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REPORT

of the

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of the

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

FAO HQs
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INTRODUCTION

Dr L. Celeda, Chairman of the EUFMD Executive Committee, opened the 35th General Session and introduced Ms Louise O. Fresco, Assistant Director-General, Agriculture Department, FAO.

OPENING CEREMONY

Address by Louise O. Fresco, Assistant Director-General, AG

Excellencies, Ladies and Gentlemen,

It is with great pleasure for me to welcome you on behalf of the Director-General of FAO, Mr Jacques Diouf, to this Thirty-fifth Session of the European Commission for the Control of Foot-and-Mouth Disease.

I should like to greet the Permanent Representatives to FAO, the Delegates and Experts of the Member Countries of the Commission, the Observers of the other countries and the International Organizations and to thank you for having accepted FAO's invitation to take part in this Thirty-fifth Session.

Rome is a city of history and I wish to recall that it celebrated its jubilee year in 2000. The EUFMD Commission is also approaching 50 years since its first Session was held in Rome in July 1954. The jubilee year of the Commission therefore falls in 2004, the period under consideration for this Session. Approaching a 50 year anniversary stimulates reflection as well as celebration.

In Europe devastating outbreaks of FMD have been recorded which date back over several centuries. In looking back, it is remarkable how much has been achieved given the long history of FMD. Lasting control in Europe was achieved first by a few countries, and later by many more, but it has not yet been achieved by all member countries.

The history of FMD control in Europe was marked by very significant and rapid progress in the first 10 to 25 years of the EUFMD, followed by the steadily improving situation enabling the policy change to non-vaccination in 1992, and periods in the 1990's where FMD was confined among EUFMD members only to Turkey. It must be recalled that following 1992, the existence of the EUFMD Commission came under question. Most fortunately the Commission continued to serve the member states and during the periods in the last 10 years when the situation in the European Union members appeared to be very favourable, the EUFMD has provided timely warnings of the deteriorating situation in other parts of the world, including, most notably, warnings of the threat from the deteriorating situation before the 2001 epidemic occurred in Europe.

In considering the origin of the EUFMD Commission it is noticeable that it was stimulated by international needs and crises in Europe and encouraged by the enabling environment of agreements between the governing bodies of FAO and OIE. The Commission was initiated with 6 member countries and has grown to its present membership of 33 countries through the collective commitment of the member states.

This Commission is not only interested in Europe – it has always had a global vision. In the years between the first meeting in 1949 and the first Session of the Commission in 1954 the framework was established. Work then began to develop control methods and an overall strategy for FMD control in Europe. The Commission has collaboration with the international organizations, including FAO, OIE and the EU and through the medium of the several tripartite groups also worked to support non member countries. The EUFMD has from the start stimulated global progress in FMD control, an issue of as great importance today as it was in 1954.

Linking of efforts within and between regions has always been a principle feature of FAO actions and FAO recognises the importance of Regional Commissions to achieve concerted actions and progress in disease control.

The Commission now includes 33 Member States, which means almost all of the countries of Europe. Yet there remain 10 other potential members of the Commission, who are FAO members in the European Region, so the family may not yet be considered complete.

I am told that virtually all the Member Countries are represented today.

Amongst the many observers, I should also like to greet the Representatives of the International Organizations and in particular the representatives from the Office International des Epizooties and the Delegation of the European Commission.

The OIE, and the predecessor of the EC have been involved with the EUFMD from the outset and the achievements reflect this productive partnership.

The joint activities of the European Commission for the Control of Foot-and-Mouth Disease, FAO, and your Organizations have been further strengthened in recent years: through the joint organization of training workshops, joint sessions of the Research Group of the Commission and experts on the disease in the countries of the European Union to, recently, the establishment of a OIE/EUFMD/EC Tripartite Group to help control foot-and-mouth disease in the countries of the Community of Independent States. We welcome this increased co-operation among our organizations as it allows greater effectiveness and better service to the Member Countries in the control of FMD.

FAO is also very grateful to the European Union for the assistance that it continues to provide to the EUFMD Commission through the jointly managed Trust Fund, particularly for actions in the protection of south-eastern Europe.

This Session is timely for the issues raised by the current events in the Middle East. Foot-and-mouth disease caused heavy loss of livestock in Iraq in 1999. FAO has been actively involved in supporting animal disease control in Iraq, and in preparing for the consequences of the current conflict for FMD control.

