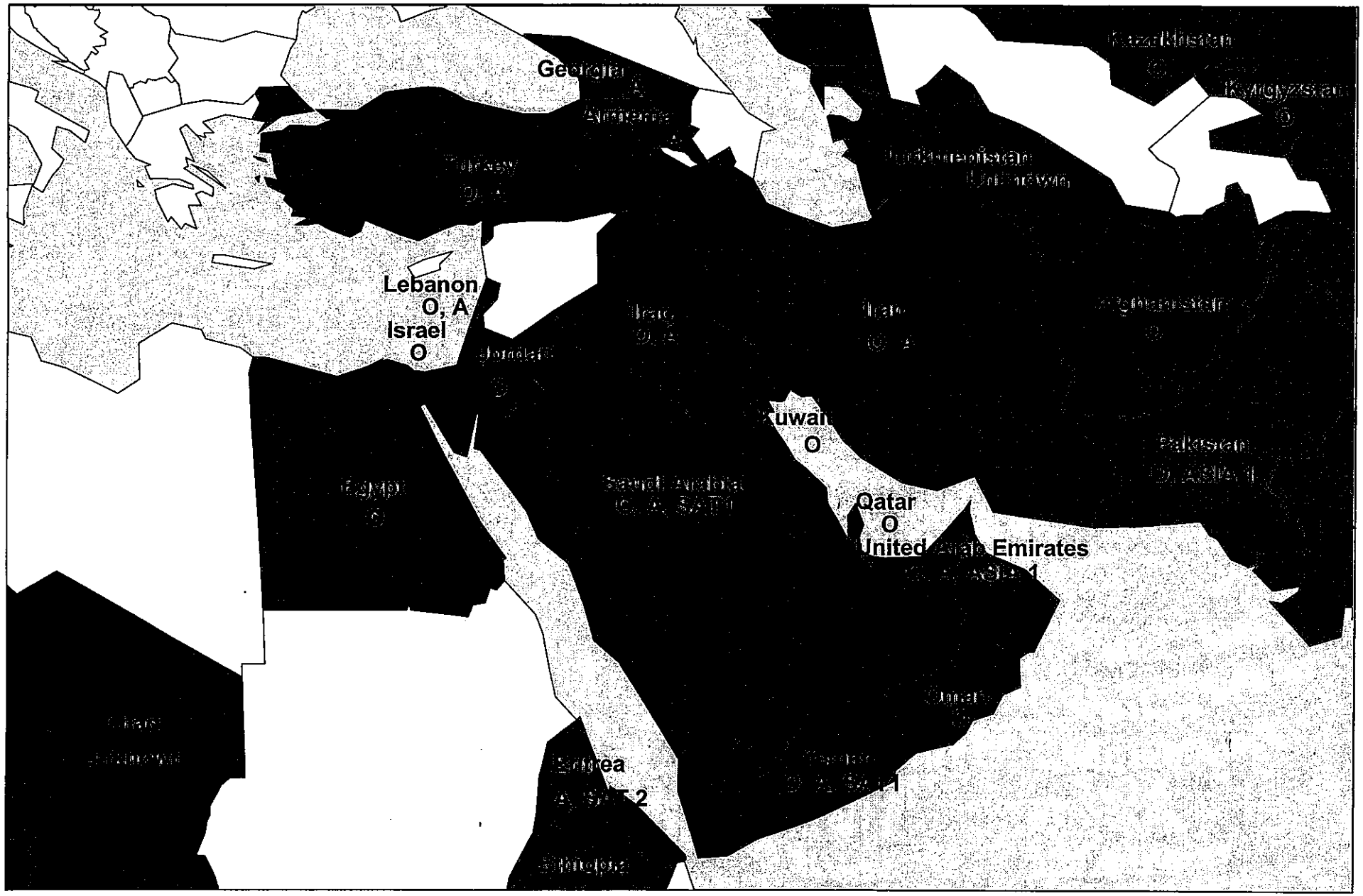


FMD Type SAT3 as officially reported (OIE,WRL,FAO)

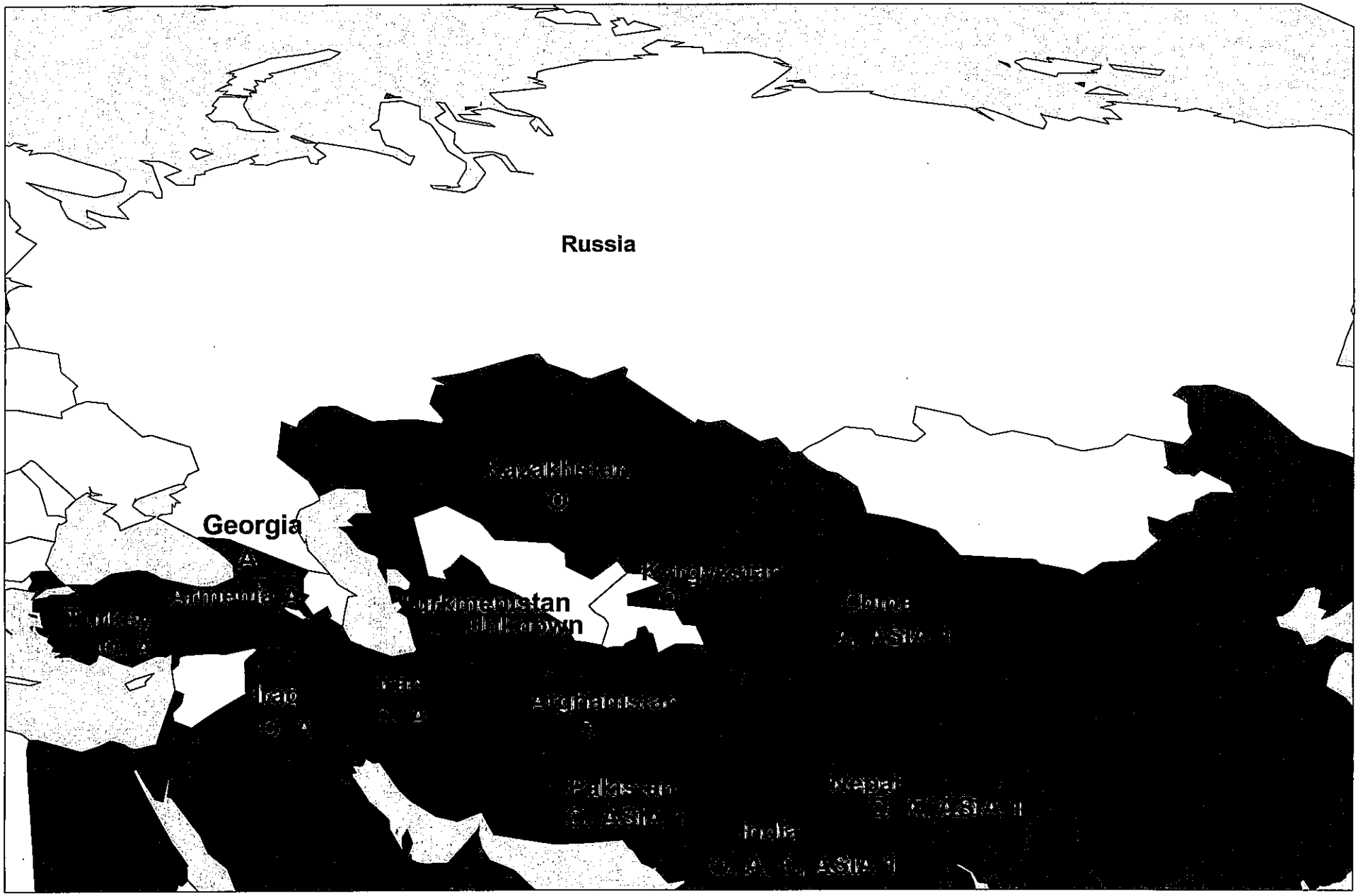
# FMD Type C outbreaks 1997-1999

FMD Type C as officially reported (OIE,WRL,FAO)

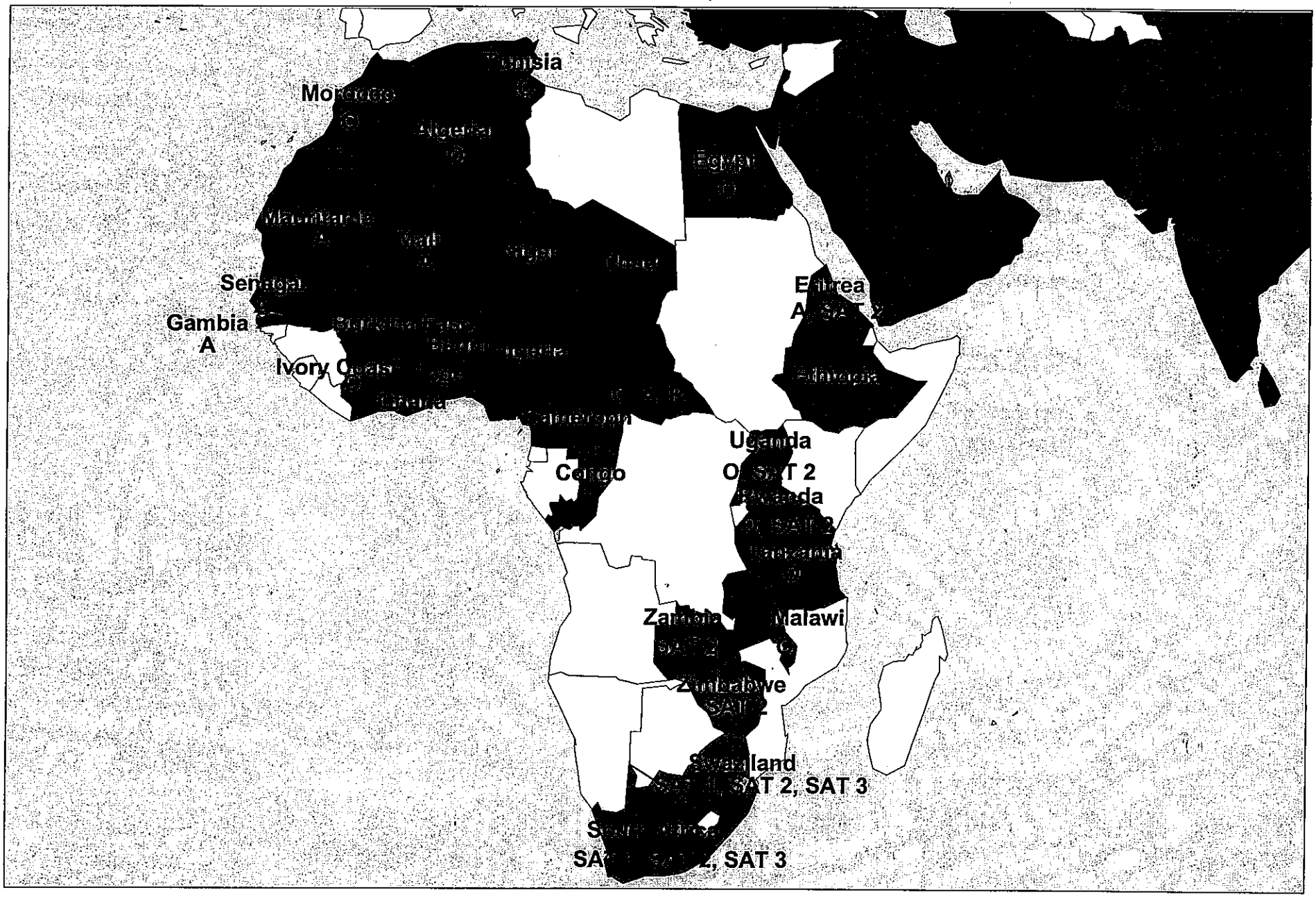
# Middle East Outbreaks 1997-1999



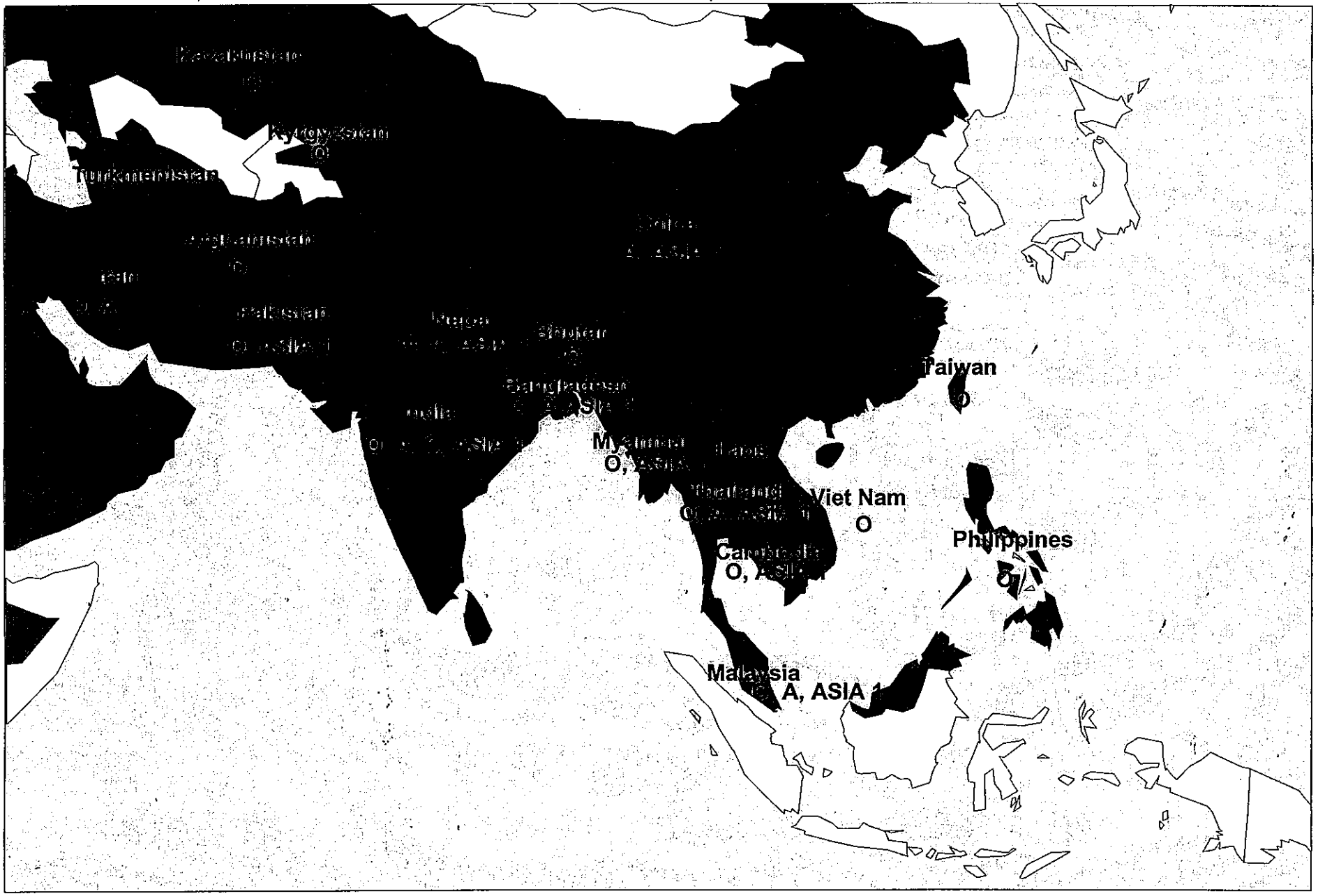
# FMD in West Asia and CIS Countries 97-99



# FMD in Africa 1997-1999



# FMD in Asia 1997-1999



# FMD in South America 1997-1999

**Annex 3**

## Summary of the Type O Foot-and-Mouth Disease situation in North Africa as of 29th March 1999

This bulletin is based on the report of the ad-hoc meeting on the FMD situation in North Africa which took place in Tunis on the 9th March 1999 between the Veterinary Services of Algeria, Morocco and Tunisia and representatives of international organisations (FAO, OIE, EC) and of the World Reference Laboratory for FMD, Pirbright, UK. It also includes updates to that information as provided by the National Veterinary Services of Morocco on the 15th March, of Tunisia on the 16th March and of Algeria on the 24th March 1999. The good news is that no new case of FMD has been reported since the 18th March.

### Summary of the current position of FMD in North Africa

| *Country* | *Bovine Population* | *Small Ruminant Population* | *Number of Outbreaks* | *Location* |
|---|---|---|---|---|
| Algeria | 1,300,000 | 16 - 18 million | 160 | 2 areas affected: Central Provinces, Western Provinces, Eastern Provinces |
| Morocco | 2,450,000 | 14-17 million | 8 | Oujda - town centre |
| Tunisia | 448,000 | 6.5 million | 2 | Grombalia, Charguia |

### Algeria

#### Incidence of the disease

Since the beginning of the epizootic and up to the 20th Mar. 1999, 160 farms and 139 communes out of 1541 have been infected by the disease. It is the central wilayates that have been most affected: Tizi-ouzou, Blida, Boumerdés and Bouira. These wilayates are situated all around the capital and have registered 95 infected farms, all situated one next to another with 801 cases.

#### Animal species affected

Butchers' cattle accounted for 90% of the cases; cows of local breeds, some heifers and milking cows accounted for the rest. Only cattle have been clinically affected. Most of the outbreaks have occurred on small family farms with 2-3 cattle. No clinical signs have been detected in sheep , even on the farms where there were both sheep and cattle.

**Evolution in space**

On the 20 and 21st February 1999, 2 cases of Foot-and-Mouth Disease (FMD) were suspected in cattle belonging to a butcher in Souidania (1 case out of 2) and Birtouta (2 cases out of 56) in the Governorate of Grand Alger. These cattle were acquired on the 17th Feb in the El-Harrach transit centre. This market turned out to be the focal point for the future dissemination of the disease.

The infected cattle belonged to a dealer from the wilaya of Sétif and were introduced to the transit centre on the 16th Feb. 1999. Cattle from the same lot were purchased by other dealers from the wilayates of Tizi-ouzou, Boumerdés, Bouira and Médéa in the centre; and Rélizane, Mostaganem and Mascara in the west of the country - where cases of FMD in these regions appeared after a lapse of 10 days.

Isolated cases appeared in Khemissa - wilaya of Souk-Ahras - 50Km from the Tunisian frontier, (the origin of this outbreak is not known as the herd-owner hadn't introduced new animals for 2 months) and Meskiana - wilaya of Oum-El-Bouaghi - bordering Tunisia.

Between the 23rd and the 26th Feb. all the cattle acquired in the transit centre of El-Harrach on the 17th presented with clinical signs of FMD in Boumerdès, Sétif and Médéa on the 24th and Bouira, Bordj-Bou-Arreridj and Rélizane on the 25th.

Other cases were subsequently declared in the Centre-West of the country (wilayas of Ghilizane, Mostaganen and Mascara) on the main national road number 2 (the most westerly outbreak was in the commune of Sebdou (wilaya de Tlemcen) bordering Morocco, on the 8th Mar.). Local markets aided the spread of the disease.

**Origin of the virus**

The Algerian authorities believe that the primary outbreak was in Sétif, but the precise origin of the virus has yet to be identified. Two markets (at Alger and Boufarik) which took place on the 17th Feb played an important role in the dissemination of the virus. In parallel, there exists a numerous animal movements - both legal and illegal - between the countries of the region. Many millions of Algerian sheep, the most prized in the region, leave the country each year , mostly west to Morocco.

Zebu cattle were found in the Saharan Districts in the south of the country (in the south of the wilayates of 'El bayadh et Béchar) and these animals were immediately slaughtered. They did not present with FMD lesions and were not found at the origin of any outbreak but their presence demonstrates that animal movements take place on the southern frontier with Niger and Mali. The Sahara had been considered until now to be an impenetrable natural barrier for animals (except camels) and didn't require particular surveillance.

Information from the WRL indicates that the Algerian strain is very close to a strain isolated in the Côte d'Ivoire in 1999 (O/CIV/8/99) with <2% in the difference between the sequences and it also has great similarities to 2 strains isolated in Ghana in 1993 (O/Gha/5/93 and O/Gha/9/93) with 9% in the difference between the sequences. These results strongly support the hypothesis that the North African virus originated in West Africa. The disease seems to be endemic in Niger and in Mali. Reports of FMD in Mauritania have also been sent to Pirbright, but virus has not yet been isolated.

## Evolution in time

The number of outbreaks increased in the second week of the epizootic between the 25th February and the 3rd March, the rapid implementation of a slaughter policy and ring vaccination followed by generalised vaccination campaign covering almost all of the livestock population initially controlled and then stopped the disease. From the 4th March, the number of cases started to diminish, and no outbreak has been registered since the 18th March 1999.

## Control measures

Slaughter and destruction of the carcasses of affected animals and slaughter of in-contact animals (bovine and small ruminant) were the measures taken to control the disease. All of the media was used since the 22nd of Feb. to sensitise farmers and to appeal to them to participate in the prevention programme to protect their livestock.

The closure of animal markets and the banning of animal movements became effective on the 23rd Feb. in the infected wilayates and on the 25th Feb. for the rest of the national territory.

In the first week of the epizootic, ring vaccination around the outbreaks was operated, then the vaccination campaign was generalised to all of the national herd, including small ruminants along the frontier on the east of the country following the appearance of cases of FMD in sheep in Tunisia.

800,000 cattle from a total of 1,200,000 head have been vaccinated, the operation is being actively pursued. A booster will be applied after one month.

Furthermore, almost 200,000 sheep have been vaccinated along the eastern border.

## Central Wilayates

| Location | Outbreaks | Species | Number of Animals in the outbreaks | | | | |
|---|---|---|---|---|---|---|---|
| | | | Susceptible | Cases | Deaths | Destroyed | Slaughtered |
| Grand Alger | 38 | bovine | 696 | 199 | 5 | 194 | 497 |
| Bouira | 11 | bovine | 55 | 42 | | 42 | 13 |
| Tizi Ouzou | 22 | bovine | 644 | 297 | 32 | 265 | 347 |
| Boumerdes | 8 | bovine<br>ovine | 247<br>12 | 121 | 2 | 119 | 126<br>12 |
| Blida | 15 | bovine | 184 | 141 | 3 | 141 | 40 |
| Total | 95 | | 1843 | 801 | 42 | 761 | 1040 |

## Western Wilayates

| Location | Outbreaks | Species | Number of Animals in the Outbreaks | | | | |
|---|---|---|---|---|---|---|---|
| | | | Susceptible | Cases | Deaths | Destroyed | Slaughtered |
| Relizane | 12 | bovine | 90 | 31 | | 31 | 59 |
| Chlef | 4 | bovine | 16 | 5 | | 5 | 11 |
| Tlemcen | 1 | bovine | 8 | 4 | | 4 | 4 |
| Tissemsilt | 5 | bovine<br>ovine | 58<br>26 | 35 | 1 | 32 | 36<br>26 |
| Mostaganem | 10 | bovine<br>ovine | 105<br>95 | 57 | | 57 | 48<br>95 |
| Mascara | 7 | bovine | 32 | 32 | 1 | 31 | |
| **Total** | **39** | | **441** | **162** | **2** | **160** | **279** |

## Eastern Wilayates

| Location | Outbreaks | Species | Number of Animals in the Outbreaks | | | | |
|---|---|---|---|---|---|---|---|
| | | | Susceptible | Cases | Deaths | Destroyed | Slaughtered |
| Béjaia | 5 | bovine<br>ovine<br>caprine | 37<br>10<br>5 | 9 | | 9 | 28<br>10<br>5 |
| Bourdj Bou Arreridj | 3 | bovine<br>ovine | 16<br>5 | 3 | | 3 | 13<br>5 |
| Guelma | 4 | bovine<br>ovine<br>caprine | 98<br>181<br>46 | 64 | | 64<br>135<br>46 | 39 |
| Sétif | 10 | bovine | 686 | 222 | | 222 | 464 |
| Oum El Bouaghi | 3 | bovine<br>ovine | 18<br>115 | 4 | | 1 | 3<br>115 |
| **Total** | **25** | | **1232** | **322** | | **549** | **678** |

## Morocco

Foot and Mouth Disease was suspected on February 25, 1999 in the province of Oujda, 5 days after being notified in Algeria. At the present time, only cattle are affected, the other susceptible species did not show the characteristic clinical signs of the disease. The disease is still confined in Oujda where 7 other foci were reported.

Since the appearance of FMD and up to March 15, 1999, eight foci were reported at 8 cattle houses totalling 113 cattle, 14 of which showed clinical signs of FMD. The last outbreak was reported on March 11, 1999.

### FMD Cases in Morocco

| *Location* | *Outbreaks* | *Species* | *Susceptible* | *Cases* | *Deaths* | *Destroyed* | *Slaughtered* |
|---|---|---|---|---|---|---|---|
| Oujda - downtown | 1 | Bovine | 20 | 5 | 0 | 5 | 15 |
| Oujda - downtown | 1 | Bovine | 68 | 1 | 0 | 1 | 67 |
| Oujda - downtown | 1 | Bovine | 3 | 1 | 0 | 1 | 2 |
| Oujda - downtown | 1 | Bovine | 7 | 1 | 0 | 1 | 6 |
| Oujda - downtown | 1 | Bovine | 2 | 1 | 0 | 1 | 1 |
| Oujda - downtown | 1 | Bovine | 5 | 1 | 0 | 1 | 4 |
| Oujda - downtown | 1 | Bovine | 2 | 2 | 0 | 2 | 0 |
| Oujda - downtown | 1 | Bovine | 6 | 2 | 0 | 2 | 4 |
| Total | 8 | Bovine | 113 | 14 | 0 | 14 | 99 |

The situation of FMD in Algeria, the geographic location of foci detected in Morocco, the nature of affected animals and the chronology of suspected cases appearance are all factors pleading the introduction of FMD virus from the Algerian territory most probably through feedlot cattle smuggling.

### Measures taken

- Restriction of animal movement within the infected area with closing of livestock markets since March 1st.
- Destruction of affected animals and slaughter of contacts with disinfection and incineration of manure.
- The immediate destruction and in situ burying of all susceptible animals intercepted at the borders which may have been introduced illegally. Since the appearance of the outbreak (February 25,1999), the number of animals intercepted and destroyed is 20 cattle and 110 sheep.
- Immediate launching of a cattle vaccination campaign at the frontier provinces with Algeria (Oujda, Berkane, Figuig, Jerrada, Errachidia and Ouarzazate). This vaccination was also extended to a buffer zone constituted of neighbouring provinces (Taza, Taounate, Fès, Al Hoceima, Boulemane and Nador). About 70.000

cattle were vaccinated.

**Tunisia**

Tunisia has had two outbreaks. The affected cattle presented classical symptoms and lesions of FMD. As regards the affected sheep, only discrete lameness was observed in certain animals without evocative signs of FMD. All the cattle and small ruminants had their last vaccination over 3 months ago and will be subject to a booster vaccination.

The First Case

The first case was reported in Grombalia, Governorate of Naebul, on the 1st of March and was confirmed on the 2nd March by ELISA at the National Laboratory. It affected a herd belonging to a butcher/fattener which was comprised of 28 cattle (23 bullocks aged between 18 and 24 months, 2 cows, 2 heifers and a calf of 6 months) and 110 "queue fine de l'ouest" sheep aged between 6 and 10 months. Only the cattle were clinically affected. 22 of the 28 cattle presented clinical signs. A meticulous examination of the sheep revealed that 5 of them had a slight limp but without mouth or foot lesions.

The Second Case

The second outbreak took place on the 11th March 5Km from the Algerian border along the route between Ghardimaou and the border post at Jlaiel, Governorate of Jendouba. The farm comprised of 2 cattle (a cross-bred cow and her heifer daughter) and 7 sheep (2 rams, 3 ewes and 2 lambs - two months old). Classic symptoms of FMD were observed on one heifer and on the sheep. There had been no introductions of new animals for one year, and the animals hadn't been vaccinated in the 1998 campaign (Oct-Dec.). The lameness in the sheep commenced one week before the first visit of the state veterinarians, and 2 lambs died in this period.

Measures taken

All of the animals were slaughtered both cattle and sheep in both outbreaks. Booster ring vaccination began on the 3rd March.

**Annex 4**

## Report on the FMD Situation in Algeria

### A/ History

On the 20 and 21st February 1999, 2 cases of Foot-and-Mouth Disease (FMD) were suspected in cattle belonging to a butcher in Souidania (1 case out of 2) and Birtouta (2 cases out of 56) in the Governorate of Grand Alger. These cattle were acquired on the 17th February in the El-Harrach transit centre. The OIE was informed of the suspicion on the 22nd February 1999 and vesicular material was taken and sent to the World Reference Laboratory (WRL) in Pirbright who confirmed the presence of the virus of type O on the 25th February The OIE and FAO were immediately informed.

In parallel, an appeal for vigilance was launched throughout the national territory with active surveillance in all farms, and mobilisation of all the profession including private practitioners and an emergency unit was set-up at central level to follow the disease situation for the entire national territory.

A Press conference was organised at the ministry of Agriculture, which allowed the message to be passed to farmers, awareness notices were also placed in many newspapers appealing for vigilance.

A system of control was conceived in such a way that all suspicions of FMD were reported through the quickest channel.

The farmers supported the plan that was put in place and then facilitated the application of the sanitary measures.

### B/ Epidemiological Data

1. Isolation of the virus

The isolation of the virus by Pirbright confirmed that the virus was of type O. Partial sequencing of the virus indicated that it was a different type O virus from other type O's available at Pirbright, and in particular from the strains currently circulating in many countries of the Middle East as well as the strain which circulated in the Maghreb between 1989 and 1992.

On the 8th March 1999, the WRL informed us that the sequencing showed that the virus strain was very close to those strains circulating in West Africa, this confirmed our suspicions about the origin of the disease. Indeed, zebu cattle introduced fraudulently across our southern frontiers during the month of February, were intercepted in the "grand sud", in the south of the wilayates of El bayadh and Béchar

and in the south of the wilaya of El Oued and were destroyed. It is worthwhile noting that these zebu cattle did not present any clinical signs of FMD.

2. Incidence of the disease

Since the beginning of the epizootic and up to the 11th May 1999, 179 farms and 143 communes out of 1541 have been infected by the disease.

3. Animal species affected

Butchers cattle accounted for 90% of the cases, cows of local breeds, some heifers and milking cows accounted for the rest.

It is the central wilayates that have been most affected: Tizi-ouzou, Blida, Boumerdés and Bouira. These wilayates are situated all around the capital and have registered 95 infected farms, all situated one next to another with 801 cases.

It is worth while noting that these infected wilayates are found along the main road Sétif - Governorate of Grand Alger - Blida.

4. Evolution in space

The first cases of FMD were reported almost simultaneously on the 20th and 21st February 1999, in the communes of Souidania and Birtouta (Governorate of Grand Alger) with the infected animals having been acquired in the transit centre of El Harrach on the 17th February 1999. The enquiry conducted at this level, revealed that the infected cattle belonged to a dealer from the wilaya of Sétif and were introduced to the transit centre on the 16th February 1999, and that the cattle from the same lot were purchased by other dealers from the wilayates of Tizi-ouzou, Boumerdés, Bouira and Médéa in the centre, Rélizane, Mostaganem and Mascara in the West of the country - where cases of FMD in these regions appeared after a lapse of 10 days.

Furthermore, on the 22nd February 1999, one isolated case of FMD was suspected in the commune of Khemissa (wilaya of Souk-Ahras) close to 50Km from the Tunisian border and on the 23rd February 1999 in the commune of Meskiana (wilaya of Oum-El-Bouaghi) bordering Tunisia.

Between the 23rd and the 26th February all the cattle acquired in the transit centre of El-Harrach on the 17th presented with clinical signs of FMD in Boumerdès, Sétif and Médéa on the 24th and Bouira, Bordj-Bou-Arreridj and Rélizane on the 25th.

Other cases were subsequently declared in the west of the country on the main national road number 2 (the most westerly outbreak was in the commune of Sebdou (wilaya de Tlemcen) bordering Morocco, on the 8th March).

5. Evolution in time

The number of outbreaks increased in the second week of the epizootic between the 25th February and the 3rd March, the rapid implementation of a slaughter policy and a generalised vaccination campaign covering almost all of the livestock population has permitted a systematic control of the disease in the majority of the national herd. From the 4th March, the number of cases started to diminish.

After a 12 day period of calm from the 18th March to the 30th March, new outbreaks were notified in 4 wilayates: 1 outbreak in Batna, 1 outbreak in Constatine in the East, one outbreak in Tebessa on the Tunisian border and final outbreak in the south of the wilaya of Saida in the west of the country approximately 150 Km from the Moroccan border. All the animals affected had not benefitted from vaccination.

It is worthwhile to note that in the last two wilayates affected, the outbreaks contained some cases in sheep and goats as well as in cattle. Samples were taken from sheep in the outbreak in Saida and sent to the WRL, Pirbright for confirmation.

After confirmation of the outbreak in Saida by Pirbright, another outbreak of ovine FMD was declared in Sidi Bel Abbes in sheep originating from the Saida region. The usual regulations were applied.

**C/ Prevention**

1. Sanitary prevention

As cited above, all of the media was used since the 22nd of February to sensitise farmers and to appeal to them to participate in the prevention programme to protect their livestock. With a conservative headline, it recommended them to:

1. Avoid acquiring new animals and introducing them into their herd.
2. Suspend animal movements
3. Apply disinfection to their barns and the access-ways to them
4. Forbid everybody entry to their farm.
5. Facilitate visits from veterinary inspectors and report all clinical signs which may be suspicious of being FMD.

Furthermore, the closure of animal markets and the banning of animal movements became effective on the 23rd February in the infected wilayates and on the 25th February for the rest of the national territory.

At the level of the infected farms, all cattle affected have been destroyed and those contaminated were slaughtered for meat, the carcasses were freed after maturation of the meat for 36 hours at 4°C, followed by disinfection and a mandatory period when the premises must be left empty, along with intensification of surveillance all

around the outbreaks. The owners of the slaughtered animals were compensated from funds maintained for zoosanitary protection.

2. Medical prevention

In the first week of the epizootic, ring vaccination around the outbreaks was operated, then the vaccination campaign was generalised to all of the national herd, including small ruminants along the frontier on the east of the country following the appearance of cases of FMD in sheep in Tunisia.

To this day, 1.1 million cattle have been primo-vaccinated and 160,551 cattle have received a booster vaccination after one month. Furthermore, 600,000 sheep and 34,733 goats have been vaccinated around the outbreaks.

**Central Wilayates**

| Location | Outbreaks | Species | Number of Animals in the Outbreaks | | | | |
|---|---|---|---|---|---|---|---|
| | | | Susceptible | Cases | Deaths | Destroyed | Slaughtered |
| Grand Alger | 38 | bovine | 696 | 199 | 5 | 194 | 497 |
| Bouira | 11 | bovine | 55 | 42 | | 42 | 13 |
| Tizi Ouzou | 22 | bovine | 644 | 297 | 32 | 265 | 347 |
| Boumerdes | 8 | bovine | 147 | 121 | 4 | 113 | 126 |
| | | ovine | 12 | | | | 12 |
| Blida | 15 | bovine | 184 | 141 | 3 | 141 | 40 |
| Total | 95 | | 1613 | 801 | 42 | 751 | 1040 |

**Western Wilayates**

| Location | Outbreaks | Species | Number of Animals in the Outbreaks | | | | |
|---|---|---|---|---|---|---|---|
| | | | Susceptible | Cases | Deaths | Destroyed | Slaughtered |
| Relizane | 12 | bovine | 90 | 31 | | 31 | 59 |
| Chlef | 4 | bovine | 16 | 5 | | 5 | 11 |
| Tlemcen | 1 | bovine | 8 | 4 | | 4 | 4 |
| Tissemssilt | | bovine | 69 | 33 | 1 | 32 | 36 |
| | 5 | ovine | 26 | | | | 26 |
| Mostaganem | | bovine | 105 | 57 | | 57 | 48 |
| | 10 | ovine | 95 | | | | 95 |
| Mascara | 7 | bovine | 32 | 32 | 1 | 31 | |
| Saida | 1 | ovine | 40 | 10 | | 10 | 30 |
| Sidi Bel Abbes | 1 | ovine | 40 | 20 | | 20 | 20 |
| **Total** | **41** | | **511** | **182** | **2** | **180** | **281** |

## Eastern Wilayates

| Location | Outbreaks | Species | Number of Animals in the Outbreaks | | | | |
|---|---|---|---|---|---|---|---|
| | | | Susceptible | Cases | Deaths | Destroyed | Slaughtered |
| Béjaia | 5 | bovine | 47 | 19 | | 19 | 28 |
| | | ovine | 10 | | | | 10 |
| | | caprine | 5 | | | | 5 |
| Bourdj Bou Arreridj | 3 | bovine | 16 | 3 | | 3 | 13 |
| | | ovine | 5 | | | | 5 |
| Guelma | 4 | bovine | 103 | 64 | | 64 | 39 |
| | | ovine | 181 | | | 181 | |
| | | caprine | 46 | | | 46 | |
| Sétif | 10 | bovine | 686 | 222 | | 222 | 464 |
| Oum El Bouaghi | 3 | bovine | 18 | 14 | | 14 | 4 |
| | | ovine | 115 | | | | 115 |
| Souk Ahras | 1 | bovine | 22 | 22 | 2 | 20 | |
| | | ovine | 50 | | 1 | 49 | |
| Tebessa | 1 | bovine | 12 | 7 | | 7 | 5 |
| | | ovine | 65 | 30 | | 30 | 35 |
| | | caprine | 110 | 5 | | 5 | 105 |
| Constantine | 1 | bovine | 9 | 3 | | 3 | 6 |
| Batna | 1 | bovine | 4 | 1 | | 1 | 3 |
| **Total** | **29** | | **1504** | **387** | **3** | **664** | **832** |

**Situation as of June 22, 1999**

Since the 33rd Session one new outbreak has been registered.

| | |
|---|---|
| Location: | Sidi Bel Abbes (Wilayate de l'Ouest) |
| Species Affected: | Ovine |
| Number of Susceptible Animals: | 30 |
| Cases: | 10 |
| Destroyed: | 10 |
| Slaughtered: | 20 |

Vaccination has continued, and to date has covered:

| | | |
|---|---|---|
| Bovine: | Primo-vaccination | 1 216 960 |
| | Booster | 430 221 |
| Ovine: | | 829 350 |
| Caprine: | | 48 561 |

**Annex 5**

# FOOT-AND-MOUTH DISEASE IN MOROCCO

## 1. The suspicion

The first case of foot-and-mouth disease was suspected on the 25/02/1999, in the province of Oujda, five days after its declaration in Algeria. Clinical signs and lesions typical of foot-and-mouth disease were observed in a 24 months old bullock in the municipal slaughter-house of the town of Oujda.

## 2. Diagnosis

The virus responsible was isolated by the national laboratory for biological production (Biopharma) on vesicular samples taken from suspect animals. Isolation was carried out on cell cultures and a cytopathogenic effect typical of foot-and-mouth disease virus was in evidence. Serotyping was carried out by the technique of sero-neutralisation. It was serotype O similar to the virus that had appeared in Algeria. Confirmation was also made by the World Reference Laboratory, Pirbright and the investigations relating to the sub-type are underway (Fax from Dr. MacKay on 14/3/99).

## 3. The Origin

The situation of Foot-and-Mouth Disease in Algeria, the geographical location of the outbreaks detected in Morocco, the nature of the animals affected and the chronology of the appearance of the suspect cases are the elements which would plead in favour of an introduction of Foot-and-Mouth Disease virus from Algerian territory by butchers bullocks probably in an illegal manner.

## 4. The Evolution

### 4.1 The chronology

The first cases of foot-and-mouth disease were declared on the 25/02/99 in the province of Oujda.

Two days later (27/02/99), two new outbreaks occurred in cattle sheds belonging to traders located in the centre of the town of Oujda (same location as the first outbreak).

The total number of cases detected in the eight outbreaks declared between February 27 and March 14, rose to 14 cattle, entirely belonging to traders whose cattle sheds were located around the municipal slaughter-house in Oujda.

The inspections carried out on the whole of the national territory did not reveal different outbreaks and a lull of approximately two weeks was observed until the appearance of the disease in the provinces of Khouribga and Beni Mellal (centre of the Kingdom) on March 31 and April 3, 1999 respectively. The origin of these appearances, approximately 600 km from the primary outbreak, was probably due to conveyance by cattle trucks bringing livestock from the provinces of the east of the country at the time of the festival of Aid Al Adha.

The last case dates from the 03/04/1999.

### 4.2 Number of Cases and Outbreaks

From the appearance of the disease and until April 3, 1999, 11 cases were declared in eight cattle holdings totalling 153 cattle of which 32 showed clinical signs of Foot-and-Mouth Disease.

Almost all of the animals affected are bovine males aged between 12 and 24 months.

Summary chart of the outbreaks:

| Geographical Location | Number of Outbreaks | Species | Total Number of Animals in the Outbreaks | | | | |
|---|---|---|---|---|---|---|---|
| | | | susceptible | cases | dead | destroyed | slaughtered |
| Oujda centre | 8 | Bov | 113 | 14 | 0 | 14 | 99 |
| Khouribga | 2 | Bov | 31 | 17 | 0 | 17 | 14 |
| Beni mellal | 1 | Bov | 9 | 1 | 0 | 1 | 8 |
| **Total** | **11** | **Bov** | **153** | **32** | **0** | **32** | **121** |

## 5. Measures Taken

### 5.1 Before confirmation: The alert and the mobilisation

- Meeting of the national committee of vigilance against Foot-and-Mouth Disease to adopt suitable control measures.
- Reinforcement of monitoring along the border with Algeria in collaboration with the local authorities and the Royal Gendarmerie.
- Launching of broad inspections in the Eastern region and in the neighbouring regions.
- Establishment of provincial committees of vigilance against Foot-and-Mouth Disease in all the provinces of the Kingdom.
- Mobilisation of the available security stocks of anti-FMD vaccine (600 000 doses of type O Manisa).

## 5.2 After Confirmation

* Sanitary Measures

- Delimitation of the infected area's perimeters by gubernatorial decree (provinces of Oujda, Khouribga and Beni Mellal)
- Restriction of animal movements inside the infected area's perimeters with the closure of livestock markets and prohibition of gatherings of susceptible animals.
- Destruction of the affected animals and slaughter of the in-contact animals with disinfection and incineration of the manure of the cattle sheds concerned. To date, 153 cattle were slaughtered of which 32 were destroyed with compensation for the owners.
- The immediate destruction and burial on-the-spot of any susceptible animal intercepted close to the borders and which could have been introduced illegally across the borders. The number of animals intercepted and destroyed since the appearance of the epizootic (25/02/99) rose to 150 sheep.

* Obligatory Vaccination

Given that cattle were subject to annual vaccination against Foot-and-Mouth Disease type O from 1992 to December 1997, that a blanket of protective immunity already existed in cattle and that the Direction de l'Elevage had a security stock (vaccine of serotype O Manisa), immediate vaccination of cattle was launched in the provinces bordering Algeria (Oujda, Berkane, Figuig, Jerrada, Errachidia and Ouarzazate).

This vaccination was extended also to the buffer zone made up of the provinces bordering on those mentioned above (Taza, Taounate, Fès, Al Hoceima, Boulemane and Nador).

In addition, and following the appearance of outbreaks away from the primary zone of infection in Oujda, immediate generalisation of the vaccination campaign to cover the national cattle population was rapidly initiated in all the provinces of the Kingdom and was reinforced in the buffer zone and in the northern provinces in order to avoid the extension of the infection.

At present, 1 125 000 doses of homologous anti-FMD vaccine have been distributed to the entire veterinary services. Further distributions will be released according to the calendar indicated hereafter:

- 400 000 doses, on the 22/04/99
- 1 000 000 doses, on the 26/04/99.

To this day, more than 1 000 000 cattle have been vaccinated against Foot-and-Mouth Disease since the beginning of vaccination.

All the necessary provisions were taken for completion of the vaccination campaign before May 10, 1999 and will cover more than 2 500 000 cattle; that is to say a vaccination coverage of more than 85% of the national herd.

An booster campaign for young cattle (30% of the national herd) will be launched on the completion of the generalised vaccination campaign.

* Surveillance Established

- Serological Survey

A serosurvey undertaken on a representative sample of the cattle population after the appearance of the first outbreaks, revealed, by the seroneutralisation technique in cell cultures, that on average 60% of cattle still had antibodies at a protective level against FMD infection (titres > 1,9 Log Dn50). In the light of the results obtained, anti-FMD vaccination was launched in the regions where weak levels of protective antibodies were observed (haouz, gharb, sidi kacem, tadla, beni mellal) and will also concern young animals not having been the subject of former vaccinations.

In addition, it is envisaged that an epidemiological investigation will be conducted after the completion of the vaccination campaign in order to evaluate the protection acquired by the national cattle population against this disease

- Inspections and Surveillance of susceptible species

- Reinforcement of the system of epidemio-surveillance for the disease on all the national territory.
- Launching of prospective investigations on a grand scale on all of the wilayas and provinces of the Kingdom. The total number of inspected animals, to date, amounts to 55% of the national livestock population susceptible to Foot-and-Mouth Disease.

**Annex 6**

## REPORT ON FOOT-AND-MOUTH DISEASE IN TUNISIA

*(from the 13TH March to the 5th April 1999)*

### I - Regulations

- Foot-and-Mouth Disease is considered legally as a contagious disease.
- As such, it is subjected to the legislative and lawful provisions fixed by the decree n°84-1225 of October 16, 1984 (relating to the nomenclature of animal diseases considered contagious and to the general control measures used against these diseases) and by the decree of the Minister for the Agriculture of November 21, 1984 (organising the control of Foot-and-Mouth Disease).

### II – Total Livestock Numbers

The national herd consists of 5 518 000 sheep (including 3 942 000 ewes), 1 103 000 goats (including 788 000 females) and 443 000 bovines (cows, heifers and young cattle of more than 3 months of age).

### III – Serotypes Identified

During the last two decades, serotypes O and A have been identified in Tunisia in the following periods:

- 1975 serotype O
- 1979 serotype A
- 1982 serotype A
- 1989/1990 serotype O (at the beginning of an ovine epidemic)
- 1994 serotype O
- 1999 serotype O

The determination of the phylogenic profile of the strain isolated in March 1999 is underway at the World Reference Laboratory. Its antigenic study showed that it is close to the O Manisa strain.

### IV – Vaccination:

- Before December 1989 (Foot-and-Mouth Disease epidemic in sheep) vaccination against this disease was carried out only in cattle.
- Since that time, vaccination was extended to sheep, goats and to a lesser extent camels.
- Vaccination of cattle, sheep and goats take place in organised annual campaigns, during the period October to January.

- The vaccination campaigns are free. They are covered by the budget of the Ministry of Agriculture and implemented by the Veterinary Service.
- The vaccine used in cattle and camels is a trivalent (O, A, C) vaccine, while that used in small ruminants is a monovalent (O) vaccine. The O valance used in the trivalent vaccine and in the monovalent type O vaccine, is the vaccine isolated in Tunisia in December 1989.
- Since the epizootic of December 1989, 10 national vaccination campaigns against Foot-and-Mouth Disease have been carried out with an average rate of vaccination cover of 65% in the small ruminant and of 73% in cattle.

## V – Evaluation of the Vaccination Campaigns

- 2 serosurveys with the objective of evaluating the protection conferred by the vaccination campaigns were carried out in Tunisia.
- The first investigation, carried out in 1990 with a representative sample of animals having blood samples taken 30 days after vaccination, gave the following results:

| Species | Titre ≥ 200 | Titre > 60 |
|---|---|---|
| Bovine adults | 82% | 19% |
| Young bovines | 67.6% | 19.4% |
| Ovine adults | 60.3% | - |
| Young ovines | 53.8% | - |
| Goats | 38.5% | - |

- The 2nd serosurvey, which took place in 1995 with the collaboration of the WRL, allowed the determination of the following percentages of ovines protected (considering a titre of 100 as protective)
  - Day 0 43%
  - Day 30 72%
  - Day 180 59%

## VI – Sanitary Situation from the 13 March to the 5 April 1999

- No new outbreak has been detected since March 13, 1999.
- All susceptible animals in the two outbreaks, confirmed on the 2 and 12 March 1999, were slaughtered and the farms concerned were cleaned and disinfected.

## VII – Control Measures Taken

### *1) as from February 23, 1999:*

As of the receipt of information from OIE indicating the existence of a vesicular-type disease in Algeria, the following measures were taken:

- Communication of information to the regional veterinary services of the 23 gouvernorats and to private veterinary surgeons
- Control of the movements of animals along the borders
- Prospective inspections of dairy farms, cattle markets and slaughter-houses in the border gouvernorats.

***2) as from February 25, 1999:***

Following the declaration of the first outbreaks of Foot-and-Mouth Disease in Algeria, the measures indicated below were reinforced and supplemented by the following actions:

- Meeting of the vigilance committee vis-à-vis Foot-and-Mouth Disease.
- Communication of information relating to the confirmation of FMD in Algeria to the regional veterinary services of the 23 gouvernorats, to private veterinary surgeons and stockbreeders organisations.
- Evaluation of the stocks of vaccine available on a central scale and a regional scale.
- Launching of a booster vaccination campaign of cattle, sheep and goats in the border gouvernorats.

***3) as from March 2, 1999 :***

Following the confirmation by the IRVT, on March 2, 1999, of the first outbreak of Foot-and-Mouth Disease in Tunisia, all measures taken previously (notably booster vaccination) were extended to all the territory.

**NB: booster vaccination** of all bovines and small ruminants whose last vaccination was more than three months previously. On April 3, 1999, a total of 193 686 bovines and 1 083 628 small ruminants were vaccinated out of 313 960 bovines and 2 102 000 small ruminants envisaged, which corresponds to a rate of realisation of 62% for bovines and 52% for small ruminants. The respective quantities of vaccine acquired for this campaign contain the strain O Manisa in accordance with the recommendations of the WRL, Pirbright.

**VIII – Evolution of the situation**

The situation, which is currently under control, will most probably develop in a favourable way for the following reasons:

- speed in the implementation of conservative measures and control measures
- good vaccine cover of bovine, ovine and caprine populations (annual vaccination campaigns since 1989/1990).
- reinforcement of vaccine protection by the booster vaccination currently underway
- availability of laboratory diagnosis at national level

- slaughter of almost 500 000 sheep at the time of the Aid El IDHHA on March 27, 1999.

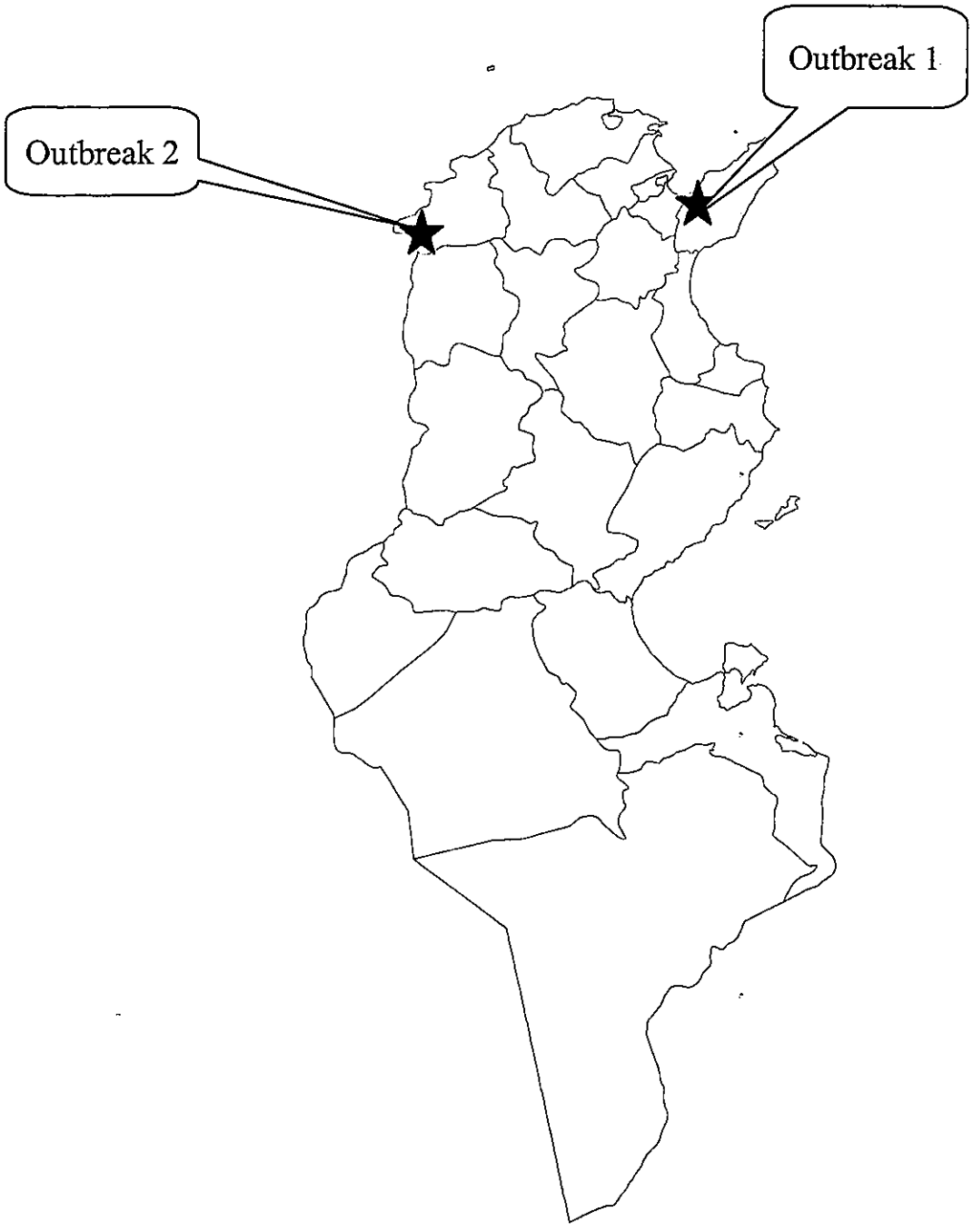
## IX – Importation

During the last 12 months, imports of animals of susceptible species and their products are distributed as follows:

- fresh and frozen beef (European Union countries and New Zealand)
- heifers (European Union countries)

Fraudulent introductions of sheep coming from Algeria are noted.

## SUMMARY CHART OF OUTBREAKS OF FOOT-AND-MOUTH DISEASE
## Up to April 5, 1999




| OUTBREAK | GOUVERNORAT | SUSCEPTIBLE SPECIES * | | CASES | |
|---|---|---|---|---|---|
| | | Bovine | Ovine | Bovine | Ovine |
| 1 | Nabeul | 28 | 110 | 22 | 5 |
| 2 | Jendouba | 2 | 7** | 1 | 3 |
| | **TOTAL** | **30** | **117** | **23** | **8** |

* All the susceptible animals at the outbreak were slaughtered
** In addition to the 7 sheep listed in the farm at the time of the visit of the veterinary surgeon, the farmer reported the death of 2 lambs during the week preceding this visit.

# FOOT-AND-MOUTH DISEASE OUTBREAK 1

*Updated on April 5, 1999*

## Geographical Location

Cattle sheds belonging to a fattener, located approximately 3 km from the town of Grombalia, gouvernorat of Nabeul.

## First observation of disease

- Date: Monday 1st March 1999
- Visit by the district veterinary surgeon following a call from the owner
- Existing population on the farm: 28 cattle and 110 sheep.
- Cattle: 23 male "Pie-noire" cattle (23 bullocks aged from 18 to 24 months) and 5 bovine females (2 cull cows of the local breed, 2 heifers - one of which was of the local breed and a 6 month old calf).
- Sheep: a follower ewe and 108 male and female lambs from approximately 6 to 10 months old, the majority of which were of the breed "queue fine de l'ouest".
- Symptoms and lesions of Foot-and-Mouth Disease were found on 5 bovines (4 bullocks and 1 heifer).

## Second visit

- Date: Tuesday 2 March 1999
- Observation of symptoms and lesions of Foot-and-Mouth Disease on 12 other bovines (bullocks).
- Observation of lameness in 5 sheep (presence of ulcerous lesions at the level of the interdigital space that had secondary infections).
- Samples of vesicular epithelium (bovine) and blood (13 bovines and 5 sheep) were taken.
- Confirmation of Foot-and-Mouth Disease (virus type O) by IRVT (ELISA) at the end of the afternoon of March 2, 1999.
- Forwarding of a aliquot of all the samples taken (of bovine lingual epithelium) to the WRL, Pirbright on March 3, 1999.

## Third visit:

- Date: Wednesday March 3, 1999.
- Observation of 5 new cases of FMD
- Blood sampling of 77 sheep.

**Regulatory measures taken:**

- Legal basis: decree n°84-1225, 16 October 1984 relating to the MLRC and decree of the Minister for the Agriculture of 21 November 1984 specific to the control of FMD
- Promulgation of a decree of infection by the governor of Nabeul.
- At the outbreak, recounting and illegal movement of the animals was forbidden: 1st March 1999.
- Slaughter of all the animals (28 bovines and 110 sheep) over two visits.
- Destruction of the litter and the manure.
- Cleaning and disinfection on March 9 1999.
- Ring booster vaccination (cattle, sheep, goats): starting March 3, 1999.

**Epidemiological Data:**

- The origin of 26 of the 28 cattle was identified. The last introduction of bovine animals to the farm (18 fattening bullocks from two large farms) was carried out on the 22 February 1999.
- The batch of 110 sheep consisted of purchases carried out on various dates, the last of which went back to February 22 at a livestock market in Tunis.
- No introduction of animals to the farm was carried out after the 22 February 1999.
- During the period from February 22 to March 1 1999, four bullocks which originated from another farm, left the premises for a slaughter-house in the area.
- All the farms of origin of the cattle were visited between the 2nd and the 4th March, no clinical signs of FMD were observed there and they were placed under surveillance
- The affected bullocks had been vaccinated only once, a vaccination carried out in December 1997 - January 1998.

**Vaccination of livestock in the region of Grombalia**

- The last anti-FMD vaccination campaign carried out in the district of Grombalia began on September 15, 1998 and was completed on January 14 1999.
- A total population of 2 955 cattle (84%), 20 015 sheep (83%) and 2 072 goats (41%) was vaccinated during this campaign.

# FMD OUTBREAK 2

*Updated on April 5, 1999*

## Geographical Location

Cattle sheds belonging to a farmer, located 5 km from the Tunisia-Algeria border, beside the road connecting Ghardimaou to the frontier station of Jlaïel, Delegation of Ghardimaou, gouvernorat of Jendouba.

## Observation of the disease

- Date: Thursday 11 March 1999.
- Visit carried out by the district veterinary surgeon.
- Existing population on the farm: 2 cattle and 7 sheep.
- Cattle: a crossbreed cow and her daughter (one heifer).
- Sheep: two rams, 3 ewes and 2 lambs approximately 2 months old of the "queue fine de l'ouest" breed.
- Symptoms and lesions of Foot-and-Mouth Disease were present on the heifer and the sheep (lameness in the rams and a lamb).
- Sampling of vesicular epithelium and blood from the heifer and blood from the sheep.

## Laboratory Confirmation

- Confirmation of Foot-and-Mouth Disease (virus type O) by IRVT (ELISA) on March 12, 1999 at the beginning of the afternoon
- Aliquots of the samples (lingual epithelium) will be dispatched to the WRL, Pirbright.

## Regulatory measures taken:

- Legal basis: decree n°84-1225, 16 October 1984 relating to the MLRC and decree of the Minister for the Agriculture of 21 November 1984 specific to the control of FMD
- Promulgation of a decree of infection by the governor of Jendouba.
- At the outbreak, recounting and illegal movement of the animals was forbidden: 12$^{th}$ March 1999.
- Slaughter of all susceptible animals at the outbreak.
- Cleaning and disinfection at the outbreak.

**Epidemiological Data**

- Sedentary Farm
- No introduction of susceptible animals (cattle, sheep and goats) for approximately one year.
- The animals on the farm had not been vaccinated during the campaign of 1998 (October - December).
- According to the farmer, the lameness began approximately one week before the date of the first visit of the veterinary surgeon and the death of 2 lambs approximately two months old was also recorded during this period.

**Annex 7**

## FOOT AND MOUTH DISEASE IN EGYPT (F.M.D.)

* History of FMD disease in Egypt

- Foot and mouth disease (FMD), one of the most wide spread diseases affecting cloven-footed animals, which has a detrimental effects on meat and milk production.
- The disease has been reported in Egypt over the last 50 years. The first detection of the disease was in 1950 when strain $SAT_2$ caused an outbreak.
- The most sever outbreak in Egypt took place in February 1987.
- The disease affected 63,430 cattle and buffaloes, 11,178 sheep and goats and 230 swines with mortality rate reaching 4%, 2% and 100% respectively.