Turkey and Iran play a key role in the Middle East as they are often the transit countries for viruses that can then threaten Europe, as in the case of the new variants of foot-and-mouth disease type A and of type Asia 1, which were in fact introduced into Greece in the Summer of 2000.

Although progress has been made in Turkey, the foot-and-mouth situation continues to be of concern in that country and the regions to the East. FAO has assisted through a regional technical co-operation programme for the control of the disease, jointly undertaken with Turkey and Iran.

Foot-and-mouth remains a major world disease and Europe's long-term protection can only be envisaged if control measures are taken in all countries where the disease remains endemic.

FMD has not yet been eradicated from Europe, however, this is a realistic goal and could be the greatest challenge for the next 10 to 50 years. Many questions remain to be answered, many challenges still to be faced.

With enlargement of the European Union in mind, it is appropriate for the EUFMD Commission to consider the enlargement of its vision. FAO is always ready to work towards improving the control of diseases throughout the world and will continue to provide its support to the Commission.

Before closing, I wish to inform you of a change in the Secretariat of the Commission. Dr Yves Leforban left the Commission to return to duties in France. I wish to take this opportunity to officially welcome the new Secretary of the Commission, Dr Keith Sumption.

I thank you, and I wish you all a fruitful outcome of this Thirty-fifth Session of your Commission.

Address by Leos Celeda, Chairman of the European Commission

Excellencies, Ladies and Gentlemen,

It is a great pleasure for me to welcome you here in Rome on the occasion of the Thirty-Fifth Session of the European Commission for the Control of Foot-and-Mouth Disease.

I should start by thanking FAO for having organised the meeting and Ms. Louise Fresco, Assistant Director General, Agriculture Department for the very kind opening speech.

I am also very pleased to welcome the Delegates and experts of the Member Countries of this Commission, representatives of the International Organizations, and observers who kindly accepted our invitation to this Session. I have received apologies from Luxembourg and Israel who are unable to attend this meeting.

Two years ago when we met here the working atmosphere was heavily influenced by the dramatic developments in the FMD epidemic in the UK and the majority of participants were afraid of further virus spread on the continent of Europe. Many colleagues and organizations were faced with the likelihood of combating the real disease in the days after the Session and I sincerely hope that the support and the solidarity expressed at many points in the 34th General Session, and shared thereafter by the common commitment of those active in safeguarding animal health at the international level, also helped in the control of the most extensive and devastating European epidemic of the recent past.

There are many lessons to be learned from this episode. The overall circumstances proved, yet again, how important is mutual and close co-operation between countries in the prevention of disease entry and in maintaining a state of preparedness for combating the disease.

The experience also accelerated the thinking of the international animal health bodies towards the control of the disease at source, through an enabling environment, also called a global framework, which would support countries to progressively eliminate infection. This approach should bring major and lasting benefits for the control of FMD and the other major diseases of livestock which still affect the livelihoods of farmers on a daily basis in much of the world.

As mentioned by Madam Fresco, our General Session is being organized close to the jubilee year of 2004, when the EUFMD will celebrate its 50th anniversary. The principles of co-operative European work in FMD control which were agreed by the founding group of 6 members in July 1954 are still as valid now with 33 members, with the disease still present in Europe.

The development of this Commission was complicated and sometimes difficult during its history. There were several circumstances influencing its function and activities. Major success was recorded in the first two decades of its existence when preventative vaccination was introduced and used in the majority of European countries. The improvement of FMD control methods including laboratory diagnosis enabled an introduction of the non-vaccination policy in EU Member Countries in 1992 which was followed rapidly by the majority of other European countries.

Political changes in Eastern Europe at the beginning of the nineties and substantial increase of mutual trade with live animals and their products were also facts which contributed to the gradual harmonization of FMD control strategy.

Let me stress again the year 2004, which will be a milestone, not only for this Commission but also for several Member Countries represented here. As it is foreseen that they will join the European Community in the next several years and due to this accession the EC Member States will represent a majority at the EUFMD thereafter.

I would like to use this opportunity to invite further discussion on the evaluation of the progress made after nearly fifty years and the strategic directions that the EUFMD should follow for the future.

There are several options available regarding the improvement of FMD control strategies and preparedness, and it is necessary to take into account other related aspects from countries adjacent to the European region especially in the Mediterranean area and the Near East. You will be informed about some activities in this respect during our meeting and any comments and proposals will be highly appreciated.