**Table 1: Number of infected and dead animals with FMD**

| Year of the outbreak | Animal species | Infected cases | Deaths | |
|---|---|---|---|---|
| | | | N° | % |
| 1987 | Bovine | 63 430 | 2 521 | 4 |
| | Caprine, Ovine | 11 178 | 186 | 2 |
| | Swine | 230 | 230 | 100 |

- In March 1993 an outbreak took place in 11 governorates, twenty foci represented by 2027 cattle, 1827 buffaloes were clinically infected.
- In November and December 1997 sporadic cases of mild FMD took place.
- In 1998 no cases.
- The virus was isolated from tissues of infected animals and identified by standard criteria as Mouse inoculation, CF, ELISA and Polymerase Chain Reactor (PCR).
- Serological techniques have confirmed the virus as an $O_1$ strain, which could be the same serotype reported in Egypt.

***Table 2: Epidemic Foci of FMD in Egypt**

| Year | Number of foci | Locations |
|---|---|---|
| 1993 | 20 | Sharkia, Dakahlia, Assiut, Monoufia, Kaliobia, Gharbia, Ismailia, Dumiat, Cairo, Beni suef, Kafr El Sheikh |
| 1994 | 0 | |
| 1995 | 0 | |
| 1996 | 0 | |
| 1997 | 5 | Monoufia, Kaliubia, Giza, Dakahlia and Fayoum |
| 1998 | 0 | |

*FMD Control Program*

**1) The Quarantine measures:**

a) The quarantine measures applied in Egypt, prohibits the importation of alive bovine, ovine, caprine or deboned meat or animal products except from countries free from FMD at least 6 months before importation to prevent the entrance of strains other than strain $O_1$ to the country.

b) The newly imported animals are put in quarantine stations for 33 days and vaccinated against FMD with serotype O1 vaccine.

**2) Notification**

a) Disease surveillance system is continuously adopted by the national veterinarians distributed all over the country working in different positions as field vets, abattoirs, vaccination campaigns and quarantine stations. Notification can be also received from owners or any member of the public. The veterinary directorate notifies the chairman of the GOVS who immediately direct a diagnostic team to investigate and provide an expert opinion, samples are taken to the diagnostic labs.

b) Notification for the health directorate in the governorate to apply the sanitary measures for the human beings.

**3) Infected farms**

Must be put under quarantine measures for 21 days after the recovery of the last infected case or death. Animals in contact and animals in the surrounding area must be vaccinated (Ring vaccination, a buffer zone)

**4) Sanitary measures**

Disinfecting of all premises using Formaline 1-2%/Sod. Carbonate 4% or Sod. Hydroxide 2%. All the farm utensils and tools must be also disinfected. Hygienic disposal of animal wastes and contaminated rations.

**5) Treatment**

After taking samples for lab. Diagnosis, lesions are disinfected with Sod. Carbonate 2% or Boric Acid 4%, Glycerol Alum or Glycerol Borax. Washing feet with Copper Sulfate 4%.
Udder and teats lesions are washed with Boric Acid 4%.
Using antibiotics to combat the secondary invaders.

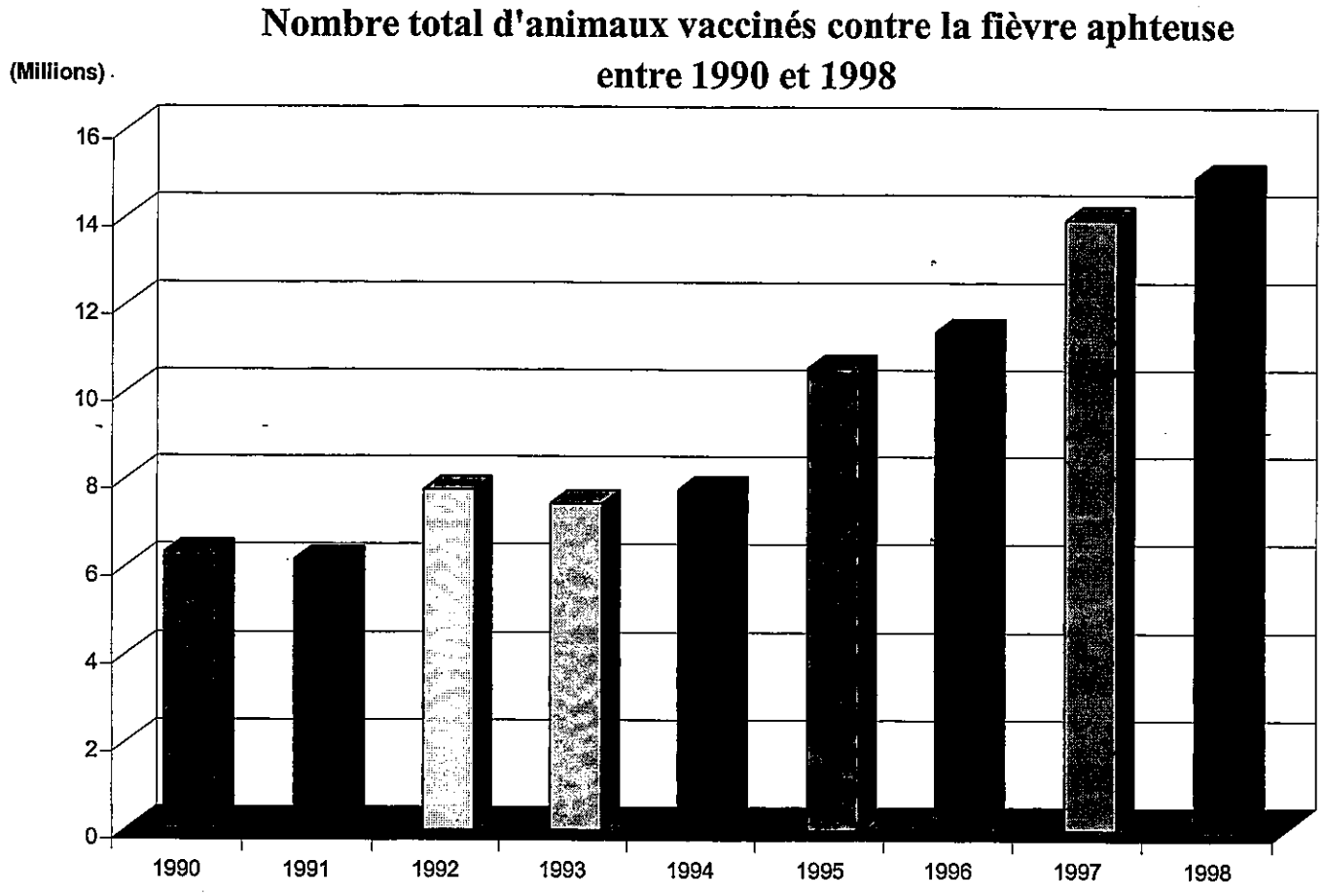
**6) Vaccination**

Using the binary ethylene imine inactivated vaccine produced from the locally isolated strain sero type $O_1$. Hydro gel aluminum adjuvant is used. The vaccine is produced in VSVRI at Abbassia.
We vaccinate cattle, buffaloes, sheep, goat and camel every 6 months (twice yearly) and every 4 months for dairy farms, calves are vaccinated at age of 6 weeks.

In Egypt vaccination against most of the infectious and contagious disease is obligatory and free of charge.

***Table 3. The Number of vaccinated animals against FMD (1990-1998)**

| Year | Cattle | Buffalo | Sheep | Goat | Camel | Total |
|---|---|---|---|---|---|---|
| **1990** | 2 572 170 | 2 490 030 | 1 228 853 | 41 005 | 11 | 6 332 069 |
| **1991** | 2 435 848 | 2 223 265 | 1 306 607 | 208 506 | 1 348 | 6 175 574 |
| **1882** | 3 025 460 | 2 542 317 | 2 032 437 | 165 565 | 1 927 | 7 767 706 |
| **1993** | 2 941 157 | 2 413 309 | 1 912 368 | 178 948 | 5 771 | 7 451 553 |
| **1994** | 2 765 637 | 2 425 041 | 2 302 477 | 260 542 | 22 769 | 7 776 466 |
| **1995** | 3 554 219 | 3 195 755 | 3 461 471 | 313 536 | 46 158 | 1 0 571 139 |
| **1996** | 3 703 673 | 3 533 253 | 35 755 594 | 494 728 | 90 267 | 11 397 480 |
| **1997** | 4 609 987 | 4 014 706 | 4 311 909 | 850 444 | 180 626 | 13 967 672 |
| **1998** | 4 929 209 | 4 022 341 | 4 929 371 | 930 633 | 128 256 | 14 939 810 |



## 7) Sero-surveillance

Sero-surveillance to assess the immune status after Vaccination Campaigns, 5112 animal serum samples has been collected during 1998 and the laboratory results were satisfactory.

**Table 4. Total Number of collected serum samples for sero Surveillance for assessing the immune status of vaccinated animals against FMD from 1995 to 1998.**

| Year | Total samples | Protected | Non protected | % protection |
|---|---|---|---|---|
| **1995** | 4 620 | 2 727 | 1 893 | 59 |
| **1996** | 2 520 | 2 407 | 113 | 95.5% |
| **1997** | 5 037 | 4 355 | 692 | 86.4% |
| **1998** | 5 112 | 4 401 | 711 | 86.1% |

**Annex 8**

## IN THE NAME OF OMNIPOTENT

## THE FOOT-AND-MOUTH DISEASE STATE OF AFFAIRS IN ISLAMIC REPUBLIC OF IRAN IN 1998

### Introduction

The area of I.R. of Iran is about 1 648 195 km, it possesses 28 provinces. The livestock population comprise 9.3 million head cattle and buffaloes, 79 million sheep and goats approximately.

### Background and antecedent

FMD is endemic in Iran owing to A & O serotypes. Besides, the exotic serotypes (Asia, SAT1) due to illegal entering of livestock previously caused regional and allover epidemic within the country livestock population. The Asia had been entered several times and SAT1 only one time in 1961 within the allover of the country, subsequently, the necessary IVO's efforts occasioned by which all the epidemics have been eradicated. The containment strategy for control is carried out by bivalent vaccine, (O & A Serotypes), sanitary and quarantine measures for many years.

The FMD epizootic took place in the most regions of the country in 1998. The disease disseminated throughout the country, accompanying with more increasing of incidence rate, from the first of August.

The incidence rate was higher than endemic level of expectancy limit. So that, according to reporting system data, (Group A diseases of surveillance system) the diseases were prevalent on 50 outbreaks in October 1998. The figure in comparison with September's figure (last month) indicated that has increased 58%. The disease occurred in 164 outbreaks (townships) in the autumn. In 1997, about 105 townships were contracted by FMD. The subtle points, in this connection indicated that the FMD has been more sever virulent identity and caused high casualties and mortalities, particularly in lambs, in the most regions of the country.

Each and every, in the Iran due to presence of efficient mechanisms for permanent surviving and circulating of virus, in the course of years the conditions that FMD occurrences have been happened in the form of the epizootic. Many epizootic mostly take place in Iran owing to some factors, which are the following:

- Increasing of compression of non-immune livestock, which by make a susceptible population
- Antigenic drifts in endemic serotypes
- Entering and circulating of exotic serotypes.

Wholly, in this epizootic, the increasing of non-immune livestock population were instrumental in the taking the form of epidemic in the most area of country.

IVO profits from domestic and international laboratories for confirming of the epizootic and virus serotyping. In the late epidemic besides of domestic lab. (1998) Pirbright tested of 17 samples from 14 outbreaks, the results of 15 samples indicated that O serotype, by which were no antigenic drifts. Furthermore, two lab. results confirmed A Serotype.

Considering of lab. Results and low level of non-vaccinat4ed population, ascertained that the late epizootic was owing to O serotype of FMD virus.

Conclusionly, it looks as if that the low level of vaccination coverage in the course of years caused the epidemics intermittently.

The coverage rates of vaccination were 30% and 15% for cattle and small ruminants (sheep and goats) respectively. The importance of economical and financial losses due to FMD outbreaks necessitate that for prevention and control, not only the cattle ought to take into consideration, but also all the susceptible livestock should be put under observation.

**Collation of vaccination coverage rate against FMD in 1997 and 1998**

| Species | Population in 1997 | Percentage of vaccination in 1997 | Population in 1998 | Percentage of vaccination in 1998 |
|---|---|---|---|---|
| sheep & goat | 77 874 000 | 8.62 | 791 132 000 | 11.18 |
| cattle | 8 638 000 | 21.82 | 9 374 000 | 26.91 |

Incidence rate of FMD in the infected flocks in 1998 are the following:

Cattle: 21.5%
Sheep and goats: 19%

Statistical indexes in various climates of the country in 1998

| Ecological conditions | Incidence rate within the infected flocks |
|---|---|
| The south coasts of Caspian Sea | 12.50 |
| The west mountain region | 16.35 |
| The south-west mountain region | 20.00 |
| The central of Iranian plateau | 12.50 |
| The north costs of Persian Gulf | 19.00 |

Some of the townships here in Iran are recognized as the main endemic area.

The factors such as: highly level of ruminants population compression per surface – the considerable number of livestock entering to region – the increasing of fattening farms – the optimum conditions of climate for dissemination of agent.

All of the above-mentioned factors are the parts of predisposing factors surviving of virus and re-occurrence in different months and seasons and finally being endemic in that area.

**Annex 9**

# THE GLOBAL STATUS OF FOOT-AND-MOUTH DISEASE AND ITS RELEVANCE TO CONTROL AND ERADICATION EFFORTS IN SOUTH-EAST ASIA

**Extract of a paper presented at the 5TH meeting of the SEAFMD Sub-Commission, Cambodia, 22-26 February 1999**

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## Relevance of the experiences of other regions to South East Asia

Since FMD has been controlled and eradicated from most of Europe and a large part of South America the focus for control and eradication has shifted to South East Asia. The drive for this has come from different quarters: from international organisations and from individual countries which have recognised the need to increase agricultural productivity to meet the demands for more protein to feed the rapidly expanding populations; from certain countries which want to eradicate the disease to increase their hard currency earnings through increased export, in particular of pig meat and pork products to Japan; and finally pressure from vaccine producers who face a declining market elsewhere.

South East Asia can learn lessons from the experiences gained in the control and eradication of FMD in other regions of the world but lessons can also be learnt from campaigns within South-East Asia itself, for example from the experiences of Indonesia which mounted a very successful programme during the 1974-81 which lead to the eradication of the disease from Bali and Madura in 1978, and from South Sulawesi and East Java in 1981. The last case of FMD was reported in Kebumen, Central Java in December 1983, while the last vaccination in Java against FMD was at the end of 1985. All of Indonesia was declared free in 1986 (Soehadji and Setyaningsih 1994).

The successful campaigns in Europe, including the former USSR, South America, southern Africa and Indonesia have certain elements in common which should be considered when plans are being formulated to control and eradicate FMD in the South-East Asian region. These include:

- each of the countries of the region should formulate a national plan for the control and eradication of FMD which has the legal and financial support of the government and the appropriate resources at all levels i.e. personnel and technical support, to effectively undertake and sustain the activities of the campaign through to the achievement of its final objectives. Guidelines for formulating national contingency plans for FMD have been provided in a document prepared jointly by the CEC, OIE and the European Commission for the Control of FMD and published by FAO (Report 1993).

- the technical requirements of the campaign i.e. surveillance, diagnosis, implementation of control measures, vaccine availability and delivery systems etc. must be given sufficient resources if they are to be effective. There should be a

central fund which is protected against the possibility of regional economic crises.

- from the earliest possible stage, representatives of the livestock industry in each country should be invited to participate in control campaigns and be involved in decision-making at all levels.

- countries in the region should benefit, especially those which share land borders with their neighbours, from the establishment of regional groups to develop common control strategies.

- the control of the movement of livestock within and between countries will be essential if the areas which have achieved a high health status are to be protected against re-introductions of virus from areas of lower status. This will require a knowledge of livestock trade movements and probably check-points and barriers to reinforce the controls. Colour-coded ear-tags have been found to be a useful in several parts of the world for identifying the origin of animals and in helping to deter illegal movement.

- adequate supplies of safe, potent vaccines of appropriate antigenic specificity are essential to reduce the prevalence of disease to levels where it will be economically acceptable to cease vaccination, implement stamping out and move towards the final goal of virus eradication.

- campaigns should have a publicity group whose main responsibility is to ensure that farming communities and the livestock industry are aware of the campaign and its potential benefits.

- the progress of a campaign should be evaluated at regular intervals including the production of □running□ cost-benefit analyses.

**Requirements for control which are unique to South East Asia**

The domestic livestock in South East Asia have some special features. The domestic pig predominates throughout the region and the water buffalo population is more numerous there than in other parts of the world. Pigs, especially, play an important role in the epidemiology of the disease and so there is a requirement for safe, good quality vaccines in sufficient quantity to protect them. There is a need for the establishment of internationally accepted protocols for testing FMD vaccines for pigs and for an independent body to take responsibility for overseeing the procedures. These shortcomings were clearly illustrated during the 1997 FMD epidemic in Taiwan Province of China and highlighted during the last meeting of the OIE Sub-Commission for FMD in South East Asia (Report 1998). The issues have been brought to the attention of the OIE Standards Commission and the proposals of that body are awaited.

Infected pigs have been defined as amplifier hosts for FMD virus (Sellers and Parker 1969). In the European context this was with reference to the role of the pig in excreting enormous quantities of airborne FMD virus, which under certain climatic and epidemiological conditions can result in an explosive spread of the disease. While the evidence suggests that airborne spread of FMD is not a common event in South East

Asia, the pig still fits the definition of an amplifier host in that it is frequently the species which is primarily infected by virus circulating in contaminated waste food which then leads to the initiation of outbreaks. The adoption of procedures to prevent the spread of FMD virus through waste food will be essential if the virus is to be eradicated from South East Asia.

An other feature of the epidemiology of FMD which appears to be currently unique to South East Asia is the occurrence of species-adapted strains, in particular strains which are highly adapted to pigs. This has been recognised in Taiwan Province of China, The Philippines and Vietnam (Dunn and Donaldson 1997; Report 1998a). The capability of pig-adapted strains to cause very serious economic impact and the need for an early warning of their presence, therefore, were highlighted at the last meeting of the OIE Sub-Commission for Foot and Mouth Disease in South-East Asia (Report 1998a).

The part which the water buffalo plays in the epidemiology of FMD in South East Asia has not been fully investigated and is worthy of further attention, especially to know more about the maintenance and persistence of FMD virus in that species and whether there are special requirements for vaccines to be effective.

**Diagnostic requirements to accelerate FMD control in South East Asia**

Under the FAO/IAEA sponsored Coordinated Research Programme entitled □Improved diagnosis and control of FMD in South East Asia using ELISA-based technologies□ the methods required to detect FMD viral antigen and antibody were successfully introduced into the national FMD laboratories of South East Asia. The priority activity for the laboratories of the region should be to use their diagnostic and surveillance capabilities to support national control and eradication schemes. The veterinary authorities should ensure that their field officers make maximum use of laboratory support to investigate all suspected cases of FMD. Unfortunately, at present the number of samples being collected is too few in most of the countries in the region for conclusions to be drawn about the true prevalence and incidence of disease and for assessments to be made about the appropriateness of the antigens in vaccines. When outbreaks occur, therefore, judgement of the suitability of vaccine is based on whether vaccination prevents further spread or not. This is a high risk strategy and one which will need to be changed if control is to be more effective. Planning and accurate costing of resources for campaigns will not be possible until comprehensive and reliable surveillance data are available.

When national laboratories are routinely using their diagnostic and surveillance tests they should consider expanding their capabilities to acquire a tissue culture capability. A few laboratories have already taken this step. A tissue capability enables a laboratory to isolate viruses from field samples, to grow them and send aliquots to the regional laboratory or the WRL for antigenic and genomic analyses. Laboratories with the capability can also confirm ELISA results by using virus neutralisation tests. The liquid phase blocking - ELISA is highly sensitive and ideal for screening large numbers of serum samples. However, a small number of samples will inevitably give equivocal results and so further testing by virus neutralisation, the definitive confirmatory test, is necessary to obtain a final result. Clearly, this requires a tissue culture capability.

The antigenic characterisation of field isolates has two functions: (i) to confirm the appropriateness of current antigens in vaccines; and (ii) to determine if there is a requirement for a new strain to be included in the vaccines. These activities fall within the remit of a regional laboratory. However, that does not preclude the possibility of a national FMD laboratory undertaking those activities should it have the capability. The WRL remains willing to provide additional support if it were required.

Nucleotide sequencing has been shown by the WRL, some national FMD laboratories in Europe and the FMD laboratory in South Africa to be a valuable tool for identifying the origin of outbreaks. The technique is also very useful for many research activities. There would be scope to use the technique in South East Asia for molecular epidemiological purposes and possibly for research, for example to investigate the duration of persistence in the water buffalo. The method requires specialist knowledge, equipment, reagents and access to sequence data banks. It is expensive and so the potential benefits would have to be balanced against the cost. In the author's opinion, Malaysia, The Philippines and Thailand are countries where there would be grounds for using the technique - primarily for molecular epidemiological investigations of the origin of outbreaks.

Donaldson and Kihm (1996) reviewed developments in diagnostic methods and other techniques which could accelerate the control and eradication of FMD. They pointed to the need for a reliable, practical, rapid and sensitive method to differentiate infected from vaccinated animals. The applications of the test are two-fold. Firstly, when a country or zone has not reported any outbreaks of disease for some months and the veterinary authority is considering the possibility of ceasing vaccination then the test can be used to verify that virus is no longer circulating. Secondly, when an FMD-free country or zone experiences an outbreak and uses emergency ring vaccination in the face of disease the test can be employed to test vaccinated animals before they are allowed to leave the vaccination zone to ensure that they are not carrying virus. In the South East Asian context the author suggests that there would be applications for the test in The Philippines, Malaysia and Thailand.

Several different types of test have been developed to differentiate infected from vaccinated animals. Most depend on the fact that cattle which have been infected with FMD virus can be differentiated from those which have been vaccinated on the basis of the detection of antibody to one or more of the non-structural (NS) proteins of the virus. During the period 1994-97 the CEC sponsored a concerted action programme in which several EU laboratories collaborated to investigate the potential of using assays measuring antibody to the NS proteins of FMD virus to differentiate infected from vaccinated animals. A number of national FMD laboratories world-wide pursued similar objectives during the same period. At a meeting held at the Institute for Animal Science and Health, Lelysad, The Netherlands on 28th and 29th April 1997 the findings were presented and discussed (Report 1998b). The most promising results have been obtained with an indirect ELISA which uses as antigen the NS polyprotein 3ABC expressed as a fusion protein in *E. coli.* Measuring antibody to 3ABC on a herd basis is useful to detect exposure of vaccinated herds to live virus and herds so identified can then be examined for the presence of virus. However, there are serious limitations to the reliability of the use of antibody to NS proteins for the detection of carrier animals, especially at the individual animal rather than the herd level, and

further work in this area is required. Presumably this will be among the topics which will be addressed during the next FAO/IAEA Coordinated Research Programme.

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**Annex 10**

## REPORT ON THE COMMISSION'S ACTIVITIES DURING 1997-1998

### GENERAL

**Europe** benefited from a period of peace in respect of FMD since the end of 1996. The last outbreak was reported in October 1996 in Bulgaria and no outbreak was reported since then in Europe. During the period 1997-1998, the activities of the Commission were oriented towards Turkey and the Community of Independent States (CIS) and particularly the Caucasian countries .

The situation in **Turkey** showed limited improvement in 1997 and 1998. (see in item 4). 54 and 75 FMD outbreaks have been reported in 1997 and in 1998 respectively. As in previous years, a bivalent vaccine locally produced by the FMD Institute in ankara, was used to vaccinate preventively in Anatolia and in Thrace. The level of vaccination cover in Anatolia - including the strategic vaccination zone of western Anatolia - was insufficient to ensure real protection. During 1997 a number of meetings were held concerning implementation of disease control measures in Turkey. By the autumn of 1997 the EU and Turkey had agreed upon a three year jointly sponsored programme. The measures proposed under the programme concerned animal identification, road checks, market disinfection. The programme could not be fully implemented. A successful seminar on cattle identification with the participation of EUFMD, EC and European countries was held in 1997. Limited progress was made in respect of control over the movement of animals between zones. Occasional incursions of the virus into Western Anatolia was observed but not in Thrace thanks to the preventive vaccination re-established since January in 1997.

This period was also characterised by the identification in Iran of new variants of FMD virus of type A which was not covered by the vaccine strains currently available. The WRL warned in 1996 of the potential danger caused by the new type A isolated then only in Iran. The virus propagated to the west and was isolated in central Anatolia, Turkey in early 1998. The EUFMD Commission immediately informed the member countries of this new potential threat. Several meetings were organised between Turkey and European experts to decide the measures to be taken in Turkey to prevent the spread of the virus to the west and reduce the risk of its introduction into Europe. It was decided to vaccinate in Thrace with the homologous vaccine. An expert visited Iran and Turkey to advise the National Veterinary Institutes in Ankara and in Teheran on a strategy to combat this new strain. During the six first months of 1998, the new type A virus spread to western Anatolia close to Istanbul but since July 1998, no FMD A type virus was isolated in Turkey.

On behalf of the CIS, the **Russian Federation** informed OIE, EC and EUFMD of the deterioration of the situation of FMD in Caucassia and of the risk that the virus would spread to Russia and to Europe. The three organisations established a Tripartite group to deal with this situation. This Group held three meetings in 1998 ( see item 5).

## SPECIFIC ACTIVITIES

1. **The Executive Committee** held three regular sessions, the 60th in Prague, Czech Republic, on 30–31 October 1997, the 61st in Antalya, Turkey, on 4-5 May 1998 and the 62nd Session in Lysebu, Norway on 26-27 November 1998. The reports of the Session - in English and in French - were circulated to all the member countries. The English version is available on the Web site.

2. **The Research Group** of the Standing Technical Committee of the Commission held two sessions in the 1997–1998 period. One organised by the Pasteur Institute Bucharest and restricted to members of the group was held at Poiana-Brasov, Romania, on 23–27 September 1997, while the other organised by the Institute for Animal Health Pirbright, was open to observers and was held at Aldershot, United Kingdom on 14–18 September 1998. The reports of the two sessions have been distributed, to the participants and to the FMD Institutes in Europe and elsewhere. The reports of the Research Group have also been made available online on the EUFMD website. The chairman of the Research Group also participated actively in most of the activities of the Commission i.e. internal or external meetings, field missions, etc. ( see item 6)

3. **The EUFMD/EC/OIE Tripartite Group for Balkan countries** met three times during the two years to discuss the FMD situation with representatives of Bulgaria, Greece and Turkey: On 20 November 1997 in Sofia, Bulgaria, on 6 May 1998 in Istanbul and 11 November 1998 in Rome, Italy. The latter meetings were essentially devoted to reviewing the situation in Turkey following the introduction of the new type A virus.

4. **A new OIE/FAO-EUFMD/EC Tripartite Group for CIS** was created to cope with the new situation in this region on the same principles as the first tripartite group. The new group met four times in 1998/1999: in Prague on 21 September 1998, in Vladimir, Russia on 24 November 1998, in OIE Paris, on 19 January 1999 and in Brussels on 23 February . The latter meeting was essentially devoted to reviewing the organisation of the expert missions to the Caucasus and to Vladimir to assess the situation and to make proposals.

5. **The Secretariat of the Commission** kept in close touch with other international organisations ( EC, OIE), with the member and non member countries of the Commission, especially those infected or threatened by the disease ( North African countries in 1999).

- **Missions** to the countries concerned were undertaken by the Secretary and experts. These missions and visits were usually carried out jointly with those of the EU (see the section on missions below).

- **Bulletins** providing information on the situation were faxed or e-mailed to all member countries whenever judged necessary (new type A in Turkey in 1998, epidemic in North Africa in 1999. These bulletins were in general, distributed in the two languages of the Commission.

## COLLABORATION WITH THE WORLD REFERENCE LABORATORY AND NATIONAL LABORATORIES

The Commission's activities were made possible by the scientific and technical support of the World Reference Laboratory (WRL) of the Animal Health Institute at Pirbright (see Item 7). WRL experts took part in several of the activities of the Commission. The WRL isolated and characterised the strains responsible for the outbreaks over the world. Comparison of strains through nucleotide sequencing provided vital information on the epidemiology of both type-A and type-O outbreaks.

The Commission contributed financially to the WRL's co-ordination and research activities and to the phase XV in the standardisation of laboratory tests for serological diagnosis of FMD.

The WRL also made a major contribution to the Commission's activities through its technical and scientific support and assistance in training staff of national FMD Laboratories. Other institutes in Europe also contributed to the FMD diagnosis training activities that were organised by EUFMD in conjunction with other organisations: the Zooprophylactic Institute of Brescia, Italy; the Centro de Investigation in Sanidad Animal (CISA), Madrid, Spain; and the National Veterinary Research Institute, Pulawy, Poland.

A special mention must made of the National Veterinary Service and the National FMD laboratory of Greece which took the initiative and sponsored the organisation of a regional workshop on FMD diagnosis in Athens with the participation of experts from Bulgaria, Turkey, Greece and from the WRL.

## MISSIONS

During the period under consideration, the following missions were undertaken by experts and the Secretary in connection with the Commission's activities, the costs being met from the Commission's trust funds.

### Experts

Research Group
Dr Kris De Clerq, represented the Commission, at the Meeting on Quality Assurance in Veterinary Laboratories held in Vienna on 2-4 February 1998

IZS Brescia
Dr Massimo Amadori participated in the following meetings in relation to the situation in the CIS countries:

- Moscow, Vladimir, preliminary meeting with OIE Regional Reference Laboratory 17/19 August 1998
- Prague, First Tripartite group meeting on CIS, 21-22 September 1998
- Second Tripartite Group Meeting with the CVOs of CIS, 24 November 1998

Private Experts
- Dr Anthony Garland: assessment of the situation in the FMD institutes in Iran, Teheran Razi Institute and Turkey Ankara Sap Institute, and preparation of a technical co-operation project , 18 June – 1 July 1998.

**Secretariat**

**1997**

- Teramo, Italy, 16-17 January, meeting of the multicountry EC Phare programme
- OIE, Paris, 17-26 January meeting of the OIE's FMD and Other Epizootics Commission.
- Brno, Czech Republic Seminar on Veterinary Biotechnology, 24-26 April
- Hannover, Germany, EC training course for diseases emergency, 19-22 May
- OIE, Paris, 65th General Session of the OIE 24May–01 June
- Ankara, Turkey, Meeting on FMD control in Turkey 10-3 June
- Warsaw, Poland, Workshop on modern diagnosis of viral diseases 20-25June (paid by FAO)
- Congress of ISVEE, Paris,08 –11 July ( paid by the secretary)
- Dubendorf, Switzerland, International training course on Risk Analysis and Animal Health,13-18 July (paid by FAO)
- Poiana. Brasov, Romania, Meeting of the Research Group, 23-28 September (Secretary and Adm. Assistant)
- Brussels, EC, Meeting with Turkey 31 September and 1 October
- Sofia , Bulgaria, Tripartite Group meeting ,15 October
- Prague, Czech Republic, 60 th Session of the Executive Committee, 30-31 October (Secretary and Adm. Assistant).