The practical organization of this meeting was arranged by our secretariat. As the staff is quite new from the last session, I would like to introduce and thank Ms E. Fragiotta, Administrative Clerk, Dr. Keith Sumption, Secretary and Dónal Sammin, Associate Professional Officer, who jointly prepared all documents for the Session and organized this meeting.

I should also like to thank the Representatives of the International Organizations and in particular the Director-General of the Office International des Epizooties and the Delegation of the European Commission. The joint activities of the European Commission for the Control of Foot-and–Mouth Disease of FAO and the EC and OIE have been strengthened recently and I would like also express thanks on behalf of all the benefiting countries.

The Commission is also grateful to the European Union for its continuing assistance through the jointly managed Trust Fund. The support for tripartite meetings, research group activities and control programme in Turkey, Iran and the Caucasus is highly appreciated.

I sincerely hope that you will find our agenda interesting and I wish you a productive Thirty-fifth Session and a pleasant stay here in Rome.

Address by Dr Y. Cheneau, Chief, Animal Health Service, FAO

Dr Cheneau gave a brief introduction to the structure and work of the EUFMD Commission.

The current membership numbers 33 countries, each paying an annual contribution to the funding of the Commission. The Executive Committee and the Research Group are elected biennially, and comprise 8 and 12 members respectively, while the Secretariat currently has 3 members. The Executive Committee meets once in the year of the biennial General Session in Rome and twice in the various member countries in the intervening years. The Research Group holds, alternately, open and closed meetings on an annual basis. The constitution of the Commission and the reports of both the Executive and Research Group meetings are available as hard copy and also available on the EUFMD website at:
www.fao.org/ag/AGA/AGAH/EUFMD/default.htm.

He paid tribute to the Government of the Republic of Ireland who had again funded and seconded the Associate Professional Officer for the Secretariat. The OIE and the EC played a prominent and vital collaborative role in the work of the Commission and many scientists contributed to the outstanding work of the Research Group.

REPORT OF THE GENERAL SESSION

Item 1. Adoption of the Agenda

The agenda was adopted as proposed.

Item 2 - The FMD situation in 2002 and the first quarter of 2003 in Europe and in other regions; events and perspective - *Keith Sumption and Dónal Sammin*

The Secretary of the EUFMD presented a comprehensive report on the global FMD situation during the period since the last General Session. The full text is given as **Appendix 1.**

Key points from the presentation were as follows:-

Fifty-one countries reported FMD in 2002, of 173 considered.

In the absence of an established and accepted quantitative risk assessment method for entry into Europe, it is difficult to assign levels of relative significance to the official information available, and to the information gaps.

In relation to risk from export zones to the EU, circulation of SAT2 and SAT1 in parts of southern Africa, and of types A and O in parts of central South America is a concern.

In relation to the threat to Turkey, and south-eastern Europe, the circulation of multiple antigenic strains of type A in Iran and neighbouring countries is of great concern.

The PanAsia strain of type O continued as a predominant virus isolated from events in the near east to far –east Asia in 2001 and 2002, but a new lineage of type O, related to the PanAsia strain, has emerged, probably from India, and spread as widely as the Gulf States in 2001 and Bhutan in 2002.

Surveillance information for endemic zones with high potential for multiple virus circulation continues to be very limited. Co-circulation of multiple virus types, and often multiple topotypes, was observed in south-east Asia, in Iran and Turkey, in Ecuador in 2002 and can be expected in much of south Asia and west, central and eastern Africa.

At the global level, it must be recognised that an increasing number of disease free zones in proximity to endemic or high risk areas increases the need for effective surveillance in these areas to strengthen confidence for trading partners, linked to early warning and response. These needs can only grow if progressive control is to become reality.

Conclusions

1. The General Session noted with satisfaction that European countries had regained the status of *freedom from FMD without vaccination* after the outbreaks of 2001, as had the Republic of Korea, zones of South Africa and southern states of Brazil. Botswana had regained this status in 2002, only to lose it again in 2003.

2. The General Session emphasised that the need for constant vigilance and preparedness remains high, since 51 countries had reported the disease in 2002, endemic FMD persists in many parts of the world and spread is exacerbated by current political instabilities.

3. The General Session expressed concern in relation to the continuing risk of the possible introduction of FMD from areas which included zones exporting to Europe, noting in particular the circulation of multiple types and the continuing evolution of antigenically different strains of the virus. Particular examples included: the multiple strains of type A virus in Turkey and the Middle East; the presence of types SAT2 and SAT3 in southern Africa; types O and A in South America and the emergence of a new lineage of type O, diverging from the PanAsian topotype which had spread to the Gulf States in 2001, and to Bhutan and to the territory of the Palestinian Autonomous Territories in 2002.