**1998**

- Paris OIE, Paris, 24Jan - 01-Feb, meeting of the OIE's FMD and Other Epizootics Commission.
- Brussels, Belgium 17-February, FAO Press Conference on Animal Disease in Brussels
- Pulawy, Poland, organisation of the EUFMD/EMPRES/EC regional workshop on contingency planning and emergency preparedness.16-20 March
- Istanbul, Turkey Seminar on Vaccinology 29 March - 01 April 98
- Antalya, Turkey 61 st Session of the Executive Committee 04 - 06-May-98 (Secretary and Adm. Assistant)
- Paris OIE, 66th General Session of the OIE 23 May – 28 May,
-Thrace and Ankara, Turkey, joint EC / EUFMD mission on surveillance of the vaccination campaign in Thrace 23-28 August,
- Athens, Greece participate in the regional workshop for FMD diagnosis 01-03 Sep
- Pirbright, Research Group meeting in Aldershot 13-20 September (Secretary, APO and Adm. Assistant)
- Prague, OIE Regional Commission for Europe, First Tripartite Group meeting on CIS, 20-24 September
- Paris OIE, joint meeting with EC and OIE on CIS countries , 13 November

- Vladimir, Russia Second Tripartite Group Meeting with the CVOs of CIS, 24 November
- Oslo, Lysebu, Norway, Sixty second Session of the Executive Committee 26-27 November ( Secretary, APO and Adm. Assistant)

## NEW MEMBER COUNTRIES

No new country joined the Commission. Contacts were established with the following countries and information supplied: Armenia, Azerbaijan, Bosnia-Herzegovina, Estonia, Georgia, Latvia, Slovakia.

## OTHER TRAINING AND INFORMATION ACTIVITIES OF THE COMMISSION

– A Workshop on Contingency Planning and Emergency preparedness in case of an FMD outbreak was organised jointly by the Commission, the FAO EMPRES Programme EC and OIE, in Pulawy, Poland 28 May–3 June 1998, aimed at the countries of Central Europe and CIS.

– Website on the Commission's activities and other activities connected with FMD control and prevention in Europe has been produced in English. The first version appeared in January 1997. It was last updated in December 1998 when the reports of the most recent statutory meetings were made available A new version of the site is under construction and a French version will follow. A questionnaire was circulated to the member countries on their requirements for the new version of the website.

**Annex 11**

## Report on the situation in Turkey in 1997 and 1998

### 1997

54 outbreaks have been reported in Anatolia, in 1997. 18 of them were located in Western Anatolia. 51 outbreaks were due to type O and 3 to type A (in Aksaray and Nigde Provinces in central Anatolia).

### Monthly Distribution of FMD Outbreaks in Turkey in1997

| Year 1997 | Type | Jan | Feb | Mar | Apr | May | Jun | Ju | Aug | Sep | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | O1 | 3 | 1 | 2 | 5 | 11 | 7 | 1 | 4 | 2 | 3 | 5 | 7 | **51** |
| | A22 | - | - | - | - | - | - | 2 | - | - | - | - | 1 | **3** |
| | Total | 3 | 1 | 2 | 5 | 11 | 7 | 3 | 4 | 2 | 3 | 5 | 8 | **54** |

A new programme for FMD control was started in Turkey in 1997 under the Authority of the Ministry of Agriculture and Rural Affairs.

### 1998

### Monthly Distribution of FMD Outbreaks in Turkey in1998

| Year 1998 | Type | Jan | Feb | Mar | Apr | May | Jun | Ju | Aug | Sep | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | O1 | 4 | 4 | 4 | 2 | 2 | 5 | 6 | 2 | 3 | 2 | 0 | 7 | **41** |
| | A22 | 2 | 1 | 2 | 3 | 1 | 2 | 2 | - | - | - | - | - | **13** |
| | Not | - | 1 | - | 3 | 6 | 7 | 3 | 1 | - | - | - | - | **21** |
| | Total | 6 | 6 | 6 | 8 | 9 | 14 | 11 | 3 | 3 | 2 | 0 | 7 | **75** |

The new variant of type A FMD virus - similar to the strain circulating in Iran since 1996 (A/Iran 96) - emerged in Turkey in early 1998. The entire 13 type A outbreaks in 1998 were due to the new variant. They occurred in 5 provinces of Eastern and Central Anatolia and 5 provinces of Western Anatolia. EU supported Turkey to vaccinate preventively against the new variant ( see below). During the last 4 months no type A outbreak has occurred. This indicates that the virus did not continue to spread to the west, as was initially feared. The O type FMD outbreaks are still dominant to A type outbreaks. All of the infected animals were cattle.

*Thrace*

The last two FMD outbreaks occurred in Thrace in 1995 and 1996. No FMD outbreak has occurred in Thrace in 1997 or in 1988. No preventive vaccination has been carried out in Thrace between 1991 and 1996. Since 1997, in accordance with the established programme, susceptible animals are vaccinated against types $O_1$ and $A_{22}$ in the Thrace provinces. In 1997, cattle were vaccinated three times and sheep and

goats once. In 1998, cattle were vaccinated twice and small ruminants once. 268,423 (59 %) large ruminants and 404,683 (47.5 %) small ruminants were vaccinated during the 1998 spring campaign.

*Vaccination Campaign in Thrace against the New Type A Variant in 1998*
After the occurrence of new type A variant in Turkey, the EC Commission decided to finance vaccination of large and small ruminants with the new type A vaccine in Thrace. 900,000 of A/Iran Monovalent vaccine were provided to Turkey. 643,007 doses were used. Totally, 302,042 (65 %) large ruminants and 637,131 (67 %) small ruminants were vaccinated during this campaign. The losses amounted to 53,493 doses ( 8.3%) and 203,500 doses were left after completion of the campaign

**Final report of vaccination Campaign against the new Type A in Thrace in 1998 (as on 26/01/99)**

| Province | Populatio n of LR | Population of SR | LR Vaccinated | SR Vaccinated | LR % | SR % | Doses used |
|---|---|---|---|---|---|---|---|
| Canakale | 11,501 | 115,000 | 8,583 | 72,031 | 75 | 63 | 45,000 |
| Tekirdag | 117,684 | 191,820 | 87,150 | 119,700 | 74 | 62 | 160,300 |
| Istanbul | 67,678 | 71,917 | 40,508 | 52,398 | 60 | 73 | 75,707 |
| Edirne | 164,543 | 306,829 | 97,981 | 159,969 | 60 | 52 | 177,600 |
| Kirklareli | 106,754 | 267,613 | 67,820 | 233,033 | 64 | 87 | 184,400 |
| Total | 468,160 | 953,179 | 302,042 | 637,131 | 65 | 67 | 643,007 |

*Western Buffer Zone*
18 outbreaks were located in Western Anatolia (WBZ) in 1997 and also 18 outbreaks in1998. In the spring 1998 vaccination campaign, 622,578 (33%) large ruminants and 393,264 (7%) small ruminants were vaccinated in this zone.

*Rest of Anatolia*
In 1998, 57 outbreaks occurred in this region. During the spring vaccination campaign of 1998 1,584,163 (16%) of large ruminants and 556,017 (1%) small ruminants were vaccinated. Vaccination is carried out in areas along the main east-west livestock transportation routes, in certain project areas, and in the case of private requests by farmers.

*Vaccine production*
The Sap FMD Institute, located in Ankara is the only Government laboratory for vaccine production and diagnosis of FMD in Turkey. It also carries out the epidemiological studies in the country. The annual production capacity is 30 million bivalent cattle doses generally.
Vaccine production in the Sap/FMD Institute for 1998 is 11 million doses A22 and 10 million O1. A private company (Vetal) also produce FMD vaccine in Turkey. For 1997 they produced 5 million monovalent doses.

The programme of vaccination for 1999 foreseen that, due to the delay in production of the vaccine against the new type A strain, bivalent vaccine ( O1, A22) will be used only in Thrace, and Anatolia will be vaccinated against O type only.

**Annex 12**

## FOOT AND MOUTH DISEASE SITUATION IN TURKEY

### 1. Introduction

Foot and mouth disease (FMD) remains an important disease worldwide. This disease is endemic in Anatolia (types O and A). So that FMD is one of the most important diseases causing significant economical losses in Turkey. Vaccination, quarantine, control of animal movements, surveillance and monitoring are being applied as control measures. The legal regulations have been prepared for the application of the stamping out policy in the planned regions.

According to the Turkish Law 3285 Article 108, the scheduled disease has to be immediately notified to the veterinary authorities which undertake respectively supervise the necessary measures, such as outbreak investigation, taking of specimen for typing at the FMD Institute (Şap Enstitüsü in Ankara), ordering movement restrictions to prevent further spread, quarantine, taken cordon, disinfection, compensation (destruction and stamping out), ring vaccination, immediately informing neighbouring districts and provinces etc.

According to General Directorate of Protection and Control (GDPC) statistic Turkey has about **11.153.148** large ruminants and about **39.378.906** small ruminants. Based on certain regions statistics is as follows;

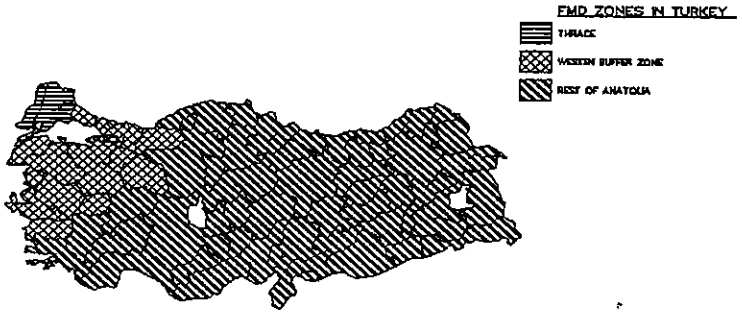
**Table 1: Ruminant population in Turkey in 1998 (*)**

| | Large Ruminants | Small Ruminants |
|---|---|---|
| Thrace | 468.160 | 953.179 |
| Western Buffer Zone | 2.062.754 | 5.608.381 |
| Residual Anatolia | 8.622.234 | 32.817.346 |
| **TOTAL** | **11.153.148** | **39.378.906** |

(*) GDPC Statistic in 1998

### 2. Disease Status

Turkey is divided into 3 main regions for the control of FMD; Thrace, Western Buffer Zone of Anatolia (WBZ) and the other provinces of Anatolia.




In Turkey, 75 outbreaks of FMD (virus types O and A) were reported in 1998. Monthly distribution of FMD outbreaks between 1996-1998 is shown in Table 2.

**Table 2: Monthly Distribution of FMD Outbreaks in Turkey (1996-1998).**

| Year | Type | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1996 | O | 12 | 14 | 12 | 13 | 17 | 20 | 16 | 11 | 7 | 4 | 3 | 3 | **132** |
| | A | - | - | - | - | - | - | - | - | 1 | - | - | - | **1** |
| | Total | 12 | 14 | 12 | 13 | 17 | 20 | 16 | 11 | 8 | 4 | 3 | 3 | **133** |
| 1997 | O | 3 | 1 | 2 | 5 | 11 | 7 | 1 | 4 | 2 | 3 | 5 | 7 | **51** |
| | A | - | - | - | - | - | - | 2 | - | - | - | - | 1 | **3** |
| | Total | 3 | 1 | 2 | 5 | 11 | 7 | 3 | 4 | 2 | 3 | 5 | 8 | **54** |
| 1998 | O | 4 | 4 | 4 | 2 | 2 | 5 | 6 | 2 | 3 | 2 | 0 | 7 | **41** |
| | A | 2 | 1 | 2 | 3 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | **13** |
| | Not Typed | - | 1 | - | 3 | 6 | 7 | 3 | 1 | 0 | 0 | 0 | 0 | **21** |
| | Total | 6 | 6 | 6 | 8 | 9 | 14 | 11 | 3 | 3 | 2 | 0 | 7 | **75** |

A new variant of type A FMD virus emerged in Turkey late in 1997. Vesicular epithelia collected from infected area were sent to WRL Pirbright for molecular characterisation. The results confirmed the suspicious situation that the entire type A outbreak was due to the new variant, which has been circulating in Iran since 1996.

In total, 13 outbreaks due to new type A strain (A/Iran 96) have been occurred in 1998. They occurred in 5 provinces of Eastern and Central Anatolia and 4 provinces of Western Anatolia. The last FMD type A outbreak was in July 1998. The FMD type O outbreaks are still dominant to type A and all of the infected animals were the cattle.

Autumn vaccination campaign has been started in September and completed at the end of the year. Totally **8.305.000** large ruminants and **6.160.000** small ruminants were vaccinated in Turkey.

The animal markets and stock exchange places that belong to the MARA and municipalities are under the control of State Veterinary Offices. There is legislation

about the certification of the livestock markets and inspection and control of those plants.

The transportation of the animals within the country requires a health certificate issued by the State Veterinary Officers after the inspection of the animals. If the province of the origin is under quarantine, no animals are allowed to leave the province.

According to the Article 108, when FMD outbreaks occur, the Animal Health Control Commission should meet as soon as possible and measures should be taken based on the fourth part of chapter 1 of the Law 3285 and Guide.

Apart from recording the outbreak situation and procedure on district and province level, the Animal Diseases Combating Department at the GDPC is receiving these information and compliance with an annual report.

There is a strong movement of beef cattle from Eastern Turkey to the consumer centres in Western and Central Anatolia. A number of control stations (Giresun-Center, Tokat-Reşadiye, Sivas-Center, Malatya-Karakavak, Kahramanmaraş-Pazarcık and Gaziantep-Nizip) have been set up at a north-west line stretching from Giresun to Gaziantep in order to check livestock movements from Eastern Anatolia towards Western Buffer Zone.
Animals to be transported have to be vaccinated two weeks prior to their dispatch, and health and vaccination certificate has to accompany the animals.

## 2.1 The Thrace Region

This region is composed of the provinces in the European part of Turkey (Edirne, Kırklareli, Tekirdağ, European parts of Çanakkale and İstanbul). There are about **468.160** large ruminants and about **953.179** small ruminants in this region.

Strict measures have been taken and disease surveillance has been carried out within the Thrace region continuously. No FMD outbreak occurred in 1997 and in 1998. Totally, **465.283** large ruminants and **300.655** small ruminants were vaccinated with a bivalent vaccine in 1998.

After the occurrence of new type A variant in Turkey, Pirbright FMD World Reference Laboratory indicated that type $A_{22}$ vaccine offered no cross protection against this new variant. The commission decided to finance vaccination of large and small ruminants with the new vaccine in Thrace. Vaccination campaign of all ruminants in Thrace region using a monovalent vaccine against the new type A İran/96 has been implemented in August 1998. Totally **311.042** large ruminants and **637.131** small ruminants were vaccinated.

## 2.2 The Western Buffer Zone of Anatolia (WBZ)

This area includes 15 provinces. Asiatic part of Istanbul, Asiatic part of Çanakkale, Kocaeli, Sakarya, Balıkesir, Bilecik, Bolu, Bursa, Eskişehir, İzmir, Kütahya, Manisa, Aydın, Uşak and Yalova. There are about **2.062.754** large ruminants and **5.608.381** small ruminants.

According to the programme all large ruminants should be vaccinated twice annually and all small ruminants once annually in this region. Totally, **1.868.405** large ruminants and **1.354.579** small ruminants were vaccinated in 1998.

Livestock transportation from eastern part of Anatolia to WBZ is free only if they have the required certificates. The animals should be kept in this region at least 3 months before being transported to Thrace.

Outbreaks in this area are also dealt with, in accordance to the law no.3285, including temporary quarantine, animal movement restrictions, ring vaccination and disinfection, etc.

In total, 18 outbreaks of FMD were reported in 1998. Number of outbreaks in the Western Buffer Zone between 1996-1998 is shown in Table 3.

**Table 3. Number of outbreaks in the Western Buffer Zone, 1996-1998**

| Provinces in alphabetical order | Number of Outbreaks in Years | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1996 | | | 1997 | | | 1998 | | | |
| | A | O | Total | A | O | Total | A | O | Not Typed | Total |
| Aydın | - | 12 | 12 | - | 5 | 5 | 2 | 2 | 1 | 5 |
| Balıkesir | - | 7 | 7 | - | - | - | - | 3 | 1 | 4 |
| Bilecik | - | 2 | 2 | - | 2 | 2 | - | 1 | - | 1 |
| Bolu | - | - | - | - | 10 | 10 | - | - | - | - |
| Bursa | - | 2 | 2 | - | - | - | - | - | - | - |
| Çanakkale | - | 1 | 1 | - | - | - | - | - | - | - |
| Eskişehir | - | 3 | 3 | 1 | 2 | 3 | - | - | - | - |
| İstanbul | - | - | - | - | - | - | - | - | - | - |
| İzmir | - | - | - | - | - | - | - | - | - | - |
| Kocaeli | - | 4 | 4 | - | - | - | 1 | 1 | - | 2 |
| Kütahya | - | 3 | 3 | - | 1 | 1 | 1 | 1 | - | 2 |
| Manisa | - | 2 | 2 | - | - | - | - | - | - | - |
| Sakarya | - | - | - | - | 1 | 1 | 2 | - | 2 | 4 |
| Uşak | - | 3 | 3 | - | - | - | - | - | - | - |
| Yalova | - | 2 | 2 | - | 1 | 1 | - | - | - | - |
| **TOTAL** | - | **41** | **41** | **1** | **22** | **23** | **6** | **7** | **5** | **18** |

## 2.3 The other provinces of Anatolia

There are 62 provinces and about **8.622.234** large ruminants and about **32.817.346** small ruminants in the remaining part of Anatolia. In 1998, 57 outbreaks were occurred in this region. Totally **5.660.270** large ruminants and **3.867.090** small ruminants were vaccinated in 1998. Priority was given for the vaccination of animals along the main east-west livestock transportation routs and animals in certain project areas.

Ring vaccination, strategic vaccination and quarantine measures are being applied for the control of FMD in that area. Due to illegal movements from neighbouring countries there is always a risk of introduction of new FMD strains in this region.

Number of FMD outbreaks in the Residual Anatolia in 1998 is shown in Table 4.

**Table 4: Number of Outbreaks in the Residual Anatolia in 1998.**

| Province | A | O | Not typed | Total |
|---|---|---|---|---|
| Ankara | 1 | 1 | 1 | 3 |
| Bingöl | - | - | 3 | 3 |
| Burdur | 1 | 2 | - | 3 |
| Denizli | - | 1 | - | 1 |
| Diyarbakır | - | 4 | 1 | 5 |
| Erzurum | - | 2 | - | 2 |
| Hatay | - | 1 | - | 1 |
| Kars | - | 1 | - | 1 |
| Kayseri | 3 | - | 2 | 5 |
| Kırşehir | - | 2 | - | 2 |
| Malatya | 1 | 1 | - | 2 |
| K. Maraş | - | 2 | 1 | 3 |
| Nevşehir | - | 2 | - | 2 |
| Niğde | - | 1 | 1 | 2 |
| Sivas | - | 3 | - | 3 |
| Tokat | 1 | 2 | 6 | 9 |
| Aksaray | - | 2 | 1 | 3 |
| Ardahan | - | - | 1 | 1 |
| Iğdır | - | 5 | - | 5 |
| Osmaniye | - | 1 | - | 1 |
| **Total** | **7** | **33** | **17** | **57** |

### 3. Vaccine Production and Control in Turkey

Şap Enstitüsü (FMD Institute) located in Ankara is the only Government laboratory for vaccine production and diagnosis of FMD in Turkey. It also carries out epidemiological studies on FMD in the country. The annual production capacity is about 30 million bivalent cattle doses.

The authorities have given permission for the production of FMD vaccines in a private company, VETAL, in Adıyaman. The Ministry of Agriculture and Rural Affairs (MARA) will continue to support the production of vaccine by private companies. There are legal regulations for the importation of FMD vaccines.

The Ministry has already started to establish an independent vaccine control laboratory at Bornova, İzmir.

Vaccine production in SAP for 1998 was 11 million doses of type $A_{22}$/Mahmatlı and 10 million doses of type $O_1$/Manisa. The institute has adapted two field strains of the new type A/Iran, namely A/Ankara and A/Aydin, for vaccine production. A/Ankara strain will be used for vaccine production in 1999.

The reconstruction of the air filtration system of the production unit is nearly completed and will be ready by the end of June.

Study on the oil adjuvanted vaccine preparation is going on with the consultancy of a Brazilin expert. Some of the equipment was purchased and the rest will be bought in advance.
A new laboratory "molecular epidemiology" has already been established in the Research and Control Unit of the Institute. First trials are started with PCR assay applications, which will be followed by nucleotide sequencing after purchasing the necessary equipment and reagents.

MARA will support the production of FMD vaccine with the new variant by the private company, VETAL, as the capacity of SAP Institute is not sufficient. Private Company received the virus strain from Pirbright and started to work on it in 1998.

## 4. Vaccination Campaign in Thrace against the New Type A Variant in 1998

### 4.1 Vaccination Campaign

After the occurrence of new type A variant in Turkey, Pirbright FMD World Reference Laboratory indicated that type $A_{22}$ vaccine offered no cross protection against this new variant. The commission decided to finance vaccination of large and small ruminants with the new vaccine in Thrace.

Large and small ruminants were vaccinated during this campaign.

### 4.2 FMD sero survey in Thrace

The proposals of sampling plan prepared by Turkey were sent to EUFMD for their comments. As we did not receive any comments, we have started to apply our original plan. After that we have received the proposals for modification of the sero-survey. But, since the first collection of samples had already been completed, it was too late to modify the sero survey.

In the survey each village is accepted as a herd. We have randomly selected 35 herds (villages). It is planned to randomly collect 5 samples from small ruminants and 5 samples from large ruminants in each selected herd (village). The question we wish to answer is the prevalence of antibodies before, 28 days and 2-3 months after vaccination in selected ruminants.

Summary of the sero survey result is tabulated below.

Table 5:Summary of the sero survey result

| For large ruminants | Pre-vaccination | | 28 days after vaccination | | 90 days after vaccination | |
|---|---|---|---|---|---|---|
| No clusters (village) | 35 | | 35 | | 35 | |
| No sera (total) | 211 | | 213 | | 204 | |
| Rate of homogenity | 0.27 | | 0.18 | | 0.14 | |
| Design effect | 2.37 | | 1.89 | | 1.69 | |
| Sero-prevalence | 47.87% | | 90.61% | | 67.16 | |
| '+/-' | 10.38 | | 5.39 | | 8.38 | |
| SE | 0.052 | | 0.027 | | 0.042 | |
| 95% CI | Lower | Upper | Lower | Upper | Lower | Upper |
| | 37.99% | 58.25% | 85.22 | 96 | 58.78 | 75.54 |

| For Small ruminants | Pre-vaccination | | 28 days after vaccination | | 90 days after vaccination | |
|---|---|---|---|---|---|---|
| No clusters | 35 | | 33 | | 35 | |
| No sera (total) | 205 | | 190 | | 184 | |
| Rate of homogenity | 0.16 | | 0.46 | | 0.34 | |
| Design effect | 1.77 | | 3.17 | | 2.44 | |
| Sero-prevalence | 14.15% | | 62.63% | | 42.39 | |
| '+/-' | 6.35 | | 12.25 | | 11.15 | |
| SE | 0.032 | | 0.062 | | 0.056 | |
| 95% CI | Lower | Upper | Lower | Upper | Lower | Upper |
| | 7.80 | 20.50 | 50.38 | 74.88 | 31.25 | 53.54 |

Test : ELISA
Used kits and antigens : FMD A22 (Mahmatlı)
Over 1/100 titre have been accepted as a antibody positive.

## 5. Control Program and strategy in 1999

During the first two months 9 outbreaks of FMD were occurred in 1999. All outbreaks were due to type O.

According to FMD Control Programme in 1999, all ruminants will be vaccinated twice a year with bivalent vaccine ($O_1$/Manisa and $A_{22}$/Mahmatlı or A/Ankara) in Thrace region.

In Anatolia, all large ruminants will be vaccinated twice a year with a monovalent vaccine ($O_1$/Manisa) and small ruminants will be vaccinated according to the farmer demands.

In a study conducted at Pirbright for a PhD project, using FMD viruses isolated from Turkey between 1964 and 1998, the presence of only one genetic sublineage was identified at any one time for FMD type A viruses. Since the first introduction of FMD type A viruses into Turkey, 6 genetic groups have been detected and each of these groups replaced the previous one. The previous genetic groups, which were replaced, by a new genetic group have never been detected again in the samples sequenced. This replacement cannot be explained by rapid spread of the new strain to replace the existing strain, because FMD type A has generally showed a modest spread in Turkey except in its first introduction in 1964. No type A outbreaks were detected between August 1990–April 1991 and December 1993–February 1995. FMD type A was about to disappear from Turkey before the introduction of the new Iranian variant towards the end of 1997. This new variant has not been detected since July 1998. The re-emerging FMD type A viruses were shown to belong to a new genetic group and introductions from neighbouring countries. These results showed that FMD type A viruses disappear from Turkey without the introduction of new strains. The same happened in the cases of the SAT 1 outbreak in 1962-65 and the Asia 1 outbreak in 1973-76.

The vaccination results obtained in the WBZ have been well below the required levels. Small ruminants in WBZ have been vaccinated only once a year, given the fact that FMD vaccines can protect animals for 4-6 months after vaccination, these animals have been susceptible to the disease for most of the year. In this situation, it might be better not to vaccinate the small ruminants at all and concentrate on vaccination of only cattle. The vaccine production, including the production of VETAL, is not enough to vaccinate all cattle twice annually with a bivalent vaccine. Most of the economical loss due to FMD has been caused by type O. This and the epidemiological facts about type A, which are mentioned above, are the main reasons for our decision to vaccinate cattle with a monovalent type O vaccine.

At the same time vaccine will be produced and stored at the FMD Institute against both the new Iranian variant and $A_{22}$/Mahmatlı. This vaccine will be ready to use in type A outbreaks.

**Annex 13**

# FMD CONTROL IN CIS COUNTRIES

## Number of outbreaks between 1986 and 1998 in USSR/CIS

| | 1986 | 1987 | 1888 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Russia** | | | | | 2 | | | 1 | | 1 | | | |
| **Latvia** | | 1 | | | | | | | | | | | |
| **Kazakhstan** | | | | 1 | 1 | 1 | | | 1 | | 1 | 1 | 8 |
| **Kyrghysistan** | | | | 2 | | 3 | | | 1 | | 1 | 4 | 1 |
| **Tadjikistan** | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 4 | | 1 | | |
| **Turkmenistan** | | | 1 | 2 | | | | | 1 | | | 4 | |
| **Uzbekistan** | 1 | | 2 | 4 | 2 | 1 | | | 1 | | | | |
| **Armenia** | | | | | | | | | | | 3 | 2 | 1 |
| **Georgia** | 1 | | | | | 1 | 1 | | | | 1 | 32 | 1 |
| **Azerbaidjan** | 1 | | | | | 1 | | 1 | 2 | 1 | 4 | 1 | |
| **Total** | **4** | **3** | **4** | **11** | **6** | **8** | **2** | **3** | **10** | **2** | **11** | **44** | **11** |

## SITUATION IN CAUCASIA

## Livestock population in Caucassian region

| | Cattle | Sheep / Goats | Swine |
|---|---|---|---|
| Armenia | 600,000 | 850,000 | 150,000 |
| Azerbadjan | 2,000,000 | 5,200,000 | 21,000 |
| Georgia | 930,000 | 1,045,000 | - |
| Total | 3,530,000 | 7,095,000 | 171,000 |

## FMD outbreaks in Caucasia in the last three years

| Country | Year | Jan | Feb | Mar | Apr | Ma | Jun | Jul | Au | Sep | Oc | No | De | Tota | last |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Armenia | 1996<br>1997<br>1998 | | | | | | | +..<br><br>1 A | <br><br>1 A | | | | | +..<br>0<br>2 A | ? |
| Azerbaijan | 1996<br>1997<br>1998 | | 2 O | | | | | 1 O | | | | | | 3 O<br>0<br>0 | 1994 |
| Georgia | 1996<br>1997<br>1998 | <br>10O | <br>1O | | | | | 1O | 1O<br>4O | 3O | 2O<br>1O | 5O | 9O | 21O<br>16O | 1993 |

## Armenia

FMD occurred in 1996, 1997 and 1998 in Armenia. For the last three years, FMD has been detected in 589 animals, 12 of them were slaughtered. Economic looses due to disease outbreaks is estimated to 1.1 million US dollars.

The reasons for this unfavourable situation are:

- the movements of susceptible animals from one pasture to another within the territory of Armenia.
- the only partial vaccination of the livestock due to the lack of funds to buy vaccine.
830,952 heads of cattle and 73,372 sheep were vaccinated in 1997.

FMD cases due to the new type A variant were detected in August 1998 in Amasiia district in the North West region very near to the borders with Turkey and Georgia. Cases occurred in 21 heads of cattle grazing in a common a pasture area.

**Azerbaidjaian**

The last outbreaks of FMD took place along the Iran border in February (2 outbreaks) and July (1 outbreak) 1996. 134 heads of cattle and 184 heads of sheep and goats were infected by the O type . None died or were slaughtered. The previous outbreak was in 1994. 1,274,031 heads of cattle and 3,174,633 heads of small ruminant were vaccinated in 1997.

**Georgia**

For the last five years situation of FMD is as follows. In 1994 no FMD was observed. The previous outbreak was in 1993.

In 1995 a single FMD outbreak occurred in a 22 heads of cattle herd in one previously uninfected area. The disease was eradicated in its primary location.

In July 1996 FMD was identified in summer pastures of Khuloysky region and Adzhaskaya autonomous republic. Type O was identified. Due to the lack of funds, no vaccination could be carried out, thus FMD spread to other territories of the country between July and December. 9071 heads of cattle were infected in 21 previously uninfected areas (outbreak). No case was observed in sheep and swine.

In 1997 FMD occurred in 35 areas (outbreaks) where 19909 heads of cattle, 2379 small ruminants and 538 pigs were infected. No mortality was registered.

No FMD outbreak occurred between October 1997 and October 1998 when FMD was identified in Akhalathsky and Akhaltsithsky regions bordering Turkey. Later disease spread to Tsalksky region. One outbreak occurred in each of the region and only few animals were infected. Material was sent to Vladimir OIE Reference Laboratory for virus isolation and serotyping. Result is still pending.
Due to the extension of the limits of Europe, its security on the eastern frontier should be reconsidered. The number of trading partners of European countries has also been increased

Five FMD outbreaks due to type O were reported in four regions of **Kazakhstan** between April and September 1998 and 3 outbreaks also due to type O in Tchoui region, Kant district affecting cattle, sheep, goat and pigs again in October 1998.