4. The General Session considered that, while epidemiological information on FMD is satisfactory in some parts of the world, in other areas there are serious deficiencies,

particularly in parts of Africa and Asia. It is considered that in these areas the true distribution and prevalence of FMD is unknown because of non-reporting and under-reporting of the field situation. These deficiencies make analysis of the risk from each region especially problematical.

5. The General Session considers it essential that surveillance in areas of endemic FMD, which often correspond to the areas of least epidemiological information, will have to be radically improved in order to identify the most important potential origins of infection and of risk within the endemic regions.

Recommendations

(Note the recommendations are numbered sequentially throughout the Report)

1. That the EUFMD should organise an ad hoc group in close collaboration with OIE to investigate the factors contributing to under-reporting and also practical means of improving global surveillance, prioritised according to the areas of highest perceived risk to member countries.

2. That EUFMD should support the timely supply of representative field samples of FMD virus to regional diagnostic laboratories and to the WRL from areas lacking the means to supply.

3. That the Commission should explore how risk assessment approaches could be used to target both information gathering by the EUFMD and surveillance efforts into areas of higher risk and/or higher epidemiological uncertainty in respect of FMD.

Item 3 - Global FMD Surveillance

Paper 3.1 - Report of the FAO World Reference Laboratory – global FMD situation during 2001/2002 - *David Paton*

The Head of the FAO/OIE World Reference Laboratory (WRL) for FMD at Pirbright in the UK presented a review of the work of the laboratory, the global epidemiological situation and developments in staffing and equipment at the laboratory since the last report. The full text is given as **Appendix 2.**

Tables were shown summarising the results of tests on 15,926 samples received in 2001 (including 15,307 from the UK epidemic) and 665 received in 2002. The results were summarised continent by continent, with Type O results predominating throughout the period. Global incidence maps were displayed showing the general pattern of disease and also a more detailed map of the epidemiology of FMD in Iran and Turkey. The point was made that such detailed maps relied heavily on the submission of sufficient field samples and that in many areas the available information was grossly deficient in this respect.

The several difficulties currently inherent in the matching of field isolates to vaccine strains were outlined, including: relatively insensitive methodology; the limited availability and commercial sensitivity of strains used in commercial vaccine manufacture; the availability

and consistency of vaccinal sera; discrepant approaches to the matching process; lack of cross-protection studies in target species; and the differing potency of various vaccines.

A series of detailed phylogenetic trees (dendograms) were displayed showing the genomic relationships of groups of viruses of type O, A and Asia 1 from different geographical regions, based on the partial or complete sequencing of the VP1 sequences, and their significance explained. Genetic divergence was particularly marked within the A serotype.

During the period WRL staff participated in training courses and conferences in 14 countries and supplied reagents to 38 countries.

Discussion

It was noted that it might be necessary to provide specific funding to cover the cost of collecting and transporting field samples to increase the coverage and rate of submission. In some countries of S.E. Asia, commercial manufacturers offered to pay for the submission of samples to reference laboratories.

The number of samples from which no virus could be recovered at the WRL probably reflected in part the quality of the material collected and inadequate conditions of transport. More attention was required to these aspects.

The Global Rinderpest Surveillance Schemes had also proved very useful in obtaining material for FMD testing and emphasised the importance of having experienced field staff on the ground in areas of particular epidemiological importance.

A suggestion was made for the preparation of a world map showing both the epidemiological situation and the availability of appropriate vaccine strains.

While current genomic analyses are principally confined to the partial or complete sequencing of the VP1 gene as a major immunogenic site, new technology is increasingly offering the practical possibility of sequencing much larger areas of the genome. This may lead to useful additional knowledge for the matching of field and outbreak strains. Antigenic profiling using panels of monoclonal antibodies (MABs) should also be increasingly used.

A priority proposal had been submitted to the EC for an international European collaboration to address the improvement of reagents and methods for the matching of field and outbreak strains of virus.

A meeting would also be held in the near future at the WRL, involving the UK, USA, Canada, Australia to discuss research needs for the development of improved FMD vaccines. The scale of this problem calls for international action.

A suggestion was made calling for the preparation of a comprehensive, global listing of current research on FMD.