# CONCLUSIONS AND RECOMMENDATIONS OF THE EXPERT MISSIONS TO CAUCASIA AND TO ARRIAH, VLADIMIR

I - OIE/EUFMD/EC Mission to ARRIAH, Vladimir, Russia, 20 - 26 March 1999

## CONCLUSIONS AND RECOMMENDATIONS

### Conclusions:

- According to the information provided by the Russian Federation, the implementation of the FMD buffer zone in the Southern part of the Russian Federation is effective. It has prevented the introduction of FMD, despite the unfavourable situation in neighbouring countries. However, the campaign of prophylactic vaccination was inconsistent, with regard to regularity, coverage and geographical implementation in the other Trans-Caucasian countries. Many animals are therefore still susceptible to FMDV, making the risk of intrusion very high.

- The expert group believes that the ARRIAH has the capabilities and the expertise, if requested by the countries in this area, to organise surveillance of FMD in this region. The staff members are very motivated and have a good knowledge about the disease and the epizootiological situation in the field. They have the laboratory expertise and infrastructure to test large amounts of samples when requested. No official sampling, however, of animals in the areas of concern is currently being performed.

- The production plant in Vladimir is currently working at one third of its capacity. The manufacturing capacity is therefore more than adequate to meet the needs of the CIS countries. In the Moscow region, there is also a second plant capable of producing FMD vaccine by the Frenkel system. These are the only two 'licensed' plants in the Russian Federation.

- The final product testing of the vaccine is more or less in compliance with the monograph on FMD vaccine production in the European Pharmacopoeia. The experts believe that the vaccine is safe with regard to virus inactivation and local side effects, and more potent ($\geq 6$ $PD_{50}$) than that prescribed in the European Pharmacopoeia (3 $PD_{50}$). As far as could be observed, sterility testing is in complete compliance with the European Pharmacopoeia.

- The process of production, however, is not in complete compliance with good manufacturing practice.

- The Machinery and techniques used are fairly outdated.

- At the moment the priority is the supply of FMD vaccine to the Trans-Caucasian region. However, the expert group believe that in the future the establishment of an antigen bank would be beneficial if ARRIAH is required to meet any urgent demands from any of the FMD free CIS countries or to supplement the buffer zone.

**Recommendations**

- The FMD buffer zone should be maintained in the Russian Federation and extended to the Trans-Caucasian countries. In 4 - 5 years, if the buffer zone is shown to be effective in the Trans-Caucasian regions, this might lead to a substantial reduction in the vaccination campaign required for the Northern part of the zone.

- The vaccination coverage of the animal population should be higher and in the Southern part it should include all susceptible species.

- The local veterinary authorities should enforce practical identification of the vaccinated animals.

- It is the opinion of the experts that a more formal and a better-structured system of supplying samples and information from the whole Trans-Caucasian region should be implemented. Thus, diagnostic material from outbreaks and sera from vaccinated animals would be sent without delay to the Vladimir institute. The system of delivery and disclosure of epidemiological information collected in the field would also be greatly improved.

- The Russian Veterinary authorities should urgently consider improving the FMD vaccine production facilities so that they can fully meet the requirements of GMP.

- The formation of an antigen bank for CIS countries that are free of FMD should be encouraged. The type and amount of antigen in the antigen bank should be discussed by the contributing countries.

## II - OIE/EUFMD/EC/ARRIAH Mission to Caucasia (Armenia, Georgia, Azerbaijan) 7 – 23 March 1999

## CONCLUSIONS

1. The outcome of the mission has been very productive thanks to the strong commitment and openness of the CVO's and of the Veterinary staff in the three countries.

2. The three countries share many common characteristics:
- Their whole economies were badly hit by the collapse of the former Soviet Union,
- Their political stability has been put at risk by the subsequent local wars.
- This has had repercussions on the veterinary services and on foot-and-mouth disease (FMD) control.

3. Each country has its own peculiarities and sometimes very strong geographical, cultural and other specificities.

4. The veterinary infrastructure in the three countries is organized around a central veterinary service, with a national veterinary diagnosis laboratory, a national veterinary research institute and a national control institute to support the scientific missions of the veterinary services.

5. The local veterinary network is still in place in the three countries. District veterinary officers, local veterinarians (all or nearly all are still state personnel), local and regional veterinary diagnosis laboratories, are in place, although they have very little means, or no means at all, to work. A reduction in numbers of Veterinary staff of some of these structures is quite probable during the current privatisation process.

6. The annual national herd vaccination campaigns against FMD that were carried out at the time of the Soviet Union stopped after independence, due to the lack of resources.

7. Georgia, Armenia and Azerbaijan are the South-Eastern gates of Europe. The region is today at risk of becoming endemically infected with FMD if nothing is done rapidly to prevent this. This risk concerns both Russia to the North and Europe to the West, as the disease may spread directly or indirectly (through trade).

8. The present veterinary network in the three countries is a good organization on which to rely upon to efficiently carry out FMD vaccination campaigns.

## RECOMMENDATIONS

### Short term

1. Vaccination is only part of a global protection scheme against FMD. At the same time, surveillance and reporting of FMD should be reinforced in the region under the co-ordination of the OIE Regional laboratory for FMD, ARRIAH, Vladimir.

2. An emergency vaccination campaign covering all ruminants along the southern border zones of the three countries, i.e. along borders with Iran and Turkey is recommended.

3. Animals should be vaccinated in April, before they leave for summer pastures.

4. Part of the cost for this vaccination campaign should be covered though the FAO/EC Trust Fund as recommended by the 62nd Session of the EUFMD Executive Committee. The three countries as well as Russia, should support the vaccination of the remaining animals.

5. The first priority is to vaccinate animals in the border districts and within these districts, to start with animals known to move to border pasture areas. The local veterinarians know this situation quite well and know which herds to vaccinate and how best to vaccinate them.

6. The FMD vaccine (bivalent A-1998 Armenian strain, O1) is to be sent directly from the Vladimir Institute to the three CVOs, without any intermediate, in a ready to use form.

7. Ring vaccination and control of animal movements around outbreaks should be reinforced.

8. Animals vaccinated should be marked (by ear notching or hair shaving). To identify animals by ear tagging is premature and not recommended at this stage.

9. Random sampling of about 500 sera in each country (cattle and small ruminants), carried out at the moment of vaccination and again when they return from Summer pastures is recommended to assess the efficiency of vaccination under field conditions.

10. Monitoring of animal movements between their Winter villages and Summer camps is to be carried out by the local veterinarians, under the control of DVO's, for the CVO.

11. The international notification of FMD should be encouraged, as the consequences of early reporting are positive for other countries in the region.

**Medium and Long term**

12. A regional approach to the prevention and control of FMD involving Georgia, Armenia Azerbaijan and Russia is strongly advocated. Ideally Iran and Turkey should also be associated with this regional co-ordination.

13. The countries in the region should develop or validate an up-to-date contingency plan against FMD.

14. Veterinary legislation, as a whole, is also to be enacted and implemented. This will certainly be aided by an improvement of the whole economy and the political stability of these countries. The importance of FMD for these countries should be remembered, as it may have heavy economical consequences. This fact could help CVOs in implementing the veterinary legislation.

15. All staff of the national veterinary diagnosis laboratories should participate in a special training session on FMD diagnosis. ARRIAH, Vladimir should organise this training.

16. It should be checked by ARRIAH - in co-operation with the WRL or with other European National laboratories - if the procedures and the reagents used for FMD diagnosis in the National laboratories of the Caucasian countries are still valid. Standardized (OIE) procedures should be used in the laboratories of the region under the co-ordination of ARRIAH.

17. The veterinary services staff should be trained in Epidemiology to better utilise the data collected at the local, regional and national levels. This could also help in proposing specific programmes against other infectious diseases and assure that the tools and capacities needed for their control are present and adequate (rabies in Georgia or tuberculosis and Brucellosis in the three countries).

18. A good network for the exchange of information between the countries and with International organisations or with other national veterinary services should be developed (E-mail and/or post).

**Annex 14**

# CONCLUSIONS AND RECOMMENDATIONS OF THE 1997 AND 1998 SESSIONS OF THE RESEARCH GROUP OF THE STANDING TECHNICAL COMMITTEEE

Session held in Poiana-Brasov, Romania
23-27 September 1997

## Items referred to the Group by the Executive Committee: proposals for better interaction between the Research Group and the Members of the European Pharmacopoeia

The Group highlighted the deficiencies in the current FMD Monograph and the absence of information in certain key areas. For example, he pointed to the developments which have occurred in FMD vaccines for emergency use yet there is an absence of protocols for assuring their potency. The EP specifies that FMD vaccines for routine prophylactic use should have a minimum potency of $3PD_{50}$ yet experts in FMD are of the opinion that that value is too low and no longer acceptable. Furthermore, protocols are lacking for vaccines for certain species, for examples sheep and pigs. The absence of the latter is seen as a particularly important deficiency.
These points and additional areas of deficiency and lack of specification were discussed by the Group which concluded that:

1. there is an urgent need for the Research Group to re-establish contact with the EP Committee so that it can participate in its deliberations, identify the deficiencies in the current edition of the FMD Monograph and the need for revisions and ensure that the Committee is aware of any new developments in FMD vaccinology which have relevance to the FMD Monograph.

The Group recommended that:

1. the Executive Committee should be made aware of the need for the Research Group to establish closer links with the EP Committee so that it can have an input in their deliberations.

2. the Executive Committee should make contact with members of the EP Committee requesting that steps be taken to ensure closer links between the EP Committee and the Research Group.

3. there should be a call for papers for the next Session of the Research Group which identify and discuss the deficiencies in the current version of the FMD Monograph of the EP.

**Potency testing of FMD vaccine, alternative tests to cattle challenge**

The Group discussed the advantages of reducing the number of cattle challenge experiments in terms of animal welfare, cost and biosecurity, and the difficulties of assessing the results of animal challenge due to the variability of individual animal response.

Conclusions

1. The Group concluded that there is now sufficient data available to show that cattle potency tests could in most cases be replaced by serological tests.

2. The Group recognised that with the procedure currently prescribed for potency testing (reduced dose application) the vaccine must contain at least 6 PD50 per dose for cattle.

Recommendations

1. Discussion should be initiated with the objective of replacing cattle potency tests by serological tests for the assessment of conventional (prophylactic and emergency) FMD vaccines.

2. A new independent FMD vaccine control laboratory supported by international organizations (EU, FAO) should be established in Turkey.

**Persistence of FMD virus in ruminants**

Conclusions

- Small ruminants play an important role in the spread of FMD outbreaks as infection is often subclinical.
- The presence of virus could be confirmed only with a very sensitive test in serologically positive, but clinically negative, contact sheep.
- Different kinds of relevant samples from several animals have to be taken. Mouth swabs are a good alternative to probang samples in subclinical cases.
- There was evidence of transmission of virus from contact sheep to sentinel animals.
- Contact sheep could present a source for the transmission of FMDV. It has to be stressed that these animals could easily be considered as FMDV-free animals after examination by classical laboratory methods.

Recommendations

1. The transmission of FMD infection in small ruminants should be studied under field conditions.

2. Subclinically infected sheep should be considered as important hosts in the epidemiology of FMD.

3. These experimental results provide the possibility of clarifying the status of seropositive, clinically negative, animals. Further work should be undertaken to adapt the test for large-scale application.

4. Further work should be done to compare mouth swabs as an alternative to OP samples for detecting subclinically infected sheep.

**Differentiation of antibodies induced by vaccination and by infection**

It was recommended that:

1. assays which measure antibody to 3 ABC be used to:
   detect viral activity in vaccinated populations
   assist risk assessment in animals found sero-positive for antibody to structural proteins

2. assays which measure antibody to non-structural proteins be combined with other assays to identify the infectious state of an animal, such as the measurement of specific IgA in saliva, and PCR using probang or nasal and/or mouth swab samples.

3. additional funds be sought from the EU to continue the Concerted Action programme overseeing the collaboration between European laboratories examining improved diagnostic techniques for identifying animals carrying FMD virus.

4. in order to detect low sero-prevalence in an area whole herds must be tested. This would only be possible if test kits incorporating 3ABC reagents were available to allow the participation of regional laboratories. Funds should be allocated for the development and manufacture of a stock of complete test kits.

**Species adaptation of different strains of FMDV: field and experimental findings**

The Group discussed the results and circumstantial evidence of species adaptation of FMD during epidemics. Examples quoted were the spread of FMD

in sheep in the 1989 Tunisian and 1994 Greek epidemics but its failure to cause disease in pigs which were at risk. Similarly, the occurrence of FMD in sheep, but not in pigs, was reported during outbreaks in Bulgaria and Israel.

The Group concluded that:

1. The 1997 Taiwan epidemic is a salutary lesson for FMD-free countries and especially those with high stocking densities of animals.

2. The episode highlights the necessity for countries to establish National Contingency Plans for FMD and to test and evaluate them periodically. National Contingency Plans for FMD should include a capability to diagnose FMD or else alternative plans for submission of suspected material to a national, or regional laboratory or to the WRL.

The Group recommended that:

1. FMD diagnostic laboratories should employ tissue culture systems originating from different species for the attempted isolation of virus from clinical specimens suspected to contain FMD virus.

2. Further investigations should be carried out to determine the basis of species adaptation in FMD. In support of this objective FMD laboratories which have species adapted strains in their collections and which isolate them during outbreaks should send samples of the original field material to the WRL.

**Development of test using milk from sheep**

The group discussed the use of a milk test for FMD virus antibody and recommended:

1. further development of the test using samples collected in countries with endemic FMD.

2. use of the test to assess FMD immunity levels in vaccinated populations.

3. combining the test for FMD antibody in other programmes in which milk samples are collected.

**Serosurveillance**

The Group recommended that

1. more relevant strains should be used for serological testing in Europe, especially for import testing. $A_{22}$ and $O_1$ Middle East should replace the $A_5$ and $O_1$ Europe strains which are still used in most laboratories.

2. an international standardised surveillance system for FMD in the Balkan countries is needed to reduce to a minimum the risk from spread of FMD. The following steps should be taken:

- the Veterinary Services should agree on the objectives and apply the same procedures for FMD surveillance.
- FAO, OIE, EEC should coordinate the use of the same methods for detecting viruses and antibodies.
- the laboratories most advanced in diagnosis and epidemiological surveillance of FMD should pass the benefits of their experience on to other countries by means of meetings of specialists and exchanges of protocols, materials and reagents.

**Quality assurance in FMD national laboratories**

The Group agreed the following conclusions:

1. Confidence in the QA programmes used by different countries and in the procedures used for compliance monitoring will increase as those procedures are better known and understood.

2. There is a need for an international organization to disseminate information about programmes for QA and compliance monitoring and to take the lead in developing a system for harmonising standards between countries.

3. The Organization for Economic Co-operation and Development (OECD) has gained the relevant organizational experience through its standardisation activities in the field of chemicals and would be a suitable organization to promote the development of a similar system for veterinary diagnostic laboratories, especially those involved in international trade.

4. The strategy adopted by the IAEA/FAO Joint Division and OECD to formulate proposals for the accreditation and compliance of laboratories in developing countries and Eastern Europe could be applied in parallel for laboratories in Western Europe and developed countries.

5. Financial support will be required to develop and sustain a system for QA and compliance monitoring.

6. The procedures for implementing compliance monitoring will need to be considered, in particular the identification of organizational responsibility.

The Group recommended that:

1. The conclusions above should be referred to the Executive Committee for their endorsement.

2. The agreement of the Executive Committee should be sought for the Group to make contact with and representation to the IAEA/OECD through the attendance of its Chairman, Dr. De Clercq, at a workshop to be held at IAEA, Vienna in February 1998 at which it is planned to discuss the development of a scheme for laboratory accreditation and compliance for veterinary diagnostic laboratories.

3. In anticipation of the adoption of this Scheme National FMD laboratories should adopt progressive measures to implement a programme of Quality Assurance.

**Emergency vaccination policy in Europe**

The Group concluded that:

1. Emergency vaccination is an important and valuable adjunct to the policy of stamping out.

2. In applying emergency vaccination it is a prerequisite that the principle of regionalisation be accepted at the international level.

3. In the light of the availability of improved diagnostic methods which will in the future be applied to larger scale surveillance there are opportunities for reducing, both in extent and time, the restrictions which are applied to emergency vaccination zones.

4. To be able to make more accurate predictions of the epidemic potential of outbreaks and to assess whether or not to use emergency vaccination, there is a need to further refine decision support systems, taking into account of different animal husbandry systems, animal densities, virus strain characteristics, etc.

5. A decision to apply emergency vaccination will also be influenced by other considerations such as the availability of the food supply for human beings, welfare and ethical considerations, acceptance by public opinion and environmental impact.

6. A national authority which is considering the implementation of emergency vaccination will need to inform and co-ordinate its actions with neighbouring countries.

The Group recommended:

1. That all aspects of emergency vaccination shall be considered by the appropriate national and international animal health organisations so that the zoo-sanitary rules relating to it are clearly established.

2. That procedures relating to emergency vaccination developed and agreed by the Group are recognized at the international level.

## SESSION HELD IN ADERSHOT AND PIRBRIGHT , UK
## 14-18 SEPTEMBER 1998

*Conclusions & Recommendations*

**Species adaptation of different strains of FMDV: field and experimental findings - New variants of FMD virus.**

1. Rapid recognition of new variants, with more attention on the 'index case', and an effective response is important for control. Submission of material to the world reference laboratory is therefore essential.

2. Molecular epidemiological studies have identified the emergence of several new strains of FMDV type A in recent years, each with a defined geographical distribution.

3. Further research is required into how new variants of FMDV can best be controlled by vaccination. The relative merits of adapting new variants to derive new vaccine strains, altering the antigenic payload, and the use of more potent vaccines with novel adjuvants, should all be evaluated.

4. FMDV strain A Iran 96 causes disease.predominantly in cattle. Experimental data supports the observation from the field that FMDV isolates from Greece in 1996 are particularly virulent for sheep. Subclinical infection with FMDV can occur in pigs.

Research is required to identify the host, viral and transmission factors that are responsible for adaptation of FMDV to a particular species.

Adaptation to a particular species can result in either a reduced ability to infect or cause disease in another species or both of these.

Changes in control strategy due to identification of a species adapted variant are rarely indicated.

**Developments in diagnostic techniques - Persistence of FMD virus in ruminants.**

1. RT-PCR is a useful adjunct to conventional diagnostic techniques, but should be used in combination with other assays, and/or clinical signs of infection.

The results presented provide further evidence for the important role of subclinically infected sheep in the epidemiology of FMD. Whenever possible, new diagnostic methods should also be validated on small ruminants. The

reduction of virus replication and excretion as well as the number of sub-clinically infected sheep was reported after the use of emergency vaccine.

2. In order to get proper insight into the antigenic profile of new field isolates, antigenic relationships using either monoclonal or polyclonal antibodies should be studied.

3. There is a need to improve diagnostic methods in terms of sensitivity, speed and simplicity and to investigate the diagnostic potential of newly developed physicochemical assays such as electrochemiluminescence, surface plasmon resonance, atomic force microscopy and biosensors.

4. Collaboration on the development and validation of diagnostic methods should be continued and colleagues from non-EU member states should be invited to participate.

**Standardisation of FMD Diagnosis (Phase XV).**

1. Primary reference sera for FMDV types O1 (Middle East), A22 (Middle East), and C1 (Europe) have been selected. The WRL for FMD should make available the selected reference sera - negative/weak positive/cut-off sera - to National FMD laboratories.
Laboratories are encouraged to evaluate these reference sera as controls in use in routine testing and report results as part of Phase XVI.

2. National Laboratories should use these sera as primary reference. Laboratories should create their own secondary and tertiary standards using strong positive sera. Advice should be given by the WRL as to how laboratories should generate their own standards.

3. Laboratories wishing to participate in the FAO Phase XVI study should make contact with the Secretary of the EUFMD Commission or the WRL for FMD.

**Serology (NSP), serosurveillance, persistence of antibody induced by vaccination.**

1. Detection of antibody to NS proteins can be used to identify infected animals, with any of the seven serotypes, whether vaccinated or not and regardless of the clinical outcome.

2. Field validation in the Balkans showed that measurement of antibody to NS proteins was useful at detecting unrecognised, subclinical spread of infection either geographically or between species, even 18-20 months after an outbreak.

Measurement of antibody to NS proteins should form part of any serological survey intended to detect past or present infection of animals vaccinated against FMD.

The assays should be used on a herd or group basis. Investigations in the field are necessary to determine the sampling rate.
Results of individual animals should be interpreted with care as not all vaccinated, infected animals seroconvert to NSP.
The tests cannot be used to determine the carrier status.

3. Measurement of antibody to several NS proteins at the same time can give a more reliable indication of the infection status of an animal.

4. No single ELISA format has yet been shown to be definitively superior to all others. The development of fully validated tests in a form suitable for supply to laboratories involved in diagnosis and control of FMD should be a priority.

**Quality assurance**

The meeting was informed that the OIE agreed to create an ad hoc group to study the proposals of the Vienna meeting. The chairman was asked to follow the progress of the ad hoc group.

National laboratories are encouraged to proceed with the implementation of a Quality Assurance Programme. They are advised to approach their National Accreditation Bodies.

In the future the FAO Collaborative Studies should comply with OIE Guidelines for Proficiency Testing.

The investment required for QA/QC activities at laboratories is high. A study should be conducted to compare the investments made by laboratories and those of private industry. In this way laboratories can justify adjustments to their future budgets.

**Inactivation of FMD virus**

Results were presented on the failure of dry heat to inactivate air-dried FMD virus. It was concluded that this method which is in the present FAO security standards for FMD laboratories in Europe should be changed. FMD laboratories and Institutes are requested to review their current inactivation procedures by taking this information into account.

Further research combining different treatments and risk analysis should be carried out.

**Vaccine and proposals for amendments of the FMD Monograph of the European Pharmacopoeia.**

Based on a proposal from the Research Group, the Executive Committee had decided to invite representatives of European vaccine producers to present their view for amendment of the FMD vaccine Monograph of the European Pharmacopoeia. It is generally accepted that the EP Monographs are designed to be appropriate to the needs of Regulatory Authorities, persons involved in the control of product quality as well as manufacturers of starting materials and medicinal products.

In particular two areas of concern were identified:

The replacement of the in-vivo safety test by more sensitive and statistically valid in-vitro tests. Results of safety testing of FMD vaccine batches were presented. Out of 253 batches only one failed the in-vivo test whereas 17 failed to pass the in-vitro safety test, clearly indicating that the in-vivo test does not really contribute to safety control of the vaccine.

The need to evaluate the PD50 and alternative methods for potency testing in other target species with a view to future inclusion in the European Pharmacopoeia.

The Chairman of the Research Group suggested to establish an ad hoc Working Group to be appointed by the Executive Committee. Dr Amadori, Dr Barteling and Dr Haas could be members of the Group together with representatives of producers, vaccine banks and of the EC Scientific Committee. Other experts of control authorities, EMEA (European Agency for the Evaluation of Medicinal Products) and specialists in statistics and quality assurance could be invited to participate in certain meetings in accordance with the Agenda.

**Closed Session**

*Vaccination against A/Iran and type A vaccines.*

Considering the field information already available on this subject and the possibility to get sera from vaccine producers and from Turkey for additional serological testing, the Group agreed that there was no need for organising a trial on large animals to verify the protection of the existing vaccines against the new strain.

The Group is of the opinion that there is a need to make a reassessment of the appropriate A vaccine to be used in Turkey.

The question of the appropriate antigen and sera to be used for the detection of the new type A virus and antibodies in national laboratories was raised and it was agreed that sera against the new A/Iran strain should be provided to laboratories.

*Development of kits for the non-structural protein*

As a start a double blind collaborative study should be organised under the next phase of the EU concerted action coordinated by the national laboratory of Germany.

*Serosurveillance in Bulgaria*

The Group agreed that the serosurveillance in small ruminants should be continued on the border with Turkey.
The collection of samples reinforces the clinical surveillance and the testing of sera maintains the activity in the national laboratory.
Testing against the 3D non-structural protein has been suggested. Bulgaria shall provide a protocol and an annual report to EUFMD when the Commission supports the cost of reagents.

*Provision of vaccine strains by the WRL and focus on index case*

The Group agreed that the provision of viral strains adapted for vaccine production is beyond the responsibility of the WRL.
The Group agreed on the need to define the index case and that procedures for early detection and investigation should be foreseen in the Contingency Plans.

*Other items*

The Group was informed that Professor Schüller had taken up new duties in Brussels and therefore had resigned as a member.
The Group expressed regret that one of the members was unable to attend the two successive Sessions in 1997 and 1998 and suggested that this could be avoided for the next Group to be designated in 1999.
The participant from France extended an informal invitation to the Group to hold their next Session at Maisons Alfort in France in 1999, and the participant from Bulgaria proposed to organise the next open Session in Sofia in 2000.

**Annex 15**

## REPORT OF THE WORLD REFERENCE LABORATORY FOR 1997/98

### *Diagnostic Samples*

Tables 1 and 2 list the samples received in 1997 and 1998 for diagnosis, the country of origin and the results obtained.

The total number of samples received for virus/antigen investigation in 1997 was 400; in 1998 it was 379.

### *Visitors for Training and Discussions*

Visitors to the WRL during 1997 and 1998 are listed in Tables 3 and 4.

### *Supply of Reagents*

Reagents were supplied to national FMD laboratories for diagnosis, research or vaccine production in the countries listed in Tables 5 and 6.

### *WRL Staff Visits*

WRL staff made visits to the countries listed in Table 7, either to organise or assist in training courses, or to provide advice on the epidemiology, diagnosis and control of FMD.

### *Visitors to the WRL 40th Anniversary*

Visitors who attended the 40th Anniversary of the WRL are listed in Table 8.

## Table 1:OIE/FAO World Reference Laboratory for Foot-and-Mouth Disease. Cumulative Report for 1997

| COUNTRY | No. of samples | FMD virus serotypes | | | | | | | SVD (a) | NVD (b) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | O | A | C | SAT1 | SAT2 | SAT3 | ASIA 1 | | |
| AFGHANISTAN | 3 | 1 | - | - | - | - | - | - | - | 2 |
| BAHRAIN | 4 | 3 | - | - | - | - | - | - | - | 1 |
| BANGLADESH | 1 | 1 | - | - | - | - | - | - | - | - |
| CAMBODIA | 5 | 3 | - | - | - | - | - | 2 | - | - |
| HONG KONG | 7 | 7 | - | - | - | - | - | - | - | - |
| INDIA | 19 | 10 | 1 | - | - | - | - | 2 | - | 6 |
| IRAN | 18 | 3 | 13 | - | - | - | - | - | - | 2 |
| ISRAEL | 2 | - | - | - | - | - | - | - | - | 2 |
| ITALY | 8 | - | - | - | - | - | - | - | 7 | 1 |
| JORDAN | 1 | - | - | - | - | - | - | - | - | 1 |
| KUWAIT | 5 | 5 | - | - | - | - | - | - | - | - |
| MALAYSIA | 16 | 2 | 8 | - | - | - | - | 3 | - | 3 |
| MALI | 2 | - | 1 | - | - | - | - | - | - | 1 |
| MAURITANIA | 8 | - | 2 | - | - | - | - | - | - | 6 |
| NEPAL | 100 | 9 | - | - | - | - | - | 13 | - | 78 |
| PAKISTAN | 3 | 3 | - | - | - | - | - | - | - | - |
| PHILIPPINES | 17 | 16 | - | - | - | - | - | - | - | 1 |
| QATAR | 10 | - | - | - | - | - | - | - | - | 10 |
| RWANDA | 7 | - | - | - | - | 1 | - | - | - | 6 |
| SAUDI ARABIA | 3 | 1 | - | - | - | - | - | - | - | 2 |
| SENEGAL | 14 | - | 2 | - | - | - | - | - | - | 12 |
| SRI LANKA | 2 | 2 | - | - | - | - | - | - | - | - |
| TAIWAN PROVINCE OF CHINA | 110 | 93 | - | - | - | - | - | - | - | 17 |
| TURKEY | 11 | 6 | 2 | - | - | - | - | - | - | 3 |
| UNITED ARAB EMIRATES | 7 | 3 | - | - | - | - | - | - | - | 4 |
| VIETNAM | 11 | 9 | - | - | - | - | - | - | - | 2 |
| ZIMBABWE | 6 | - | - | - | - | 6 | - | - | - | - |
| TOTAL | 400 | 177 | 29 | - | - | 7 | - | 20 | 7 | 160 |

Institute for Animal Health, Pirbright, Woking, Surrey UK
(a)Swine vesicular disease
(b) No virus detected

103 out of 143 positive samples tested as original suspension were typed by enzyme linked immunosorbent assay (72%) and the remainder (28%) were typed as tissue culture.

## Table 2: OIE/FAO World Reference Laboratory for Foot-and-Mouth Disease.

### Cumulative Report for 1998

| COUNTRY | No. of samples | FMD virus serotypes | | | | | | | SVDV (a) | NVD (b) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | O | A | C | SAT1 | SAT2 | SAT3 | ASIA 1 | | |
| BAHRAIN | 8 | 8 | - | - | - | - | - | - | - | - |
| BHUTAN | 2 | 2 | - | - | - | - | - | - | - | - |
| BURKINA FASO | 9 | - | - | - | - | - | - | - | - | 9 |
| CAMBODIA | 10 | 10 | - | - | - | - | - | - | - | - |
| ERITREA | 12 | - | 2 | - | - | 7 | - | - | - | 3 |
| GAMBIA | 52 | - | 10 | - | - | - | - | - | - | 42 |
| GREECE | 10 | - | - | - | - | - | - | - | - | 10 |
| HONG KONG | 5 | 1 | - | - | - | - | - | - | - | 4 |
| IRAN | 28 | 15 | 12 | - | - | - | - | - | - | 1 |
| ITALY | 18 | - | - | - | - | - | - | - | 18 | - |
| KUWAIT | 3 | 2 | - | - | - | - | - | - | - | 1 |
| LEBANON | 17 | 14 | - | - | - | - | - | - | - | 3 |
| MALAWI | 2 | 2 | - | - | - | - | - | - | - | - |
| MYANMAR | 2 | 1 | - | - | - | - | - | - | - | 1 |
| NEPAL | 8 | 6 | - | - | - | - | - | - | - | 2 |
| NEW ZEALAND | 11 | - | - | - | - | - | - | - | - | 11 |
| PAKISTAN | 12 | 1 | - | - | - | - | - | 3 | - | 8 |
| PHILIPPINES | 18 | 16 | - | - | - | - | - | - | - | 2 |
| RWANDA | 6 | 3 | - | - | - | - | - | - | - | 3 |
| SAUDI ARABIA | 43 | 12 | - | - | - | - | - | - | - | 31 |
| TAIWAN PROVINCE OF CHINA | 13 | 2 | - | - | - | - | - | - | 5 | 6 |
| TANZANIA | 10 | 9 | - | - | - | - | - | - | - | 1 |
| TURKEY | 44 | 9 | 29 | - | - | - | - | - | - | 6 |
| UGANDA | 21 | 4 | - | - | - | 2 | - | - | - | 15 |
| YEMEN | 15 | 12 | 1 | - | - | - | - | - | - | 2 |
| TOTAL | 379 | 129 | 54 | - | - | 9 | - | 3 | 23 | 161 |

* Institute for Animal Health, Pirbright, Woking, Surrey, UK

(a) Swine vesicular disease virus

(b) No virus detected

115 out of 157 positive samples tested as original suspension were typed by enzyme linked immunosorbent assay (73%) and the remainder (27%) were typed as tissue culture.