It was noted that the Maghreb countries had been free of FMD for several years and that the authorities in Morocco were considering whether to continue or discontinue with prophylactic vaccination.

Conclusions

1. The General Session noted that the WRL had continued to provide services of high value to the Commission during 2001 and 2002, supported, in part, through EUFMD/FAO contract. These included the receipt of samples for virus isolation and typing, antigenic and genomic characterisation, the supply of viruses, antisera and other reagents to other laboratories, the development of diagnostic tests, the preparation of reports and scientific papers, dissemination of information and advice, participation in working groups, training, and the organisation of and participation in meetings and conferences.

2. The General Session noted that the reported additional staff and resources at the WRL could extend the value of the WRL support to EUFMD.

3. The General Session noted that the supply of sufficient field samples of virus had enabled the detection of new virus variants in only a few areas.

4. The General Session noted the current problems associated with the matching of outbreak and vaccine strains and encouraged further efforts in this area.

5. The Session recognises that adequate funding is required for the fullest discharge of the international functions and responsibilities of the OIE/FAO World Reference Laboratory for FMD and that current levels of funding from FAO/ EUFMD are inadequate for the tasks required.

6. The General Session noted that, despite the clear evidence of the continuing emergence of new virus variants for serotypes O, Asia 1 and especially A, relatively restricted range of vaccine strains would be expected to provide adequate immunity in the field. The situation with coverage of type A infections in the Near East however remains of concern.

7. The General Session noted the global overview for the period in that the epidemiological situation had improved in South America, that disease continued to be widespread in Africa (although the information was very limited for the continent) and in Asia and the Middle East, while Europe had received a strident wake-up call.

Recommendations

4. The OIE, FAO and EUFMD should strongly encourage the increased submission of field samples to regional diagnostic laboratories and to the World Reference Laboratory and also investigate incentives towards this end. The workload of the WRL should also be continuously monitored to ensure that the resources available are adequate for the tasks involved.

5. The OIE, FAO and EUFMD should seek to identify funding for additional fieldwork on the epidemiology of FMD in areas of the world where the disease is endemic.

6. The OIE, FAO and EUFMD should encourage greater collaboration between the Regional FMD laboratories and the World Reference laboratory for the exchange of information and viruses. One such measure could be by the funding of a regular meeting of experts from these laboratories for this specific purpose.

7. A comprehensive global listing of current research on FMD would assist the Member states and international bodies to identify research needs, define gaps and prioritise the activities. The EUFMD should begin this task by requesting listings of current research from member countries.

Paper 3.2 - Risk assessment for the import of meat and meat products contaminated with FMD virus into Great Britain and the subsequent exposure of GB livestock - *Emma Hartnett*

Dr Hartnett spoke of the work carried out by the newly created Risk Assessment Unit at the UK Veterinary Laboratories Agency. The present, DEFRA funded, assessment of the risk of the illegal import of FMD infected meat and the subsequent exposure of susceptible livestock constituted one part. The text is given in full as **Appendix 3.**

The elements of this complex model, the sources of information and the assumptions used were described. Key data deficiencies were identified and the high degree of uncertainty within many of the variables considered was stressed. For these reasons the estimates of risk were described by probability distributions with 90% uncertainty intervals.

An estimated 7,431 tonnes of meat enter the UK illegally annually, of which over 80% is carried in personal baggage, including meat for commercial, rather than personal, use. On average, 95 kg is estimated to be contaminated with FMD virus. The model predicts an average infection frequency of 1 outbreak in 130 years (range 40 to 1100 years at the 90% confidence interval). The risk of animal exposure to infection is greatly reduced subsequent to arrival in the UK during the processes of distribution, human consumption and waste disposal. Pigs are at greatest risk of infection.

The exercise facilited the identification of areas where weak data could be strengthened by research and where control methods might be improved. It also highlighted the importance of improving the knowledge base on the global epidemiology of FMD in order to bring greater certainty to such exercises.

The updating and refinement of the model would be a continuous process and similar exercises were ongoing for Classical Swine Fever, African Swine Fever and Swine Vesicular Disease.

Discussion

It was suggested that while the approach was seen as commendable it did not appear to have revealed new aspects and the estimates of the frequency of infection could be seen as being unrealistic. However, it was stressed that the analysis had only considered one of the several routes by which infection could gain access.

The question of the risk of the import of FMD infected sausage casings was raised. This aspect had not yet been addressed in the risk analysis but would be included in future work.