**Table 3: Visitors for Training and Discussions during 1997.**

| | | |
|---|---|---|
| Dr Sinan Aktas | Turkey | January/December |
| Mr Pablo Caballero | Paraguay | April |
| Mr Ivanco Naletoski | FYR Macedonia | April |
| Dr Georgi Georgiev | Bulgaria | April |
| Dr Ivailo Chenchev | Bulgaria | April |
| Mrs Emilia Veleva | Bulgaria | April |
| Mr Joseph Sarr | Senegal | May |
| Prof. Tien-Iye Chang | Taiwan POC | May |
| Dr Ming-Hwa Jong | Taiwan POC | May |
| Dr Ping-Cheng Yang | Taiwan POC | May |
| Prof. Rea-Min Chu | Taiwan POC | May |
| Prof. Wen-Bin Chung | Taiwan POC | May |
| Dr Yeong-Nan Lin | Taiwan POC | May |
| Dr Watson H Sung | Taiwan POC | May |
| Dr Cheng-I Liu | Taiwan POC | May |
| Dr Helen Hondrokouki | Greece | June |
| Dr W Tu | Taiwan POC | June to July |
| Dr Y Lin | Taiwan POC | June to July |
| Mrs Y Lee-Lin | Singapore | August |
| Dr Ramiz Velic | Bosnia Herzegovnia | September |
| Dr Toru Kanno | Japan | September/October |
| Miss Fairouz Hamou | Tunisia | September/October |
| Dr Rosa Di Landro | Uruguay | October |
| Dr Alfredo Garin | Uruguay | October |
| Dr Andres D Gil | Uruguay | October |
| Dr Mec Chung | South Korea | October/November |
| Dr Goncala Arita | Brazil | October/November |
| Dr Naheed Hussein | Malaysia | November/February |
| Mr Daud Zakaria | Malaysia | November/February |
| Dr Mathew | Saudi Arabia | December/January |

**Table 4: Visitors for Training and Discussions during 1998.**

| | | |
|---|---|---|
| Mr Hikmet Ün | Turkey | January/April |
| Dr G Jermolenko | FR Yugoslavia | January (2 weeks) |
| Dr M Val_i_ | FR Yugoslavia | January (2 weeks) |
| Miss M Lundervold | UK | February (6 weeks) |
| Dr M Jiminez | Spain | March (2 days) |
| Dr M Callens | Brussels | March (2 days) |
| Dr A Bulut | Turkey | March (1 year) |
| Ms Mary Lou Berninger | USA | April (9 days) |
| Miss E Felipe | Philippines | April (9 months) |
| Dr YaYa Thiongane | Senegal | April (1 month) |
| Dr R Di Londro Casas | Uruguay | May (2 weeks) |
| Dr M Edacheril | Saudi Arabia | May (3 weeks) |
| Dr N Panizzutti | Brazil | August (3 weeks) |
| Dr S Hammami | Tunisia | September (8 days) |
| Dr M Piccone | Argentina | September (10 days) |
| Dr Ana Maria Espinoza | Peru | September (4 weeks) |
| Dr B Verin | Philippines | September (6 weeks) |
| Dr W Linchongsubongkoch | Thailand | September (3 days) |
| Dr S Vanaga | Latvia | October (5 weeks) |
| Dr M Hesounova | Czech Republic | October (5 weeks) |
| Dr J Rakita | Bosnia Herzegovnia | October (5 weeks) |
| Dr P Jadud | Slovak Republic | October (5 weeks) |
| Dr M O'Connor | Ireland | October (2 weeks) |
| Dr R Silber | Austria | October (3 days) |
| Dr R Schrijver | Netherlands | October (3 days) |
| Dr P Eble | Netherlands | October (3 days) |
| Dr Butchaiah | India | November (2 days) |
| Dr Tomer | India | November (2 days) |
| Dr M Hesounova | Czeck Republic | November (4 weeks) |
| Dr P Hostnik | Slovenia | November (4 weeks) |
| Dr V Palfi | Hungary | November (4 weeks) |

**Table 5: Countries Supplied with Diagnostic Reagents during 1997.**

Austria
Bhutan
Bolivia
Bulgaria
Cambodia
Canada
Croatia
Czech Republic
Estonia
Ethiopia
France
Germany
Greece
Indonesia
Israel
Japan
Kenya
Korea
Kuwait
Laos
FYR Macedonia
Malaysia
Morocco
Myanmar
Netherlands
Philippines
Poland
Romania
Slovak Republic
Slovenia
Sri Lanka
Switzerland
Taiwan POC
Tchad
Tunisia
Turkey
United Arab Emirates
United States of America
Vietnam
Yemen

**Table 6: Countries Supplied with Diagnostic Reagents during 1998.**

Austria
Bangladesh
Bosnia Herzegovnia
Botswana
Bulgaria
Cambodia
Czech Republic
Estonia
France
Germany
Greece
Hong Kong
Hungary
India
Indonesia
Israel
Italy
Kenya
Laos
Malaysia
Morocco
Myanmar
Netherlands
Pakistan
Philippines
Poland
Portugal
Russia
Senegal
Slovak Republic
Slovenia
South Africa
Sweden
South Korea
Switzerland
Taiwan POC
Tchad
Thailand
Tunisia
Turkey
USA
Vietnam

**Table 7:** **Countries visited by WRL Staff**

**a) 1997**

Ireland
Bulgaria
Poland
Romania
Botswana
Kenya
Ethiopia
Saudi Arabia
Sweden
Tunisia
FR Yugoslavia
FYR Macedonia
Germany
Slovenia
Argentina
Israel
Yemen
Vietnam
Taiwan POC

**b) 1998**

Argentina
Bosnia Herzegovina
Brazil
Czech Republic
Hungary
Japan
Malaysia
Myanmar
Palestine
Peru
Philippines
Poland
Slovak Republic
Slovenia
Taiwan POC
Tunisia
Turkey
Uruguay

**Table 8:Overseas visitors who attended the 40th Anniversary of the WRL (Sept 1998).**

| | |
|---|---|
| Ahl Prof R | Germany |
| Alexandersen Prof S | Denmark |
| Amadori Dr M | Italy |
| Bachanek Ms K | Poland |
| Bahnemann Dr H | Germany |
| Bakkali Dr M M | Morocco |
| Bao Youdi Mr | PR China |
| Barteling Dr S | Netherlands |
| Benigno Dr C A | Philippines |
| Berlinzani Dr A | Italy |
| Bernardy Dr J | Czech Republic |
| Bla_evi_ius Dr E | Lithuania |
| Breeuwsma Dr A J | Netherlands |
| Brocchi Dr E | Italy |
| Bulut Dr N | Turkey |
| Correa Mr R | Germany |
| Crowther Dr J R | Austria |
| Danner Prof K | Germany |
| Daoud Dr A | Egypt |
| De Clercq Dr K | Belgium |
| Debourget Dr P | France |
| Dekker Dr A | Netherlands |
| Dobri_ Dr D | FR Yugoslavia |
| Elvander Prof M | Sweden |
| Espinoza Dr A-M | Peru |
| Felipe Dr E | Philippines |
| Feng Jinglan Dr | PR China |
| Füssel Dr A | CEC, Belgium |
| Gard Dr G | Australia |
| Gleeson Dr L | Thailand |
| Groocock Dr C | USA |
| Gruia Mr M | Romania |
| Gürhan Dr S Í | Turkey |
| Haas Dr B | Germany |
| Hammami Dr S | Tunisia |
| Have Dr P | Denmark |
| Hondrakouki Dr H | Greece |
| Horska Dr D | Slovak Republic |
| House Dr J A | USA |
| Ivanov Dr Y | Bulgaria |
| Jemerši_ Dr L | Croatia |
| Klingeborn Dr B | Sweden |
| Leforban Dr Y | FAO, Italy |
| Lika Dr A | Albania |
| Liu Dapin Dr | PR China |
| Lombard Dr M | France |
| López Dr J | Brazil |
| Lubroth Dr J | USA |
| Madec Dr J Y | France |
| Marabelli Dr R | Italy |
| Marquardt Dr O | Germany |
| Murakami Dr Y | Japan |
| Naletoski Dr I | YR Macedonia |
| Nú Dr T N | Portugal |
| O'Reilly Dr P J | Ireland |
| Pàlfi Dr V | Hungary |
| Panina Prof. G-F | Italy |
| Pazôut Dr | Czech Republic |
| Philippe Dr B | Belgium |
| Piccone Dr M E | Argentina |
| Raftery Ms J | FAO, Italy |
| Rahman Dr A O Abdel | Egypt |
| Reek Dr F | Netherlands |
| Reichard Dr R | OIE, France |
| Remond Dr M | France |
| Rödder Dr H | Germany |
| Rweyemamu Dr M | FAO, Italy |
| Ryan Mr J | FAO, Italy |
| Š_erbavi_ius Dr R | Lithuania |
| Schon Dr J | Luxembourg |
| Schrijver Dr R | Netherlands |
| Sihvonen Prof L | Finland |
| Silber Dr R | Austria |
| Sorensen Dr K J | Denmark |
| Sterritt Dr W | OIE, France |
| Swam Dr H | Netherlands |
| Terpstra Dr C | Netherlands |
| Terreran Dr M T | Brazil |
| Terzi_ Dr S | Croatia |
| Thomson Dr G R | South Africa |
| Vanaga Dr S | Latvia |
| Verin Dr B | Philippines |
| Vitásek Dr J | Czech Republic |
| Webb Dr R | FAO, Philippines |
| Wensing Prof C J G | Netherlands |
| Westbury Dr D | Australia |
| Xie Qin Q-C Prof. | PRChina |
| Yadin Dr H | Israel |
| Yang Yongqin Dr | PR China |
| Zhang Nianzu Dr | PR China |
| Zhao Weining Dr | PR China |

**Annex 16**

# REPORT ON THE STATUS OF CONTINGENCY PLANNING IN MEMBER COUNTRIES

**JOHN RYAN & YVES LEFORBAN**

## *INTRODUCTION*

At the 32nd Session of the Commission it was decided that the Secretariat was to be informed of the status of member countries' contingency plans and that the executive committee should follow up on the report of the situation. The contingency plans were assessed by questionnaire prepared in English and in French.

This report will initially take a look at the response rates to the questionnaire. This will be followed by an analysis of these responses. Then a special section will outline the specific constraints mentioned by member states. This will be followed by an analysis of the role of EUFMD in relation to contingency planning and finally the conclusions.

## *RESPONSE RATES*

**Results**

The response rate was good with 30 responses and only 3 countries not responding. Of these responses 21 countries supplied a copy of their plan while 9 did not. Of the 15 EU countries, 14 responded to the questionnaire, and all included a copy of their plan. Of the 18 non-EU countries, 16 responded to the questionnaire, but only 7 included a copy of their plan. Four countries have plans in preparation but 5 did not supply a copy of the plan.

**Comment**

The importance of having a contingency plan to deal with a crisis situation cannot be over emphasised, as the quality of decision-making under such crisis situations is directly proportional to the amount of planning and information gathering which has taken place before the outbreak.

## *ANALYSIS OF RESPONSES*

The questionnaire examined all aspects of the contingency planning process:

1) the necessary legal powers
2) financial provisions
3) the chain of command
4) the resources required
5) the procedures and protocols defined
6) staff training
7) awareness campaigns
8) the decision and preparedness for emergency vaccination

## 1) Legal Powers Results

This section of the questionnaire analysed whether the necessary legal powers are available to the Veterinary Services to adequately deal with an outbreak situation.

All of the 30 countries that replied can enlist the help of the police and other authorities, can impose restrictions on animal movements and can initiate emergency vaccination. All but 2, i.e. 28 countries, can impose compulsory slaughter of infected and in-contact animals and can subsequently destroy the infected and in-contact animal carcasses. Legal provisions for the compensation of farmers following compulsory slaughter are in place in 26 countries.

Constraints specific to the legal aspects of contingency planning were mentioned by four countries. These included not having enough funds to implement the law, difficulties in defining control zones, difficulties in modifying the legislation to allow compensation payments, existing legislation allowing local authorities to act independently, and social factors and constitutional clauses preventing prolonged and complete animal movement restrictions.

**Comment**

In general the legal powers are adequate. All or part of the countries which don't allow compulsory slaughter lie outside Europe and practice preventative vaccination and ring vaccination around an outbreak. The constraints mentioned are specific to certain countries are not generalised problems.

## 2) FINANCIAL PROVISIONS

**Results**

The number of responses to this section was lower than that for other sections as only 23 member countries provided financial details. Only 13 countries have emergency funds permanently available, 6 more countries need to get governmental approval.

The total budget for animal health in member countries ranged from $400 million to 1 million with a mean of $33.3 million. This corresponds to a range of $25 to $0.36 (mean=$6.2) per head of susceptible livestock. Twelve countries reserved funds for payment of compensation and these funds ranged from $16 million to $10,000 (mean=$3.2 million). This corresponds to a range of $5 to $0.50 (mean=$1.6) per head of susceptible livestock.

The cost of maintaining an emergency vaccine/antigen stock was given by two countries. The total costs were given as US$580,000 and US$ 9 million, which corresponds to $0.21 and $0.32 per head of susceptible livestock.

**Comment**

Getting governmental approval for the necessary funds can be slow and add additional delay in an emergency situation.

The figures per head of livestock are only indicative of the level of preparedness and financial commitment of member countries' governments and they do not allow for the large variation in size of the member countries.

The available funds per head of livestock and the costs of maintaining a vaccine bank per head of livestock are useful for comparison between countries of equivalent size and can be used to justify the case for more funds when petitioning governments.

Comparing these budgets is difficult as the cost of implementing a contingency plan (labour, transport, communications, vaccine, facilities, equipment, disposables, compensation to farmers etc.) and the costs associated with the implications of an outbreak (effects on international trade, social impact, loss of production, loss of genetic resources etc.) vary greatly between countries and even between regions within countries.

For example, the total cost of all the control measures required to deal with an outbreak, and therefore the amount of funding required (for vaccine stocks, equipment, compensation funds etc.), varies significantly between an outbreak in densely populated pig exporting region of high cost western Europe, and an outbreak in sheep in a sparsely populated region of lower cost eastern countries.

In conclusion, the response to this section could be better. Much more data is required to make an assessment on whether there is sufficient funds available to deal with an outbreak. Compensation funds are highly recommended as they are critical in ensuring that farmer vigilance is the first line of defence.

There are 3 categories of costs which should be clearly calculated and up-dated regularly when securing funding for FMD (and other OIE listed diseases) from the political decision-makers:

1) Prevention costs – the costs that can be attributed to all the measures taken to prevent the introduction of the disease. These include awareness campaigns, training, border controls, controls and certification of trade in animal products, on-going animal identification programmes etc.

2) Control costs – the costs that will be incurred in dealing with a disease outbreak. These include extra man-hours, transport of material/equipment to disease site, cost of slaughtering and destruction of carcasses, compensation payments to farmers etc.

3) Implication costs – the cost of a disease outbreak in terms of lost trade, lost production, lost genetic resources, and the socio-economic impact on the region.

It is recommended that the total of Control costs (2) and Implication costs (3) are used to justify adequate funds to cover Prevention costs (1).

In justifying the availability of funding for Control costs (2) , it is suggested that the costs are calculated for several scenarios (worst case, best case, & a range of more probable scenarios) and a weighted average is calculated of these costs (the weights can be derived from probabilities suggested by a thorough risk analysis). This weighted average cost of controlling an outbreak can justify the provision of an emergency fund, when it is compared to greater costs like lost trade for longer periods, or the cost of not containing an outbreak.

In the larger countries, it would be useful if each region undertook this same economic analysis.

As the agricultural industry gains the greatest benefit from effective prevention and control of FMD, state veterinary services should explore any arrangements where the substantial costs involved could be shared with the industry. This may be essential in the future as European tax payers become less willing to support agriculture either directly or indirectly. Two ways which could be explored are the creation of revolving funds administered by the industry, or a system of insurance against the costs involved in an outbreak, where the premiums to be paid by each enterprise are based on the risk associated with their activities i.e. an importer of pigs for fattening in a densely populated region would pay more than a combined breeding-fattening enterprise in a region with a low population of pigs.

It is because the industry doesn't pay for the disease prevention costs incurred by its activities in international trade that such trade is so attractive and offers the potential for increased profits at the tax payers expense. Disease prevention and control costs are real and significant, if mechanisms were put in place where the full costs of disease control were allocated to those activities which carried the greatest risks, then such costs would act as a deterrent and help to reduce the overall risk of introduction of FMD. As veterinary services are under increasing pressure to remove barriers to trade under GATT and WTO agreements, new mechanisms must be found to protect the livestock populations under their care and new mechanisms of financing this increased workload must also be found. This is why these options should be fully explored and supported.

## 3) CHAIN OF COMMAND

**Results**

A direct chain of command exists 29 countries. A National Disease Control Centre (NDCC) exists in all countries. It is headed by the CVO in 19 countries, by another officer in 6 countries, by the minister in 1 country and it is not clear who heads the other 4 NDCC's. In one country representatives of the 5 Ministries involved in emergency situations have representatives at the NDCC.

The organisation of the NDCC varies greatly between countries. The number of staff within the Centre varies from 3 to 12. The equipment listed in the questionnaire is available in 22 countries.

Regional Disease Control Centres (RDCC) and/or Local Disease Control Centres (LDCC) exist in 24 countries. The number of RDCC and LDCC varies from 0 to 500. The structure and arrangements between national and regional disease control centres varies considerably across countries.

**Comment**

The different arrangements and structure of disease control centres in the countries reflects differences in size, administrative history, power distribution, etc. It is not correct to judge a "right" or "wrong" structure, the only issue is whether any given structure is appropriate to the size of a country, the culture of the staff etc. What is really important its that the correct decisions are made. Clear leadership and rapid

decision making are required in a crisis and often structures can have an undue influence on the flow of essential information to the decision makers and on the implementation of those decisions.

It is recommended that all countries recognise the shortcomings of whatever structure is in place i.e. it might be prudent to decentralise decision making and control in large countries, as long as a clear chain of command is still functioning and the regions can be trusted with correct decision making, while in smaller countries it may be more prudent to centralise the decision making and maximise the use of scarce expertise.

## 4) RESOURCES REQUIRED FOR DISEASE EMERGENCIES

The questionnaire enquired about the various resources needed to deal with an outbreak, i.e. personnel – in terms of manpower and expert teams – equipment, materials and communications.

The actual manpower available in the veterinary services to deal with an outbreak varies from 40 to 3,000 persons. This labour pool can be supplemented with private veterinarians and practitioners in 7 countries. Personnel issues are decided and organised at national level in 12 countries, at regional level in 6 countries and at both levels in 6 countries. Shortage of manpower was listed as being due to budgetary restrictions, difficulties involving private vets and a lack of any practical experience of FMD amongst the great majority of personnel.

In response to these constraints, other possibilities which could be explored are hiring national or international consultants for the period of the outbreak, sub-contractors - veterinary or other specialists or commandeering staff from other governmental departments.

One or several teams of experts exist in 21 countries. In 4 countries there are several teams who can operate at the same time. Each team consists of 3 to 6 experts who are specialists in virology, epidemiology, weather forecasting, communications, an economist etc. In 2 countries these teams meet regularly even during periods of absence from the disease.

Equipment for collection and transport of samples is available in 29 countries, it is available in the national laboratory in 20 countries, in the regional laboratories in 5 countries and in the RVO or DVO in 9 countries.

In terms of equipment for humane slaughter, special vehicles for the humane killing of pigs are available in 3 countries, electric devices for the humane killing of animals are available in 7 countries and captive bolt guns are available in 12 countries. However, no special equipment for humane killing is available in 12 countries. Slaughtermen with their own equipment can be involved in 13 countries, and equipment for disinfection is available in 10 countries.

In terms of materials, 23 countries have protective clothing available, but in 12 countries, this is limited to expert teams or Disease Control Centre (DCC) staff only. Stocks of chemical products or disinfectants are available in 19 countries and an

additional 3 countries have special contracts with private manufacturers. In 11 countries additional equipment for cleaning , disinfection and for burying animals (excavators) can be obtained by leasing. Advance arrangements or service contracts are made in only three countries.

Communication Equipment exists in all countries at the national (NDCC) and regional levels (RDCC, LDCC). Fax facilities are present in all centres and 12 NDCC are equipped with mobile phones. It is safe to conclude that communication is no longer a major problem in member countries.

The specific constraints mentioned in regard to resources were a lack of funding and a lack of standing arrangements for sanitation, while the more general constraints were a lack of advance contracts and a lack of facilities for humane slaughter.

## 5) PROCEDURES

**Results**

Written instructions for dealing with FMD outbreaks exist in only 21 countries but were updated in 1997 or 1998 in only 12 countries. Eight countries updated them between 1995 and 1996 and 2 countries updated them pre-1994.

**Comment**

The importance of written protocols/plans that are updated regularly cannot be too highly emphasised. There is also no conclusive evidence from the questionnaire that these documents/manuals are in place.

**Results**

The collection of samples is also very varied with the National Laboratory responsible in 7 countries, the regional laboratory in 2 countries, a team of experts in 5 countries, the DVO in 9 countries and the local veterinarian in 5 countries. Standing arrangements for sending suspected material to the WRL exist in only 10 countries and of these only 2 countries have pre-printed export permits and standing arrangements with air companies.

**Comment**

Once again the method of collection of samples is not as important as the result which should be: rapid sampling by well-equipped competent vets or technicians in the field. The 1996 outbreak in the Balkans showed that in the absence of standing arrangements with air companies and the WRL transporting samples may take some time.

Rapid diagnosis and characterisation of the virus strain by a competent laboratory and/or the WRL is highly recommended but the results do not suggest that sufficient advance arrangements have been made in this regard. It must be recalled that this commitment to provide the WRL with all new isolates – ideally all index cases – is included in Paragraph 4, Article II of the Constitution of the Commission.

## 6) TRAINING

**Results**
Only 20 countries organised training workshops and their number varied from 1 to 20 per year. Simulation exercises were organised in 17 countries and were combined with the training workshop in 8 countries. Material for training is prepared in 17 countries and videos for training are prepared in 9 countries. Constraints for training were mentioned in 11 countries, and include the increase in the official tasks of veterinary service, a lack of training material, the cost, a lack of personnel, and a lack of experience in organising simulation exercises.

**Comment**
Training programmes are not a strong enough feature in the plans, and should be increased. Simulations are needed to keep awareness and freshness. Assistance can be provided in designing and organising these simulations. The constraints as regards training are generalised problems but may be overcome by giving a higher priority to FMD, committing more resources to FMD and getting assistance from EUFMD or other countries with more experience in specific areas. This can be justified as simulations and training for FMD can also have benefits in the control of other exotic diseases.

## 7) AWARENESS CAMPAIGNS

**Results**
In the period 1995 to 1997 there were 11 countries where a suspicion of vesicular disease has been reported, there were 12 countries with no suspicions of vesicular disease and in 7 countries there was no answer to the question. In total, 110 false suspicions for vesicular diseases were notified that is an average of 35 suspicions per annum that were ruled out by national experts and in some cases after laboratory testing.

Awareness campaigns are conducted for vets in 22 countries, for farmers in 18, for farmers associations or the industry in 19, and for the public and consumers in 14.

The media used depends on the target group, sanitary bulletins, and professional magazines for veterinarians, professional magazines and farmers journals for farmers and the industry and TV and the printed press for the general public. One country also uses the internet to disseminate FMD information. One country also arranges a special programme for airlines serving infected countries.

The absence of FMD for many years in the great majority of countries is reported as a major constraint for awareness campaigns as private vets and farmers become de-sensitised to the campaigns.

**Comment**
Where no suspicions are reported it may be due to low levels of awareness or surveillance or particularly in countries that are free of the disease, that the reporting procedures are too complex i.e. the costs and consequences of reporting false suspicions are too high for the farmer and the vet.

When it comes to awareness, all national veterinary services have limited resources in terms of man-hours and funds, therefore it is all the more important that strategic use is made of them. Some countries only organise campaigns at the time when the disease has entered neighbouring countries, this may be too late!!! It is suggested that a basal awareness campaign should be maintained at all times, and in the case of increased threat, that this campaign should be boosted.

The aims of an awareness campaign should be to sensitise all citizens to the dangers of FMD, while targeting sub-groups of the population with more specific knowledge when required. A strategic awareness plan should build the general awareness of the population over time. A suggestion is as follows:

The short term goal would be an awareness campaign to target any group dealing with infected countries (tourists, traders, transport companies) and give them a basic awareness of the do's & don'ts.

A medium term goal would be to target all relevant professionals/technicians (vets, agriculturists, customs professionals, police etc.) and ensure that they are given a full appreciation of the dangers, the economic impact and the control methods for FMD and other OIE listed diseases. They should be thoroughly educated as to their role and responsibilities in the control of these diseases, and this includes regular refresher courses for all these professionals.

The long term goal is to raise the general awareness among the population, and activities can be taken to target young people in schools to give them a basic appreciation of the importance of the OIE-listed diseases and outline their civic duties regarding disease prevention and control. This may overcome the problem of ignorance when tourists illegally import animal products from infected countries and will mean that warnings given later in their lives will have a greater impact.

As the volume of international travel and trade continues to grow, there is a need for veterinary services to modify their view of exotic diseases. It may no longer be possible to police and control all the movements of people, animals and animal products which can impact on a country's disease status. In this scenario, prevention of animal diseases becomes a concern for everybody.

## 8) ARRANGEMENTS FOR EMERGENCY VACCINATION

### Results

The decision to vaccinate is taken by the CVO in 14 countries, by the minister in 7 countries and by a committee in 9 countries. Whether there will be rapid access to a vaccine bank with the relevant strain and to the necessary vaccination equipment is not clear from the results of the questionnaire.

### Comment

Clear rules on the scenarios, criteria and thresholds when emergency vaccination should be implemented and on the procedure for arriving at this decision should be included in the contingency plan. Consulting with trading partners and international organisations is also highly recommended as it can clarify and simplify the process

for re-instating trade when the country or region is free from the disease again. This is reflected in the recent history of outbreaks in Europe, when decisions to vaccinate were not taken at purely national level but in a committee which included representatives of international organisations.

An examination of the whole information system leading to such a big decision is suggested, i.e. the arrangements for reporting, gathering data, processing the information, the role of decision support programmes, thresholds, scenarios, computer models etc.

## *CONSTRAINTS*

Specific problems with the whole process of contingency planning are: the absence of disease for several decades de-sensitising farmers and vets, the shortage of funds, the lack of personnel, the disposal of cadavers while respecting the environment, access to vaccine banks, the involvement of other authorities/associations/police/industry, involvement of private veterinary personnel, the limited number of experts and staff with experience in FMD and the difficulty in giving contingency planning a high priority among the many other tasks of the veterinary service.

## *ROLE OF EUFMD*

The role of EUFMD got a very mixed bag of responses and this was due to the open nature of the question where countries were free to suggest any response. The most popular role identified was to inform and co-ordinate FMD surveillance and control suggested by 19 countries, followed by dissemination of information (10 countries), and the organisation of meetings/training courses and promoting regional co-operation suggested by 9 countries. There was some support for the roles of advising on contingency plans (8 countries), of preparing guidelines (4 countries), of providing equipment and vaccine (3 countries) and of helping countries gain access to vaccine banks (2 countries).

This mixed bag of responses probably reflects the different status of member countries in terms of their economic and political circumstances as well as their disease status. As countries needs differ so do their expectations from EUFMD.

This is also reflected in the replies to the question on which particular aspects of contingency planning that the support of EUFMD is expected. 11 countries expected technical advice and co-ordination, 9 countries expected training and simulation exercises, 8 countries wanted a team of experts from EUFMD to assist in outbreaks of FMD, 2 countries expected EUFMD to help non-EU countries, 2 countries expected grant-aid for their National Diagnostic Laboratory, and 6 countries expected EUFMD to create publicity and disease awareness.

All 30 countries agreed that their contingency plans and the other information that they provided could be circulated to other member countries. All countries also agreed to share their experience and provide support to other member countries in the preparation of their plans.

## *CONCLUSIONS*

For EUFMD we conclude that the questionnaire was a useful exercise and that it should be repeated regularly to track improvements or slippages in contingency planning. It is hoped for a better response from non-EU countries and an increase in the number of plans submitted. Assistance can be given to any member country in the preparation or validation of a plan. A small stock of non-perishable equipment has been ordered for Rome as agreed.

There will always be resource constraints even in the richest countries. What must be remembered is that finance is only one resource of many, yet it seems to get most of the attention. Leadership, good planning and sound management are far more important resources which should not be forgotten.

As the only true measure of a contingency plan is its success when confronted with a real outbreak, validation by simulation should be a priority for all countries. This cannot be emphasised too strongly.

To follow up this report it is suggested that EUFMD:

1) prepare guidelines for the creation and validation of contingency plans

2) repeat the questionnaire at regular intervals to track progress in contingency planning

3) make current training materials available in English and in French

**Annnex 17**

**Draft guidelines for the assessment of the risk of introduction of FMD into Europe; focusing on the threats associated with tourism and transport and on the preparation of an awareness campaign to decrease these risks.**

Yves Leforban, John Ryan

The 32nd Session of the Commission, held in 1997 in Rome, asked the Secretariat of the Commission to prepare a draft of guidelines to prevent the introduction of FMDV by tourists or workers originating in FMD infected countries. These guidelines, after adoption by the Commission, should be used to prepare awareness campaigns targeted at the population concerned in member countries.