The analysis had concluded that the area of major risk for the illegal import of contaminated meat into the UK was from the Middle East. The analysis did not support the perception that the import of so-called "bush meat" from Africa constituted a pre-eminent risk, since only part of it derived from FMD susceptible species and it was considered that it was principally utilised for human consumption.

The cost-effectiveness of measures to minimise risk was discussed in relation to the low estimated frequency of infection; given the extremely high impact of FMD, cost-effective measures were identified for the UK. The model could be used to investigate the effect of various options and to focus attention on areas where cost-benefit analyses indicated the best return on investment, such as the targetting of customs inspections on selected products and regions.

This risk analyis had cost around £ 0.5 million pounds sterling.

Conclusions

1. The General Session noted the structured approach taken to risk analysis for the illegal import of FMD infected meat and meat products and the subsequent exposure of British livestock. This report set out to estimate the frequency with which such illegal entry and dissemination occurred and also to identify levels of uncertainty within the data used for the analysis.

2. The current analysis confirmed that pigs were the most likely species to contract infection via this route (96% of total risk), specially where waste food was being fed, that the Near and Middle East appeared to be the most likely source of current import of illegal meat and meat products (40% of total risk) and that carriage in personal baggage was the commonest mode of entry (95% of total risk).

3. The methodical approach was considered to be especially valuable in separating out the contributory factors, in bringing focus to the areas where additional research and/or controls might, or might not, justify increased attention.

4. The estimation of different levels of under-reporting in countries could be very valuable and should be kept under review as the information available changes.

Recommendations

8. Member states, the EUFMD Commission and the EC should consider the methods used in this risk analysis and should consider the need to conduct such studies in their own situation, and evaluate how these could be used Europe-wide.

9. The relevance of the estimates of risk from geographical regions for targeting surveillance for illegal imports, and for selection of antigens for the European banks, should be further explored by the EUFMD Commission, the WRL and the EC.

Paper 3.3 - Global Early Warning and Response System for major Animal diseases – a joint initiative to better combat Diseases at source

- Vincent Martin and Juan Lubroth

Dr Martin of FAO explained the concept of the proposed new early warning system which is a joint initiative involving the OIE, FAO and the World Health Organisation (WHO) and the benefits foreseen from its possible implementation. The full text is given as **Appendix 4.**

The system would be expected to improve the accuracy and quality of disease and associated information at all levels, enhance analytical capabilities, facilitate risk-based surveillance and generate sound strategies for rapid intervention.

If the proposal found acceptance and funding the next steps would be the definition of the institutional framework and the capacity building required, and the creation of regional surveillance "hubs".

Discussion

As to the time scale for the project: the concept had already been presented to meetings in the Near and Middle East and in South East Asia and would be presented in South America. It was intended that the case would be presented to potential international donors before the end of 2003. Implementation would take several years.

It was recognised that the feasability and benefits of the scheme would have to take into consideration the potential impact on trade of early warning messages.

It was envisaged that the central organisation would carry out the analysis of the data, while implementation of control would be implemented locally. The questions of the overall mandate and authority were under discussion.

Conclusions

1. The General Session learned with interest about the joint proposals under development by FAO, OIE and WHO for a new global early warning system for major animal diseases.

2. The proposals would supplement the existing OIE system by the addition of complementary information from other sectors such as: data on human migrations, animal movements, climate change and patterns of trade. This would be expected to improve the basis for epidemiological analysis, prediction and risk analysis and also aid decisions on the choice of control options.

3. It was noted that the proposed scheme had many elements in common with the ongoing FAO pilot study on the mapping of FMD transmission in the Middle East and Central Asia **(Item 7.2** and **Appendix 10)**.

4. The management of the system, particularly the analysis of the information, and the communication of risk, should be further clarified.

Recommendations

10. The Session supported the initiative for the proposed introduction of an extended and more comprehensive global early warning system by FAO, OIE and WHO and asked the EUFMD to collaborate in its development and to evaluate its effectiveness in relation to FMD.

Item 4.

Paper 4.1 - Report on the Commission's activities in 2001 and 2002 - *Keith Sumption*

The Secretary of the EUFMD presented a comprehensive report on the work of the Commission since the previous General Session. The Full text is given as **Appendix 5.**

Key points from the presentation were as follows:-

The situation of FMD control in Turkey and the Caucasus was kept under continual review through the mechanism of Tripartite group meetings, and at the 3 meetings of the Executive Committee, resulting in decisions to resume buffer zone vaccination/surveillance support in the Caucasus in 2003, to supply vaccine for Thrace in 2003 and to support surveillance activities in Turkey.