Possible places of origin of the virus

All FMD infected countries. Regions classified by order of perceived risk to Europe:
- Middle East
- CIS countries
- North Africa
- Asia
- South America
- rest of Africa

Possible sources of virus (classified by decreasing risk)

*Live animals*
sheep and goats are particularly dangerous as they rarely show symptoms, (wildlife may also be a source of virus, e.g. gazelles in Israel and in Kazakstan, Wild boars in Turkey)

*Animal products (see the OIE Code)*
- meat on the bone
- milk and milk products
- meat
- game meat
- hides and skins
- other animal products
- trophies

*Vehicles*
- trucks
- private cars

*People*

Periods of high risk

Peak Tourism period (summer holidays in Europe)
Return of migrant workers from holidays in their home countries (September)
Periods of religious festivals (Kurban holidays in Turkey)

Routes of entry

- Places of illegal crossing of terrestrial borders (illegal immigrants from Asiatic countries)
- Ferry boats (+ Cruise boats) between North Africa, Turkey, Black Sea and Europe
- Harbours: special attention should be paid to catering on ships and boats, to duty free shops, free port facilities and all places which are not under the control of national Veterinary Services (e.g. Piraeus in Greece was the port of entry of meat legally imported from India to Albania)
- Trucks: snacks, food and drivers belongings
- Private vehicles
- Airports (while scanning luggage at arrival, it is recommended that meat or at least meat on the bone should be detected - dogs could also be used to detect meat!)
- Yatchung harbours (waste food)

Chain of contamination in the country of destination

- contact between infected animals or contaminated products and susceptible animals is required
- garbage in bins along international motorways and highways
- swill distributed to pigs
- contaminated vehicles which have transported infected animals or contaminated products - the risk associated with external contamination of the vehicle or of the wheels is more limited

Specific threats associated with the situation in Turkey and in the Middle East

*Epidemiological situation*

- FMD continues to be endemic in the Middle East, Iran and Turkey, however the number of outbreaks has decreased in Turkey since 1995
- New type A strain. outbreaks have been reported in 9 Provinces of Turkey including 3 Provinces in Western Buffer Zone since its introduction . However the propagation of the virus was not as widespread as had been feared:
- Poor surveillance of FMD in the eastern part of the country may explain the low numbers of outbreaks reported

*Control measures*

- The quality of the vaccine used in Turkey is uncertain
- No vaccine available against the new strain in Turkey
- Cattle are not identified
- The movements of animals are not properly controlled

*Risk to neighbouring countries:*

- illegal crossing of the border by susceptible animals
- Populations of Turkish origin living in border areas
- Live animal or meat price differentials can be inductive for illegal importation into Europe
- payment of premium or of compensation in case of disease may also be inceptive to illegal import of live animals
- trucks and private vehicles in transit
- Turkish workers returning to Western Europe after their holidays (may carry fresh food of animal origin for two days of travel)

*Risk to other countries in Europe*
- Turkish workers returning to Western Europe after their holidays (the risk with fresh food is less important than preserved animal products, or milk products)
- Vehicles

Specific threats associated with the situation in CIS countries

*Epidemiological situation*
- FMD is present in Armenia and was present in Georgia in 1997, the situation in Asiatic countries is unclear
- New type A strain in Armenia
- Poor surveillance of FMD in Russia and in other counties due to lack of resources

*Control measures*
- uncertain vaccination coverage in Transcaucassian area
- No vaccine available yet, against the new strain in Vladimir Institute Russia
- Free movement of animals and animal products between the CIS countries
- cattle are not identified

*Risk to neighbouring countries:*
- illegal crossing of the border by susceptible animals (sub-clinically infected)
- legal crossing of borders with official certificates but with false or unclear animal origins (or accompanied by forged certificates)
- Live animal or meat price differentials can be inductive for illegal importation into Europe
- payment of premium or of compensation in case of disease may also be inceptive to illegal import of live animals
- trucks and private vehicles in transit
- travellers/truck drivers may carry fresh food of animal origin for two days of travel
- risk of delays in reporting and reacting to an outbreak - during this period of delay, no restriction measures will be taken at the borders

*Risk to other countries in Europe*
- workers returning to Western Europe after their holidays (the risk with preserved animal products is less important than with fresh food or milk products)
- Vehicles, trucks coming from Asiatic or Transcaucassian Republics
- Illegal immigrants

Origin of the introductions of FMDV in Europe since 1990

| | | |
|---|---|---|
| 1991 | Bulgaria | Illegal import of one goat |
| 1993 | Bulgaria | Illegal crossing of the border by small ruminants |
| | Italy | False certification of imported cattle |
| 1994 | Greece | Illegal import of sheep in Lesbos Island |
| 1996 | Albania / FYR of Macedonia | Import of meat on bone / or import of live animals from infected country |

| | |
|---|---|
| Greece | Illegal immigrants |
| Bulgaria | unknown |

Proposal for measures to decrease the risk of introduction of FMDV by tourists and workers

*awareness campaign with leaflets distributed at the border*
- one model for people and vehicles entering Europe is attached ( Annex I)

*destruction of animal products on the spot at the terrestrial border*

*awareness campaign in airports and harbours*

- on the risk of waste food from planes/boats coming from infected countries. The campaign should be targeted at airline companies, catering companies and airport management companies (model in Annex II)

*training of Veterinary teams at the border*

*training of Custom Officers/Police/Border Guards*

*Increasing their awareness of the countries with particular risks and reinforcing the controls applying to vehicles and travellers from these countries*

*encourage legal trade by simplifying import and testing procedures, and decreasing taxes/excise duties to discourage illegal trade*

*Annex I*

**Tentative text for a leaflet to be distributed to tourists on their return to Europe in their national language + one or several of the following languages: English, French, German, Turkish, Arabic or Russian.***

**DANGER ! YOU MAY BE UNINTENTIONALLY CARRYING FOOT-AND-MOUTH DISEASE VIRUS WHICH CAN INFECT LIVESTOCK IN THIS COUNTRY OR IN YOUR COUNTRY OF FINAL DESTINATION !**

You have come from a country that is not free of Foot-and-Mouth Disease and you are entering a country (or countries) that is free of this disease. Foot-and-Mouth Disease is a highly infectious viral disease of livestock (cattle, sheep, goats, and pigs) which is not harmful to humans, but which may cause dramatic losses when it infects livestock populations.

The virus is transmitted by infected animals, but it can also be transmitted by **meat, meat products, milk, dairy products, hides, skins or animal trophies** and subsequently infect susceptible animals which consume or are put in contact with these products.

You are kindly requested to inform the Customs Officer:
- if you are carrying any products of animal origin - including the food that you may have brought for consumption during your journey

**or**

- if you have visited a farm with cattle, sheep, goats or pigs on your travels. You should disinfect your shoes and clothes and avoid visiting farms or other places with susceptible animals for five days.

**Never throw any food to animals along the road. You should keep your waste food in a plastic bag and put it in the special bins.**

**It is prohibited to feed this waste food to pigs.**

(* EUFMD may provide support for translation of short leaflets in these languages, free of charge for member countries, the costs, if any, will be supported by EUFMD)

*Annex II*

***Awareness campaign for companies in Airports and Harbours (airlines, catering companies and airport and harbour authorities) on the risks associated with waste food from planes and boats coming from Foot-and-Mouth Disease infected countries.***

**DANGER ! YOU MAY UNINTENTIONALLY INTRODUCE FOOT-AND-MOUTH DISEASE VIRUS WHICH CAN INFECT LIVESTOCK IN THIS COUNTRY OR IN OTHER COUNTRIES IN EUROPE !**

Foot-and-Mouth Disease is a highly infectious viral disease of livestock (cattle, sheep, goats, and pigs) which is not harmful to humans, but which may cause dramatic losses when it infects livestock populations.

You manage a transport company having regular commercial relations with countries that are not free from Foot-and-Mouth Disease.

The virus is transmitted by infected animals, but it can also be transmitted by **meat, meat products, milk, dairy products, hides, skins or animal trophies** and subsequently infect susceptible animals which consume or are put in contact with these products.

**You are kindly requested to:**

**- take all necessary measures for the destruction by heat (min 100 degrees C for 20 min) of all waste food coming from your planes/boats.**
**- contact the National Veterinary Services on the local procedures to be followed to safely eliminate the waste food, which should never be distributed to animals.**

**Annex 18**

# THE AVAILABILITY OF FOOT AND MOUTH DISEASE VACCINE FOR EMERGENCY VACCINATION IN EUROPE

John Ryan

## 1. Introduction

A review of the availability of vaccine and inactivated antigen for emergency vaccination use was called for during the 62nd Session of the Executive Committee of the European Commission for the Control of Foot and Mouth Disease at their meeting in Lysebu, Norway in November 1998. This report is intended to be used as an update to the comprehensive report prepared by Dr. Garland for the 32nd Session of the European Commission for the Control of Foot-and-Mouth Disease.[1]

Foot and mouth disease (FMD) vaccines banks are of two types: those holding reserves of fully formulated and tested vaccine ready for immediate use but with limited shelf life, and those holding reserves of tested antigen of long shelf life which can be formulated into vaccine and filled as required. This paper is only concerned with antigen banks in Europe.

Stockpiles of FMD antigen have been in existence for over 20 years. The first was created in Denmark in 1976 while international banks were formally inaugurated in North America in 1982 and in Europe in 1985. National banks have also been created. Commercial manufacturers provide much of the antigen for these banks and also hold stocks in their own right.

To date stocks of antigen in international banks have been called upon to supply emergency vaccine rather rarely i.e. from the European Commission Vaccine Bank to the Balkans in 1996.

The threat of FMD persists and the risk of spread is exacerbated by political and economic developments, expanding free trade areas and ever more rapid movement of animals, animal products and people around the globe. In the European context the continuing risk from FMD is emphasised by the presence of endemic disease in Anatolian Turkey and recent outbreaks in North Africa and the Caucasian countries.

## 2. Existing FMD Vaccine Banks

There are essentially three existing types of FMD vaccine bank.

- **International, Government administered and financed banks.**
- **National, Government administered and financed vaccine banks.**
- **Commercially maintained vaccine banks.**

### 2.1 International Governmental Vaccine Banks

#### 2.1.1. The International Vaccine Bank (IVB)

The IVB came into being in 1985. The founder members were comprised of seven countries, all of which were free of FMD at the time and which have since maintained that freedom, namely: Australia, Finland, The Republic of Ireland, New Zealand, Norway, Sweden, and the United Kingdom. Malta joined the bank as an associate, non-voting member in 1995.

The bank is located at the UK Institute of Animal Health (IAH) Laboratory at Pirbright, England, which is also the World Reference Laboratory (WRL) and European Reference Laboratory for FMD. Antigens are purchased according to open tender from commercial sources. The IVB is unique among the FMD vaccine banks in having its own facilities for the formulation and filling of vaccines in dedicated premises under licensed conditions and in compliance with Good Manufacturing Practice.

The choice of antigens is determined according to the prevalent epidemiological conditions world wide and to reflect the likely needs of member countries in Europe and Australasia The selection process takes cognisance of the latest information available from the WRL, the Office International des Epizooties (OIE) and the Food and Agriculture Organisation (FAO) of the United Nations Organisation. It has not been deemed necessary to change the selection of antigens since the previous report in 1997. Currently the stocks include antigens equivalent to half a million doses of finished vaccine of each of the types and subtypes of virus and of the potencies shown in table 1.

**Table 1 : IVB Vaccine Stocks and Potency Values**

| Vaccine Type and Strain | | PD50 value as most recently assayed in 1996[2] |
|---|---|---|
| Type A15 | Thailand | > 112 PD50 per dose |
| Type A22 | Iraq | 75 PD50 per dose |
| Type A24 | Cruzeiro | 18 PD50 per dose |
| Type O1 | Lausanne | 41 PD50 per dose |
| Type O1 | Manisa | > 112 PD50 per dose |
| Type C1 | Oberbayern | > 112 PD50 per dose |
| Type Asia1 | India 8/79 | 61 PD50 per dose |

The bank is maintained in a constant state of readiness and has the capability of formulating, filling and despatching up to 500,000 doses of vaccine within three days of receiving a request from a member state. Both aqueous-saponised and oil adjuvanted vaccines can be formulated.

2.1.2. The European Union Vaccine Bank (EUVB)

The establishment of the European Union Vaccine Bank (also earlier referred to as the European Commission Vaccine Bank) was formally authorised in 1991 by EC Decision 91/666/EEC [5]. This Decision stipulated that the bank would eventually hold antigen equivalent to at least five million doses of vaccine of ten subtypes, these being specified in Annex 1 of the Decision. The Directorate General VI of the EC in Brussels manages the bank with technical advice from the FMD Sub-group of the Scientific Veterinary Committee of the Commission of the European Communities and the Standing Veterinary Committee.

Antigens are purchased from European manufacturers with a minimum acceptance level of 6.0 PD50 per dose. For ease of geographical access and for reasons of security the inactivated concentrates are divided between at least two of three designated storage locations situated at: Pirbright in the UK; the Laboratoire de Pathologie Bovine du Centre National d'Etudes Veterinaire et Alimentaire at Lyon in France; and the Instituto Zooprofilattico Sperimentale di Brescia in Italy.

The current quantities and locations of antigen in the EUVB are shown in Table 2.

**Table 2: EUVB antigen stocks and locations**

| Virus type and subtype | Quantity | Location. |
|---|---|---|
| O1 Tur 1/78 (Manisa) | 2,500,000 | Brescia |
| C1 Europe (Noville)* | 2,500,000 | Brescia |
| Asia1 (Asia 1 Shamir)* | 2,500,000 | Brescia |
| A22 Iraq 24/64 | 2,500,000 | Brescia |
| O1 Tur 1/78 (Manisa) | 2,500,590 | Lyon |
| O1 BFS | 2,500,692 | Lyon |
| A24 Cruzeiro | 2,500,874 | Lyon |
| A22 Iraq | 3,887,124# | Lyon |
| O1 BFS | 2,500,000 | Pirbright |
| A24 Cruzeiro | 2,500,000 | Pirbright |

(strain x) => Closest strain to those recommended by EUFMD Research Group Vienna, Sept. '94. See Appendix 1
# = items changed since the 1997 report

2.1.3. The All Russian Research Institute for Animal Health (ARRIAH) Vaccine Bank

The ARRIAH Institute at Vladimir near Moscow has for many years supplied vaccine for a number of regions within Russia and for countries formerly included in the USSR prior to the break up of the soviet block. The Institute is recognised by OIE as a Regional Reference Laboratory for FMD for the countries of Eastern Europe, Central Asia and Transcaucasia, including the function of acting as the vaccine bank for these regions. ARRIAH has negotiated contracts for the supply of vaccine to Bulgaria, Ukraine, Kazakhstan, Belarus, Moldavia and Turkmenistan [5, 6]. Its role in the co-ordination of FMD Control in the Caucasian countries (Russia, Armenia, Georgia, and Azerbaijan) has recently been defined by the EUFMD/OIE/EC mission to the Caucasian countries and ARRIAH Vladimir. (see item 5).

## 2.2 National Government Vaccine Banks (NGVB)

The status of NGVBs was reviewed in an international context by Callis in 1994 [6] and in an European context by the EUFMD Commission in 1993 [7], 1995 [8]. and again in 1997[1]. The latter three reviews utilised a questionnaire sent to all member countries - including both members and non members of the European Union - and a number of associated countries. This exercise was repeated in January 1999 and the detailed results are given in Appendix 2.

Summary of Results of the Questionnaire of NGVB in Europe in 1999
Questionnaires were despatched to the 33 member countries and replies were received from all 33 countries, giving a 100% response rate.

- Six countries (18%) have made no arrangements for the supply of emergency vaccine.
- Seventeen countries (52%) have made one arrangement - either through a national vaccine bank, through a contract with a commercial supplier or as a member of an international vaccine bank - for the supply of emergency vaccine.
- Ten countries (30%) have made more than one arrangement for the supply of emergency vaccine.

In total there are 11 national banks among the member countries, and they vary in their arrangements. Seven of the 11 banks (64%) are maintained by private manufacturers under contract; the remainder are with national institutes. Seven of the eleven banks (64%) consist of inactivated antigens only, 1 bank consists of formulated vaccine only and 3 banks include both.

Five countries (15%) maintain contracts for the supply of formulated vaccine in an emergency either from a commercial supplier or from a national institute.

Six countries (18%) are members of the International Vaccine Bank. The 15 (45%) EU members are all entitled to access the EU vaccine bank. However, nine of the fifteen (60%) have an additional arrangement, 4/15 are also members of the IVB and 5/15 maintain national vaccine banks. Of the ten countries who maintain more than one arrangement, 9 are EU countries.

Nine countries have changed their position since the previous report.
Six of these changes involved changes to a national vaccine bank. There was 1 new contract, a change in the terms of another contract and the final change was related to changes in the European Union vaccine bank.
Of the changes to the National vaccine banks, five of the six included a change in the profile of serotypes represented, four of the six increased the overall quantities and in general the changes reflected a trend towards more inactivated antigen than formulated vaccine.

### 2.3 Commercial Vaccine Suppliers

Three commercial companies are currently engaged in FMD vaccine manufacture within the EU namely: Bayer AG in Germany; Intervet in the Netherlands; and Merial in England and in France.[1]

Vaccine manufacturers outside the EU include: the government ARRIAH facility in Russia and regional vaccine plants in Shelkovo and Povrov [8]; the Dyntec company at Terezin in the Czech Republic; the government SAP Institute in Ankara and the new, private Vetal company at Adiyaman in Turkey.[1]

On contacting these manufacturers the amount of additional information to that provided by Dr. Garland in his previous report is very little.[1] Some manufacturers reported that due to the current outbreak of FMD type O in

North Africa, very little type O vaccine was available for quick delivery, but this vaccine is still available from other suppliers.

### 3. Summary

The IVB holds antigen equivalent to 3.5 M doses of formulated vaccine of seven serotypes and is accessible to 6 commission members. The EUVB antigen stocks are equivalent to 26.4 M doses of six serotypes and are accessible to the 15 EU member countries (and possibly other countries on a case by case basis). National vaccine banks in member countries currently hold antigens equivalent to 38.4 M doses of formulated vaccine and cover 17 serotypes. The full break down of Serotypes can be found in Table 3. Thus there are antigen stocks capable of producing some 68.3 M doses in member countries, excluding some stocks maintained by commercial firms and the antigens held in the ARRIAH bank.

Table of Detail of Emergency Vaccine Stocks

| Serotype | IVB | EUVB | NGVB | Totals |
|---|---|---|---|---|
| O | 1,000,000 | 10,001,282 | 10,778,718 | 21,780,000 |
| A | 1,500,000 | 11,387,398 | 13,599,602 | 26,487,000 |
| C | 500,000 | 2,500,000 | 6,800,000 | 9,800,000 |
| Asia 1 | 500,000 | 2,500,000 | 5,240,000 | 8,240,000 |
| SAT1 | | | 1,000,000 | 1,000,000 |
| SAT2 | | | 1,000,000 | 1,000,000 |
| **Total** | 3,500,000 | 26,389,280 | 38,417,720 | 68,307,000 |

## 4. References:

1. Garland A.J.M. (1997) The Availability of Vaccines for Emergency Vaccination in Europe. Report of the 32nd Session of the European Commission for the Control of Foot and Mouth Disease, Rome, Italy 2-4th April 1997. Appendix 8, pages 89-111.

2. Pastoret P-P. (1996) Report on the Control of Foot and Mouth Disease in the European Union. Directorate General VI, European Commission, Brussels.

3. Anon.(1991) Council Decision of 11th December 1991. establishing Community Reserves of Foot and Mouth Disease vaccines (91/666/EEC).

4. Anon. (1994) Virus Strains for Vaccine Banks. European Commission for the Control of Foot and Mouth Disease. Session of the Research Group of the Standing Technical Committee, Vienna, Austria, 15-22nd September 1994. Item 8, pages 8-9.

5. Zakharov V.M., Baibikov T.Z., Rakhmanov and Dudnikov A.I. (1995) Foot and Mouth Disease Control Strategies in the Russian Federation and in Ex-USSR Countries. European Commission for the Control of Foot and Mouth Disease. Meeting of the Research Group of the Standing Technical Committee, Vladimir, Russian Federation, 20-22 September 1995. Appendix 13, pages 81-83.

6. Callis, J. (1994) Vaccine Banks: Present Status and Future Development. In the Proceedings of the 62nd General Session of the Office International des Epizooties. Paris, 16-20 May 1994. Report 62/SG 10, pages 1-6.

7. Anon.(1993) (a) Foot and Mouth Disease Prophylaxis in Europe 1991-92. (b) Vaccination programme 1991-1992. Report of the 30th Session of the European Commission for the Control of Foot and Mouth Disease, Rome, Italy, 27-30 April 1993. Appendix 3, pages 28-35.

8. Leforban Y. (1995) Availability of Vaccines for Emergency Vaccination in Europe. Report of the 31st Session of the European Commission for the Control of Foot and Mouth Disease, Rome, Italy 5-7th April 1995. Appendix 9, pages 60-65.

## Appendix 1

# FMD virus strains recommended for inclusion in the European Vaccine Bank by the Research Group of the EUFMD at its Session held in Vienna from 19-22 September 1994

*Vaccine strains recommended for inclusion in the European Vaccine Bank:*

| | |
|---|---|
| **High priority** | 0 Manisa<br>O BFS or Lausanne<br>A22 Iraq<br>A24 Cruzeiro<br>Asia 1 Shamir<br>C Noville |
| **Medium priority** | SAT 2 Zimbabwe<br>A15 Bangkok related strain<br>A87 Argentina related strain<br>A Saudi Arabia<br>SAT 1 South Africa<br>C Philippines<br>A Turkey |
| **Low priority** | SAT2 Kenya<br>SAT1 Kenya<br>SAT3 Zimbabwe<br>O Thailand<br>A Kenya<br>0 Hong Kong |

(not in order of importance)

*Strain not Circulating at the time of the recommendations above:*

A Iran/96

## Appendix 2

**Strategic Reserves of FMD Vaccine and Antigen held by Member countries as of as of March 1999.**

| Country | Changed | IVB[1] | EUVB[2] | Strategic Reserves Of Vaccine Or Antigen |
|---|---|---|---|---|
| Albania | | | | Does not maintain a vaccine antigen bank. |
| Austria | | | ✓ | |
| Belgium | ✓ | | ✓ | Antigens are stored at Merial, Pirbright. Stored antigens are equivalent to 1,200,000 doses of each of the following serotypes: A Iran 1996; O1 Manisa; C3 Philippines; and Asia1 Shamir. |
| Bulgaria | ✓ | | | Has contracted with the ARRIAH, Vladimir, Russia for the provision in case of need of 30 000 doses anti-FMD vaccine A22 and 30 000 doses anti-FMD vaccine O1 |
| Croatia | ✓ | | | Has a contract with private firm "Veterinaria" for the provision of 60,000 doses of Emergency vaccine. The Serotype is not specified. |
| Cyprus | | | | No antigen or vaccine bank is maintained. Proposes that the question of access to the EUVB for non EU countries be discussed again. Also that in the event of non EU members not being able to gain access to the EUVB there should be discussion of the possibility of creating a bank for European countries outside the EU. |
| Czech Republic | | | | An annual contract for the emergency supply of vaccine has been in place since 1991 with the private company, "Dyntec RSO", at Terezin in the Czech Republic. The company holds stocks of inactivated, concentrated antigen equivalent to 2,000,000 monovalent doses of each of the following types and strains: A5 LBR; O1 Brent and C LBR. |
| Denmark | | | ✓ | Has maintained a **National Antigen Bank** of inactivated, concentrated virus since 1976, held at the State Veterinary Institute for Virus Research at Lindholm. The bank contains antigen equivalent to 340,000 doses of vaccine of serotype A10, 800,000 doses of serotype O1, and 720,000 doses of serotype C1. The potency has not been estimated in terms of PD50 values. The supply has never been activated. |
| Finland | | ✓ | ✓ | |
| Former Yugoslav Republic of Macedonia | | | | No antigen or vaccine bank is maintained. |
| France | ✓ | | ✓ | Maintains a **National Bank** of formulated vaccine which is stored with Merial SAS, Lyon, containing 300,000 monovalent doses each of O Iran 1994 and A Albania 1996, and 100,000 monovalent doses of Asia 1 Shamir, Israel.<br>One of the designated repositories of antigen for the **EUVB** at CNEVA, Lyon. Holds concentrated, inactivated antigen equivalent to 3,887,124 doses of A22 Iraq 64; 2,500,590 doses of O1 Turkey 1/78; 2,500,874 doses of A24 Cruzeiro and 2,500,692 doses of O1 BFS. |

For Countries G-I, p.t.o.➔

| Country | Changed | IVB[1] | EUVB[2] | Strategic Reserves Of Vaccine Or Antigen |
|---|---|---|---|---|
| Germany | ✓ | | ✓ | Maintains a National Vaccine Bank under contract with the private German company, Bayer AG, in Cologne and under state authority.<br>The bank holds 100,000 doses of formulated vaccine of each of the following serotypes: A Iran 96 (to be filled in March 99), A22 Iraq ; A24 Cruzeiro ; O1 Kaufbeuren (O1 BFS or Lausanne); O1 Manisa ; C Oberbayern (C Noville); and Asia 1 Shamir.<br>Holds concentrated inactivated antigen equivalent to 1,000,000 doses of each of the following serotypes: O1 Manisa; O1 Kaufbeuren (O1 BFS or Lausanne); A22 Iraq; A Iran 96; A24 Cruzeiro; A Castellanos; C1 Oberbayern (C Noville); Asia1 Shamir; SAT1 Zimbabwe and SAT2 Zimbabwe. Also holds 500,000 doses of A Saudi Arabia. |
| Greece | | | ✓ | |
| Hungary | ✓ | | | Concentrated inactivated antigen equivalent to 350,000 doses of each of the following serotypes: O1 Manisa 69; A 22 Iraq 64; Asia1 Israel 89 (Shamir); C Noville and A Iran 96 is held at Merial SAS, Pirbright UK under the authority of the Ministry of Agriculture and Rural Policy (Hungary), Department of Animal Health and Food Control. |
| Iceland | | | | No antigen or vaccine bank is maintained. |
| Ireland | | ✓ | ✓ | |
| Israel | ✓ | | | Routine annual vaccination is practised and ring vaccination takes place in the event of an outbreak. All vaccine and antigen stock is under the authority of the CVO.<br>Formulated vaccine is stored in the refrigerated storage facilities of the National Veterinary Services. The current formulated vaccine stock consists of:<br>○ 800,000 doses of trivalent Cattle vaccine containing the following vaccine strains: O1 Geshur 2/85, O1 Manisa 1/78, A Turkey 1/98, A Iran 78 and Asia 1 Shamir.<br>○ 50,000 doses of monovalent Cattle vaccine containing A Turkey 1/98<br>○ 1,500,000 doses of monovalent Sheep & Goat vaccine containing both O1 Geshur 2/85 andO1 Manisa 1/78 strains<br>○ 200,000 doses of monovalent Sheep & Goat vaccine containing Asia1 Shamir<br>○ 50,000 doses of monovalent Pig vaccine containing O1 Geshur2/85 and O1 Manisa 1/78 vaccine strains.<br>The Kimron Veterinary Institute holds inactivated antigen stocks equivalent to 50,000 doses of O1 Geshur Israel 2/85.<br>Whatever company won the tender for delivering FMD vaccines for the 1999 vaccination campaign, also got to supply the emergency vaccine stock which is 100,000 doses of the cattle trivalent vaccine, 200,000 doses of the Sheep and Goat monovalent O1 vaccine, 50,000 doses of the Pig monovalent O1 vaccine and 50,000 dose of the Cattle monovalent A Turkey 1/78 vaccine. |

For Countries I-S, p.to. ➔

| Country | Changed | IVB[1] | EUVB[2] | Strategic Reserves Of Vaccine Or Antigen |
|---|---|---|---|---|
| Italy | ✓ | | ✓ | One of the designated repositories of antigen for the **EUVB** at the Instituto Zooprofilattico Sperimentale at Brescia which has facilities for the formulation and filling of emergency vaccine. Holds concentrated inactivated antigen equivalent to 2,500,000 doses of each of the following vaccine strains: A22 Iraq 24/64, O1 Tur 1/78 (Manisa), C1 Europe (C.Noville) and Asia1 Shamir. |
| Lithuania | | | | No antigen or vaccine bank is maintained. |
| Luxembourg | | | ✓ | |
| Malta | | ✓ | | Associate Member of the IVB since 1995. Vaccine stored at the Institute of Animal Health Laboratory, Pirbright, UK. Drawing rights of up to 100,000 doses of vaccine. See UK entry for details of the IVB. |
| Netherlands | ✓ | | ✓ | Maintains at ID-DLO, Lelystad a National Antigen Bank under the authority of the Ministry of Agriculture, Nature Management and Fisheries. The bank holds inactivated concentrated antigen equivalent to >2,000,000 doses of the following vaccine strains: A5 Westerwald; A22 Iraq; O1 Manisa; O1 BFS; C1 Detmold (C Noville) and Asia1 Shamir. Formulation can take place within ID-DLO with a capacity of 500,000 doses per week. |
| Norway | | ✓ | | |
| Poland | | | | A **National Antigen Bank** has been maintained since January 1996. The bank is situated at the National Veterinary Research Institute, Zdunska Wola, Poland. The antigens are equivalent to 80,000 doses of A22 Iraq; 100,000 doses of O1 Manisa; 80,000 doses of C1 Noville and 70,000 doses of Asia 1. |
| Portugal | | | ✓ | |
| Romania | | | | Maintains a **National Vaccine Bank** of formulated vaccine established in 1993 at the Institut National de Medecine Veterinaire "Pasteur" in Bucharest. 1,000,000 doses of monovalent vaccine is held of each of the following Types and Subtypes: A5 Romania; O1 Romania; and C Romania. |
| Slovenia | | | | Has had a contract with the private company Bayer AG in Cologne since 1993 for the maintenance of inactivated, concentrated antigen and its supply as formulated vaccine on demand. Current antigen stocks are equivalent to 100,000 doses of each of the following serotypes: A22 Iraq, A Saudi Arabia, O1 Manisa, C1 Bavaria, and Asia 1 Shamir. |
| Spain | | | ✓ | |
| Sweden | | ✓ | ✓ | Drawing rights on the IVB are for up to 100,000 doses of each of the constituent types and strains. |
| Switzerland | | | | Has a contract with the French private company Merial (Rhone-Merieux) for the maintenance of inactivated, concentrated antigens and their formulation and supply as vaccine on demand since September 1996. Stocks of antigen are held equivalent to 330,000 doses of each of the serotypes: A 22 Albania; O1 Iran 94 and C1 Europe; and 220,000 doses of Asia 1. |

For Countries T-Y, p.t.o. →

| Country | Changed | IVB[1] | EUVB[2] | Strategic Reserves Of Vaccine Or Antigen |
|---|---|---|---|---|
| Turkey | | | | All vaccine production of the State Sap FMD Institute is used in the year of production. (See item 4) |
| United Kingdom | | ✓ | ✓ | No stocks of formulated vaccine are maintained.<br>Member of IVB since 1985. Central storage repository for IVB at The Institute for Animal Health Laboratory at Pirbright which is responsible for the day to day management of the IVB. The bank has the capability to formulate and fill both aluminium hydroxide -saponin and oil adjuvant vaccines.<br>Holds concentrated, inactivated antigen equivalent to 500,000 doses of vaccine of each of the following types and subtypes: A15 Thailand; A22 Iraq; A24 Cruzeiro; O1 Lausanne; O1 Manisa; C1 Oberbayern; Asia1 India 8/79.<br>Member of the EUVB since 1993. Previously was one of the designated storage repositories for EUVB. Currently in the process of transferring the concentrated, inactivated antigen - equivalent to 2,500,000 doses of each of types and subtypes O1 BFS and A24 Cruzeiro - of the EUVB to Merial SAS who have a private FMD vaccine facility located at Pirbright in the UK. Merial SAS currently has the contract with the EU for the formulation, bottling and labelling of vaccine reconstituted from the EUVB in emergency situations. |
| Yugoslavia | | | | No antigen or vaccine banks are routinely maintained. Given more favourable future economic circumstances Yugoslavia would like to establish a contract for the emergency supply of vaccine with a commercial supplier. |

**[1] IVB:** International Vaccine Bank.

**[2] EUVB:** European Union Vaccine Bank.

**Annex 19**

## FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

## EUROPEAN COMMISSION FOR THE CONTROL OF FOOT-AND-MOUTH DISEASE

The European Commission for the Control of Foot-and-Mouth Disease is a body established under Article XIV of the Organization's Constitution for the purpose of promoting and coordinating national and international action for the control of foot-and-mouth disease in Europe and its final eradication. Its funds are handled as a Trust Fund under Financial Regulation 6.7, with the symbol MTF/INT/011/MUL.