The principle of progressive control of FMD in Turkey over a 5-10 year period, with the aim of creating progressively extensive disease free zones over the next 5 years, was agreed by the Tripartite group members as a regional component of the Global Framework for Progressive Control of Trans-boundary animal diseases, prepared by FAO and OIE.

Increasing engagement with the situation in Iran, in response to the high level of circulation of types A, O and Asia-1 and the threat of the type A antigen variants which contributed to a continually high risk situation. Technical and financial support for technical co-operation between Turkey and Iran in FMD surveillance, diagnostics and vaccine production was provided under an FAO TCP, managed by EUFMD, which concluded in 2002. A Mission to Iran in 2002 identified strong potential for following this up with support for active field surveillance and for the establishment of co-ordination centre in Iran.

The events of 2001 created an enormous demand on the Secretariat for information to support national decision making and international policy on FMD control. The past and current Secretary have continued to work closely with the OIE in the OIE FMD Commission, particularly in the development of international standards for surveillance. The present Secretary has been invited by the OIE to co-ordinate efforts to identify how FMDV genetic and antigenic information can be more rapidly made available from the global network of reference centres and laboratories engaged in FMDV characterisation.

The Secretariat has initiated a review of diagnostic activities and capacity to respond to FMD crisis situations in member countries, and completed the regular EUFMD review of the status of vaccine banks in the EUFMD region.

A meeting was held on agro-terrorism and it was agreed that the possibility of establishing an EUFMD ad-hoc group on this be kept under review.

The Research Group met on two occasions and continued its position as a pre-eminent, and unique, international forum for review of progress in FMD diagnostics and vaccination issues. The Chairman was highly involved in issues relating to validation of DIVA tests (differentiation of infection from vaccination) and in licensing of FMD vaccines for European use (Eur.Pharm, and CVMP working party).

Extensive changes to the EUFMD web-site have been initiated, and will in future be updated on a 2 weekly basis, while the database facilities will be expanded in line with risk assessment requirements in the biennium 2003-4.

Dr Yves Leforban resigned from his position as Secretary of the Commission, leaving office on 31 August 2002, and a successor was recruited who entered the position on 1 September, with no gap in coverage.

No new member countries joined the Commission in the period. Invitations were extended to the Republics of Latvia, Estonia and Slovakia.

Discussion

The majority of the 41 actions arising from the last General Session had been actioned.

Further work was required on Risk Analysis and on Guidelines for the Collection and Transport of Field Samples. The existing WRL documentation on the latter topic would form a useful basis for this work.

Concern was expressed concerning the difficulties which had arisen relating to the international transport of infective materials by air and it was considered that this aspect should be pursued with the relevant organisations as a matter of urgency. (See also **Item 8.2**).

Shortage of time curtailed discussion on this item.

Conclusions

1. The General Session accepted the Secretary's report and noted with satisfaction the full programme which had been undertaken by the EUFMD during the period 2001-2002.

2. The Session considered that the work of the Commission in the Tripartite groups had played a very important role in enabling the FMD situation in Turkey and the Caucasus to be kept under continual review, and in the implementation of strategic interventions.

3. The Session noted that the majority of the recommendations of the 34th Session for the Commission had been implemented.

4. No new member countries joined the Commission in the period. Since 10 countries in the European region are not members, further enlargement of the Commission might well have advantages for control of FMD and other diseases.

Recommendations

11. The Session endorsed the continuing activities of the Commission in Turkey, I.R. Iran and the Caucasus, and the proposal to increase efforts to obtain FMD samples and information from areas of high risk to Europe.

12. The Session endorsed the proposal for the Commission to become increasingly involved in risk analysis as a tool in the control of FMD, in line with the recommendations of the 34th Session.

13. The Session encouraged the Commission to pursue the planned changes to the EUFMD website for the improved reporting of global information on FMD, the expansion of the database facilities to encompass elements of risk analysis and the estimation of true incidence and prevalence rates of FMD infection.

14. The Session called for an investigation by the EUFMD, OIE and WRL of the current difficulties of the international transport of FMD samples by air in order to arrive at solutions for these problems (see also Item 8.2).

15. The Session endorsed the Secretary's proposal to celebrate the 50th anniversary of the Commission, in part, by the production of a commemorative CD-ROM.