### FUNDS

The Organization does not maintain separate bank account for each Trust Fund, but instead manages and invests Trust Funds monies combined in pooled bank accounts. The balance of funds held by the Organization on behalf of the European Commission for the control of Foot-and-Mouth Disease as at 31 December 1998 amounted to US$165,612.

### INCOME AND EXPENDITURE

Contributions to the Commission's Trust Fund amounting to US$337,940 were received from Member countries of the Commission in 1998. Contributions for 1998 amounted to US$314,540, contributions paid in advance for 1999 amounted to US$20,800 and contributions received in arrears for early years amounted to US$2,600. The Commission's Trust Fund was credited with interest earned during 1998 amounting to US$13,543. Administrative costs for 1998 amounted to US$321,975.

### SERVICES PROVIDED BY THE ORGANIZATION

During 1998 the Organization made available without charge the use of accommodation and facilities, to a total estimated value of US$50,000.

Plato M. Kastanias
Chief, Central Accounting, Reporting and Control Service
Finance Division

STATEMENT 1

**MTF/INT/011/MUL - TF number 904200**

**EUROPEAN COMMISSION FOR THE CONTROL OF FOOT-AND-MOUTH DISEASE**

Financial Report as at 31 December 1998

| | US$ | US$ |
|---|---|---|
| **Balance as at 1 January 1998** | | 136,104 |
| Interest received (average rate 5.92%) | 13,543 | |
| Contribution from member countries (As per statement 2) | 337,940 | 351,483 |
| **Expenditure** | | |
| Commission Secretary | 135,963 | |
| Consultancy | 1,260 | |
| Admin. Support Personnel | 78,219 | |
| Duty Travel | 41,295 | |
| Contracts | 55,000 | |
| General Operating Expenses | 1,282 | |
| Expendable Equipment | 8,956 | |
| Total Expenditure | | (321,975) |
| **Balance as at 31 December 1998** | | **165,612** |

STATEMENT 2

**TRUST FUND No. 9042.00 - MTF/INT/011/MUL - Inter-Regional - European Commission for the Control of Foot-and-Mouth Disease**

Status of Contributions as at 31 December 1998
(expressed in US$)

| Member Governments | Outstanding 31/12/97 | Contribution due for 199 | Received up to 31/12/1998 | Outstanding 31/12/1998 | |
|---|---|---|---|---|---|
| **ALBANIA** | 21.00 | 2,600.00 | 2,575.00 | 46.00 | |
| **AUSTRIA** | 0.00 | 7,800.00 | 7,800.00 | 0.00 | |
| **BELGIUM** | 0.00 | 13,000.00 | 13,000.00 | 0.00 | |
| **BULGARIA** | 11,364.99 | 7,800.00 | 7,800.00 | 11,364.99 | |
| **CYPRUS** | 0.00 | 2,600.00 | 2,600.00 | 0.00 | |
| **CROATIA** | 1,300.01 | 2,600.00 | 3,900.00 | 0.01 | **/1** |
| **CZECH REPUBLIC** | 0.00 | 7,800.00 | 7,800.00 | 0.00 | |
| **DENMARK** | 0.00 | 13,000.00 | 26,000.00 | (13,000.00) | **/2** |
| **FINLAND** | 0.00 | 7,800.00 | 7,800.00 | 0.00 | |
| **FRANCE** | 0.00 | 26,000.00 | 26,000.00 | 0.00 | |
| **GERMANY** | 0.00 | 26,000.00 | 26,000.00 | 0.00 | |
| **GREECE** | 0.00 | 7,800.00 | 7,800.00 | 0.00 | |
| **HUNGARY** | 0.00 | 7,800.00 | 7,800.00 | 0.00 | |
| **ICELAND** | 0.00 | 2,600.00 | 2,600.00 | 0.00 | |
| **IRELAND** | 0.00 | 7,800.00 | 7,780.00 | 20.00 | |
| **ISRAEL** | 0.00 | 2,600.00 | 2,600.00 | 0.00 | |
| **ITALY** | 0.00 | 26,000.00 | 26,000.00 | 0.00 | |
| **LITHUANIA** | 0.00 | 2,600.00 | 2,600.00 | 0.00 | |
| **LUXEMBOURG** | 0.00 | 2,600.00 | 2,600.00 | 0.00 | |
| **MACEDONIA, F. Y. R. of** | 1,300.01 | 2,600.00 | 3,885.01 | 15.00 | |
| **MALTA** | 0.00 | 2,600.00 | 2,600.00 | 0.00 | |
| **NETHERLANDS** | 0.00 | 13,000.00 | 13,000.00 | 0.00 | |
| **NORWAY** | 0.00 | 7,800.00 | 15,600.00 | (7,800.00) | **/2** |
| **POLAND** | 0.00 | 13,000.00 | 13,000.00 | 0.00 | |
| **PORTUGAL** | 3,900.09 | 7,800.00 | 7,800.00 | 3,900.09 | |
| **ROMANIA** | 0.00 | 13,000.00 | 13,000.00 | 0.00 | |
| **SLOVENIA** | (1,950.01) | 2,600.00 | 0.00 | 649.99 | |
| **SPAIN** | 0.00 | 13,000.00 | 13,000.00 | 0.00 | |
| **SWEDEN** | 0.00 | 13,000.00 | 13,000.00 | 0.00 | |
| **SWITZERLAND** | 0.00 | 13,000.00 | 13,000.40 | (0.40) | **/1** |
| **TURKEY** | 0.00 | 13,000.00 | 13,000.00 | 0.00 | |
| **UNITED KINGDOM** | 0.00 | 26,000.00 | 26,000.00 | 0.00 | |
| **YUGOSLAVIA, Fed. Rep. o** | 52,261.30 | 7,800.00 | 0.00 | 60,061.30 | **/3** |
| TOTAL | 103,992.39 | 325,000.00 | 337,940.41 | 55,256.98 | |

**/1** o/s amounts under $10 will be written-off at year end
**/2** 1999 contributions paid in advance
**/3** o/s amount not to be called

STATEMENT 3

**Summary of Contributions Received in Arrears in 1998**

| Received in arrears for earlier Years | **US$** |
|---|---|
| **CROATIA** | 1,300.00 |
| **MACEDONIA, F. Y. R. of** | 1,300.01 |
| | 2,600.01 |

**MTF/INT/004/MUL - TF number 909700**

**FOOT AND MOUTH DESEASE - EMERGENCY AID PROGRAMME**

Financial Report as at 31 December 1998

| | US$ | US$ |
|---|---|---|
| **Balance as at 1 January 1998** | | 63,905 |
| Interest received (average rate 5.92%) | | 3,635 |
| **Expenditure** | | |
| Consultancy | 8,764 | |
| Support Cost 6% (on all items except expendable equipment) | 526 | |
| Total Expenditure | | (9,290) |
| **Balance as at 31 December 1998** | | **58,250** |

**MTF/INT/003/EEC - TF number 911100**

**FOOT AND MOUTH DISEASE**

Financial Report as at 31 December 1998

| | US$ | US$ |
|---|---|---|
| **Balance as at 1 January 1998** | | 1,274,770 |
| Interest received (average rate 5.92%) | | 64,828 |
| **Expenditure** | | |
| Consultancy | 5,101 | |
| Duty Travel | 62,288 | |
| General Operating Expenses | 1,829 | |
| Expendable Equipment | 310,398 | |
| Support Costs 6% (on all items except expendable equipment) | 4,153 | |
| Less: Total Expenditure | | (383,769) |
| **Balance as at 31 December 1998** | | **955,829** |

# European Commission for the Control of Foot-and-Mouth Disease

## Trust Fund 904200 MTF/INT/O11/MUL

## Provisional Budget for 1999/2000

### Annual Contributions for 1999/2000: $325,000

| | Budget Components | Budget for 1999 Approved by 61st Session | Budget for 1999 Revised by 62nd Session | Proposed Budget for 2000 |
|---|---|---|---|---|
| 1101 | Secretary | $ 152,949 | $ 136,181 | $ 141,628 [1] |
| | Administrative Assistant | $ 82,208 | $ 83,008 | $ 86,328 [1] |
| | Overtime | $ 1,500 | $ 1,500 | $ - |
| | Support Staff for 33rd Session | $ 15,000 | $ 15,000 | $ - |
| | **Subtotal** | **$ 251,657** | **$ 235,689** | **$ 227,956** |
| 2000 | Duty Travel | | | |
| | Secretariat and Non-Staff Travel | $ 35,000 | $ 30,000 | $ 30,000 |
| 3000 | Contracts | | | |
| | Annual Contribution to WRL | $ 30,000 | $ 35,000 | $ 35,000 |
| | Collaborative Laboratory Studies | $ 6,343 | $ 11,200 | $ 11,200 |
| | Workshop | $ - | $ - | $ 15,000 |
| 4000 | General Operating Expenses/Hospitality | $ 500 | $ 1,500 | $ 1,000 |
| 5000 | Expendable Equipment | $ 750 | $ 6,550 | $ 3,750 |
| 6000 | Durable Equipment | $ 750 | $ 2,500 | $ - |
| | **Subtotal** | **$ 73,343** | **$ 86,750** | **$ 95,950** |
| | Reserve/Unallocated Funds | $ - | $ 2,561 | $ 1,094 |
| | **Total** | **$ 325,000** | **$ 325,000** | **$ 325,000** |

[1] Based on revised actual costings for 1998 and a projected 4% increase for 1999 to allow for inflation

# Budgets for 1998 and 1999 concerning the Trust Funds 911100/909700

approved by the Commission at the 32nd and 33rd Sessions

## Trust Fund 911100 MTF/INT/003/CEE

| | Details | Approved for 1998 | | Approved for 1999 | |
|---|---|---|---|---|---|
| 1151 | Consultants | $ 50,000 | | $ 50,000 | |
| 2000 | Duty travel | $ 70,000 | | $ 70,000 | |
| 3000 | Contract | $ - | | $ 340,000 | |
| 4000 | General Operating Expenses | $ 2,500 | | $ 2,500 | |
| 5000 | Expendible Equipment (vaccine) | $ 500,000 | | $ 160,000 | |
| 9100 | Support Cost (6% except for the vaccine) | $ 7,350 | | $ 7,350 | |
| **Total** | | **$ 629,850** | | **$629,850** | |
| Balance | | $ 1,274,770 | as of 31.12.97 | $ 955,829 | as of 31.12.98 |
| **Balance less predicted expenses** | | **$ 644,920** | | **$325,979** | |

## Trust Fund 909700 MTF/INT/004/MUL

| | Details | Approved for 1998 | | Approved for 1999 | |
|---|---|---|---|---|---|
| 1151 | Consultants | $ 20,000 | | $ 20,000 | |
| 2000 | Duty travel | $ 5,000 | | $ 10,000 | |
| 5000 | Expendible Equipment (vaccine) | $ 25,000 | | $ 15,000 | |
| 6000 | Durable Equipment | $ 5,000 | | $ 5,000 | |
| 8000 | Training | $ 5,000 | | $ 5,000 | |
| 9100 | Support Cost (6% except for the vaccine) | $ 2,100 | | $ 2,400 | |
| **Total** | | **$ 62,100** | | **$ 57,400** | |
| Balance | | $ 63,905 | as of 31.12.97 | $ 58,250 | as of 31.12.98 |
| **Balance less predicted expenses** | | **$ 1,805** | | **$ 850** | |

**Annex 20**

## WEB-SITE REQUIREMENTS QUESTIONNAIRE RESULTS

John Ryan

Introduction

### Why have a web site?

We now live in an information age where the entirety of human knowledge is literally at our fingertips. The capabilities of information technology (IT) has been expanding exponentially for the last 30 years and arguably IT's greatest societal impact has been in the last decade with the development of the world-wide-web.

The world-wide-web is a sub-set of the internet - a global network of computers which has been around since the late 1960's - however the world-wide-web finally made the power of that global computer network available to the lay-man.

With the development of special software - internet browsers such as Netscape Navigator and Microsoft's Internet Explorer - people without special computer training and knowledge of the arcane internal languages of computers and network communication could finally point and click their way around the information world.

EUFMD cannot be left behind in the development of this global resource. Graduates leaving veterinary college or even children would wonder with awe and amazement if an institution did not have a web-site for them to browse and learn about in seconds. The pace of life is being accelerated by these and other technologies, people are capable of accomplishing far more in a much shorter time period and will be increasingly impatient at having to wait for the information that they need.

### *Constitution of EUFMD - our mandate*

On a more practical level the stimulus for having a web-site can be justified by examining the constitution of the Commission:

Article 4: 1 General Functions

*"1.1 all Members are provided with technical advice on any problem relating to the control of foot-and-mouth disease;"*

*"1.2 comprehensive information on outbreaks of the disease and identification of virus is collected and disseminated as quickly as possible;"*

In particular we can focus on the phrase "as quickly as possible", at the moment technology allows us three ways to disseminate information almost instantaneously: Fax, E-mail and the Internet.

Of these the least expensive and least labour intensive is an internet world-wide-web site. E-mail is also very inexpensive but it is more labour intensive in that distribution

lists have to be maintained and updated and incompatible file formats and message size limits tend to reduce the content allowable (especially with embedded map files, formatting or pictures).

Overall, a combination of e-mail and an up-to-date web-site is ideal. A simple e-mail can than alert users to changes in the web-site when they occur, and this e-mail need contain no more than a link to the most recently up-dated information on the web-site.

***How to decide what to provide***

However, the ideal is rarely attainable in any aspect of life and there is little point in providing a service where those people who need it cannot access it. Nor is there any point in providing content that those who can access it do not find the information useful. Examining the viewing figures for the EUFMD web-site makes uncomfortable reading, it proves that very few people use the current web-site meaningfully.

The first problem is therefore to find out if our target audience has and uses all the necessary components to access the EUFMD web-site, namely, a PC, internet access and the ability/will to use the internet as an information source. The next problem is deciding what content to include on the EUFMD web-site to make it worthwhile for our target audience. To find these answers we decided to ask you, the users, what information would persuade you to use the EUFMD web-site.

Method

The method chosen to gauge our users needs was by a questionnaire which was distributed to the CVO's and directors of the National FMD laboratories in all the member countries in Dec 1998, with instructions to distribute it "to relevant staff in their Service/Institute who use (or may have use for) the information to be contained in the new-look web-site". It was distributed by both e-mail and by post. It was hoped that the questionnaire would circulate widely and that a true picture of what was required of the web-site would emerge.

## Results

### Response Rates

### Overall Response

In all we received 48 responses, representing 29 countries, from a total of 89 questionnaires directly distributed. This gives a response rate of 88% per country and 54% per questionnaire.

25 responses were from the National Service (52% of responses), 19 responses were from the National Labs (40%) and 4 were from other institutions (8%).

14 of the responses from the National Services were from the CVO (56% of the National Service responses, 42% of countries and 29% overall); 8 responses were

from senior officers (32% of the National Service responses, 24% of countries and 17% overall); and there were 4 responses from other officers.

3 of the responses were from the directors of the National Laboratories (16% of National Laboratory responses, 9% of countries and 6% overall); 12 of the responses were from the head of FMD at the National Laboratory (63% of National Laboratory responses, 36% of countries and 25% overall); and 4 of the responses were from other officers at the National Laboratory (21% of National Laboratory responses, 12% of countries and 8% overall).

Question 1: Computer Access

*1.* ***Do you have permanent access to a personal computer or expect to have permanent access to a personal computer in the next 6 months?***

All 48 respondents have a PC. We cannot presume that those who did not respond do not have access to a PC so the level of availability of PC's to FMD decision-makers is still unknown.

Question 2: IBM or Mac

*2.* ***What type is your computer?***

47 of respondents have an IBM-compatible PC (98%). Only one respondent has an Apple Macintosh.

Question 3: Computer and Connection Speed

*3.* ***Please give some details of the power of the Computer:***

**3 (a)** Processor type and Speed?

Mostly Pentium or Pentium II's, Average MHz 170, Range 66-400Mhz.

**3 (b)** Ram?

Average 34Mb, Range 8-128MB

**3 (c)** Hard Drive Capacity?

Average 1688Mb, Range 210-4200Mb

**3 (d)** Modem?

Average 32.6Kbps, Range 14.4-96.6Kbps

**3 (e)** Network Connection?

40 of the 48 respondents have network connections (83%).

**3 (f)** ISDN line?

12 respondents have ISDN lines (25%).

**3 (g)** Monitor Size?

Average size is 16", Ranges form 14-19".

These details were necessary for the design of the web-pages as the greatest difficulty with the Internet is speed. Many factors contribute to the speed at which a page is transferred from the FAO servers to the users computers, some of which such as network traffic, the speed of intermediate machines or the capacity of telephone lines we cannot predict and allow for. However we can control the size of pages and how they load on the target machine, and with a better appreciation of what users computers are capable of we can try to trade off speed versus visual content. In general, the more maps and pictures and visual effects then the slower the page will load.

Question 4: Access to the WWW

*4.* ***Do you have access to the world-wide-web?***

45 respondents (94%) have access to the world-wide-web. This figure is also quite high but probably reflects the bias in response to the questionnaire i.e. that only people who are currently interested in and use both PC's and the internet were likely to respond to the questionnaire.

**4 (a)** How many people in your Service/Institute have access to the web?
The total number of people in National Veterinary Services or FMD Laboratories with web access was 1949, with an average of 51 per institution. Most of these people obviously do not concern themselves with FMD in their day to day duties, but do represent a potential audience who from time to time may want to check the current FMD situation.

Question 5: Browser Software

*5.* ***What browser software do you use?***

The results of this question indicate that 55% of respondents use Microsoft's Internet Explorer as their browser software of choice and 45% use Netscape's Navigator/Communicator software to browse the internet.

This information will be used in designing the web-pages so that, in as far as is possible, the pages will look the same in both programs. One of the problems in designing web-pages is that these programs are not totally compatible with each other, i.e. they interpret HTML code (a supposedly standard code) in different ways. This is also true of different release versions of these products i.e. versions 2.0, 3.0, 4.0, 5.0 etc. have features that are not supported in older versions. The good news is that the latest versions of these programs can usually be downloaded free from the company's web-site.

Question 6: Use of the WWW as an Information Source

*6.* ***Do you currently use the world-wide-web as an information source?***

All 45 respondents (94% of respondents) with web-access currently use it as an information source.

40 respondents or 89% use the web to access Specific Veterinary Information.

37 respondents or 82% use the O.I.E. Site, connecting on average 5.2 times per month.

35 respondents or 78% use the web to access Disease Occurrence Data.

28 respondents or 62% use the web to access Scientific papers.

28 respondents or 62% use the FAO Site, connecting on average 2.1 times per month.

24 respondents or 53% use the web to access General Scientific Information.

16 respondents or 36 % use the web to access General News items.

9 respondents or 20% use the web to access Political Information.

8 respondents or 18% use the web to access Current Affairs items.

Other uses identified were the WHO site and equipment manufactures sites.

6 (b) **If No, why not?**

1 respondent had difficulties in finding relevant sites.

1 respondent believed that finding relevant sites takes too much time.

1 respondent felt that relevant sites contain too much information which is of little use

1 respondent felt that relevant sites are too slow

Other problems mentioned by one respondent were that the data was of questionable quality and that in general, there is too much down-time when sites are not available.

Summary of Questions 1-6

These questions hopefully would have teased out how many of the senior officers in National Veterinary Services and National FMD Laboratories have the facilities (PC and internet connection) and the will to use the internet as an information source. The results are heartening as 98% of respondents have the ability to connect and 94% seem to use it on a regular basis as an information source.

The number of difficulties with the web that were mentioned is very low, but they do serve as important reminders of the critical elements of building good web-sites: ease of navigation, avoidance of clutter and irrelevant information, fast download times, accuracy of the information presented, frequency of up-dating and the reliability of the servers used.

It must also be remembered that the questionnaire may be biased towards those who already use the www as an information source.

Question 7: Use of the EUFMD Site

*7.* ***Do you currently access the EUFMD web-site***

21 respondents (47% of those with web access) currently use the EUFMD web-site, connecting on average 1.7 times per month.

7 (b) **Which sections did you find useful**

20 of the 21 respondents (95%) found the Reports of Research Group Meetings useful.

18 of the 21 respondents (86%) found the Reports of General Sessions useful.

15 of the 21 respondents (71%) found the Reports of Executive Committee meetings useful.

14 of the 21 respondents (67%) found the Calendar of Events useful.

14 of the 21 respondents (67%) found the List of national FMD labs and their contact details useful.

11 of the 21 respondents (52%) found the List of member countries useful.

11 of the 21 respondents (52%) found the Basic Texts of the Commission useful.

10 of the 21 respondents (48%) found the List of CVOs and their contact details useful.

9 of the 21 respondents (43%) found the Introduction to the EUFMD Commission useful.

7 (c) **If No, why not?**

24 respondents didn't use the current EUFMD site.

6 of the 24 respondents (25%) found the EUFMD site had not enough information of relevance.

5 of the 24 respondents (21%) found the EUFMD site had too much information which is of little use.

2 of the 24 respondents (10%) found the EUFMD site too slow to navigate.

1 of the 24 respondents (4%) found the EUFMD site took too long to access.

1 of the 24 respondents (4%) found the EUFMD site was not updated often enough.

Other complaints were that the same information was available elsewhere (1 respondent ), no reason was given by another respondent, not enough time was cited as the reason by another respondent and 6 respondents (25%) did not even know that the site existed.

Question 8: Proposals and Constraints on the use of the Web-Site

*8.* ***Would you use the web-site if the information it contained matched your needs better?***

39 of the 45 respondents with web-access (87%) said that they would use the site if it matched their needs better. Only one respondent indicated that the web-site would not be used and cited that lack of time as his major constraint.

8 (a) **If Yes, help us tailor the web-site to your needs.**

38 of the 39 respondents (97%) who would use the site supported the proposal for the inclusion of Maps of FMD outbreaks in Europe.

38 of the 39 respondents (97%) supported the proposal for the inclusion of Maps of FMD outbreaks in Middle East.

36 of the 39 respondents (92%) supported the proposal for the inclusion of A Page specific for each country giving details of:

- Who is the CVO + his/her contact details - 31 of the 36 (86%) support this section.

National Disease control centres - contact details- 30 of the 36 (83%) support this section.

National FMD Diagnostic Laboratory - contact details- 30 of the 36 (83%) support this section.

National FMD Research Laboratory - contact details- 27 of the 36 (75%) support this section.

E-mail links to key individuals - 27 of the 36 (75%) support this section.

Vaccination details in non-FMD free countries- 26 of the 36 (72%) support this section..

Arrangements and stocks for Emergency Vaccination - 23 of the 36 (64%) support this section.

WWW links to Departmental/Laboratory sites- 22 of the 36 (61%) support this section.

Details of Vaccine/Antigen Banks present in your country- 19 of the 36 (53%) support this section.

Current research topics in the National FMD Laboratory - 18 of the 36 (50%) support this section.

References for recent research papers from the National FMD Laboratory- 15 of the 36 (42%) support this section.

Regional Disease control centres + contact details- 14 of the 36 (39%) support this section.

6 of the 36 (17%) object to displaying an information item about their country if other countries are not prepared to display the same information.

35 of the 39 respondents (90%) supported the proposal for Maps of FMD outbreaks in the CIS counties to be included.

35 of the 39 respondents (90%) supported the proposal for a summary of relevant Scientific Papers to be included.

34 of the 39 respondents (87%) supported the proposal for Maps of FMD outbreaks in North Africa to be included.

33 of the 39 respondents (85%) supported the proposal for Maps of FMD outbreaks in the Rest of the World to be included.

31 of the 39 respondents (79%) supported the proposal for including General Session reports, with 24 of the 39 respondents (62%) supporting the inclusion of the Appendices.

31 of the 39 respondents (79%) supported the proposal for including the Research Group meeting's reports, with 24 of the 39 respondents (62%) supporting the inclusion of the Appendices.

27 of the 39 respondents (69%) supported the proposal for including the Executive Committee meetings reports, with 20 of the 39 respondents supporting the inclusion of the Appendices.

27 of the 39 respondents (69%) supported the proposal for including the Calendar of events.

26 of the 39 respondents (67%) supported the proposal for including articles on the Practical Diagnosis of FMD.

24 of the 39 respondents (62%) supported the proposal for including a page giving details on how to obtain further information - including e-mail links to the Secretariat and www links to other sites of interest.

22 of the 39 respondents (56%) supported the proposal for including a map individual member countries, showing their Veterinary administrative regions.

21 of the 39 respondents (54%) supported the proposal for including a description of Foot-and-Mouth Disease.

17 of the 39 respondents (44%) supported the proposal for including an Introduction and Description of EUFMD.

13 of the 39 respondents (33%) supported the proposal for including summary information for non-member countries on contribution scales and procedures for joining the Commission.

4 of the 39 respondents (10%) supported the proposal for duplicating all pages in French.

The Other Suggestions were varied and ranged from broad suggestions such as not to take on too much, to update the site regularly and to focus on quality not quantity; to specific suggestions such as descriptions of the OIE official status of countries, the means of control, the serotype and the date of the last outbreak; new scientific papers; links to basic and applied research sites; and news bulletins about outbreaks.

8 (b) **If No why not?**

Of the reasons given for not using the web-site, there were only 3 responses:

Will never have the time to update - 2 responses

Can get the same information elsewhere - 1 response

Question 9: Other criticisms, proposals, details or suggestions.

Suggestions in this section were as follows:

- As most of the information is available else where, from Avis, OIE etc. - collating it would be useful, but it would entail a lot of work to keep it updated.
- That the site should be restricted to member countries only.
- That the site should contain no graphics, Java applets or frames: all these make loading pages slower and may confuse the navigation process.

Summary Questions 7 - 9

In these sections we get a very clear picture of what content is felt to be useful to those surveyed. It is suggested that a work plan be created as in Appendix 1, with a priority derived from ranking the support for each suggestion. The issues raised in the comments are useful and will be noted especially as concerns such as the frequency of updating, the quality of the data presented and speed of access should form the pillars around which a good web-site is built.

A good web-site should have the answers to the specific questions that concern the audience, be complete and accurate in all its data, be reliable in the frequency of updating and the servers it uses and, above all, it should be fast, so that it saves time and increases the efficiency for those using it.

Conclusions

**Response**

The response rate was very good considering that this is still relatively new technology and gives us a good snap-shot if not a fully accurate picture of our target audience and their needs.

**Use of the web**

The questionnaire could have been better designed or titled to remove the bias towards existing users, and examine the reasons why people currently do not use the internet as an information source. it may be useful to repeat this exercise before the next session, to capture any changes in web-usage and examine the success or otherwise of the new-look site.

**Priority of Sections**

The web-site will be completed according to the work plan in Appendix 1, the priorities for the sections will be derived from the results of questions 7 - 9.

**Problems foreseen**

There may be problems with acquiring the data for each specific country, some countries are prepared to show less data than others, while some countries will not be prepared to publish certain items if all other countries do not. What is suggested is that before any information is published about a country, the secretariat should contact the National Service with the proposed information for clearance. A designated contact person would be useful for this purpose.

The final problem foreseen is time, creating web-pages that fall within the criteria of compatibility across browser software, small file sizes with interesting maps is difficult and time consuming.

# Appendix 1

## *Work Plan for EUFMD Web-site*

1. Home Page and Navigation Centre
2. Maps of FMD outbreaks in Europe.
3. Maps of FMD outbreaks in Middle East.
4. A Page specific for each country giving details of the following (if agreed):
   - Who is the CVO + his/her contact details.
   - National Disease Control Centres - contact details
   - National FMD Diagnostic Laboratory - contact details
   - National FMD Research Laboratory - contact details
   - E-mail links to key individuals.
   - Vaccination details in non-FMD free countries
   - Arrangements and stocks for Emergency Vaccination
   - WWW links to Departmental/Laboratory web-sites
   - Details of Vaccine/Antigen Banks present in your country
   - Current research topics in the National FMD Laboratory
   - References for recent research papers from the National FMD Laboratory
   - Regional Disease Control Centres - contact details
5. Maps of FMD outbreaks in the CIS countries
6. Summary of relevant Scientific Papers
7. Maps of FMD outbreaks in North Africa
8. Maps of FMD outbreaks in the Rest of the World
9. [illegible]
10. [illegible]
11. [illegible]
12. [illegible]
13. [illegible]
14. [illegible]
15. [illegible]
16. [illegible]
17. [illegible]
18. [illegible]
19. [illegible]

Technical Note:

- all pages will be optimised for viewing on 15" monitors
- there will be no optimisation for particular browser software
- compatibility will only be guaranteed for 3.0 browsers or higher
  (note later versions or upgrades of browsers are usually available free to download from the respective companies)
- all pages will be monitored for download time at 14.4 Kbps.

**Annex 21**

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