Item 5 - Report on the FMD situation in Turkey

Paper 5.1 - Report on the situation of FMD in Turkey - *Sinan Aktas*

Dr Aktas, Deputy Director at the SAP (Foot-and-Mouth Disease) Institute in Ankara, presented the report on the situation in Turkey. The full text is given as **Appendix 6.**

The disease control strategy included active surveillance and monitoring, vaccination, quarantine and restrictions on animal and animal product movements. There had been 88 outbreaks reported in 2001 and 48 in 2002. Most had been of types O and A. The outbreaks of Asia 1 first reported in Iran in September 1999 had spread to Turkey by October of that year and subsequently spread as far as the Western Buffer Zone. The last Asia 1 outbreak had occurred in April 2002. Genetic characterisation at the SAP Institute revealed that the type A viruses were related to the A Iran 96 cluster. Types O Manisa and A Ankara 98 vaccine strains give adequate coverage against the strains currently circulating in Turkey.

Active serological surveillance had been intensified in the Eastern and south-eastern border regions. Active monitoring had demonstrated that Thrace remained free of clinical FMD. Some 24.6 million, monovalent, cattle doses of vaccine were produced at the SAP Institute in 2002 and a number of improvements had been effected in the facilities and equipment.

The regional vaccination plans for the control of FMD in 2002 and 2003 were described. The EU had supplied 0.5 million trivalent cattle doses for vaccination in Thrace in 2003. Locally produced, trivalent Types O, A and Asia 1 vaccine will be used for large ruminants throughout Anatolian Turkey in the spring and the autumn.

The results of external and internal quality control tests of SAP vaccine in Turkey and at Pirbright and Tübingen had given discrepant results. Protective antibody responses had not

been observed in tests at Pirbright and limited protection was observed at Tübingen where the results were around 3 PD 50 for type O, 1.5 PD50 for Asia 1 and 3/10 animals protected against challenge for type A. In Turkey the results had showed 3/3 cattle protected for all three types and herd protection percentages of 86.6 % for type O, 88.5% for type A and 94.7% for type Asia 1. Further collaboration to conduct additional internal and external tests on SAP vaccine batches would be welcomed as would assistance from EUFMD for training in the area of vaccine quality control.

The quality control laboratory at Bornova was nearing completion and was expected to be fully operational for the control of FMD vaccines in 2004.

Special measures were described to guard against the possible spread of FMD into Turkey from neighbouring countries to the east on account of the war in Iraq.

Discussion

Turkey was congratulated on the progress made in the control of several aspects of FMD which included improved levels of vaccination coverage, movement controls and the identification of around 80% individual cattle by ear tagging together with their recording on a central computerised database. It was suggested that there should be an expert review of the Turkish animal health legislation to ensure harmonisation with EU law.

The effective assistance of the EC in the provision of vaccine for Thrace was gratefully acknowledged.

The results of recent potency testing of SAP vaccine in Turkey and at Pirbright and Tübingen were of concern. There was no clear explanation for the discrepant results, but possible reasons included: differences between challenge strains in the three laboratories, antigen stability problems (especially for type A), lack of standardisation of the serological tests and defective vaccine transport conditions. Further investigation was called for.

The collaboration between Turkey and Iran initiated by means of the completed FAO Technical Co-operation Project was reported to be continuing with good collaboration between the national laboratories.

Conclusions

1. The General Session noted with satisfaction that many measures had been adopted for the improved control of FMD in Turkey. Type Asia 1 which appeared in Turkey in 1999 and subsequently spread as far as Greece had not been recorded in Turkey since April 2002 and the overall number of outbreaks was showing an overall decline over previous years, down from 88 in 2001 to 48 in 2002. About 80% of the bovine population were now individually identified. However, concern remained over the persistence of endemic disease due to serotype O and the epidemic of type A in 2002.

2. The General Session noted that the war in Iraq increased the risk of the spread of diseases, including FMD, towards Turkey and welcomed the efforts being made to control the illegal transborder movement of animals.

3. The General Session welcomed the clinical and serological surveillance undertaken in the border areas with Iran, Iraq and Syria and in Thrace as an essential ongoing activity.

4. The General Session was pleased to note the planned sero-surveillance programme in 2003 in Turkish Thrace, supported by the EUFMD Commission/EC.

5. The General Session noted the recent results of the independent testing in Pirbright and Tübingen of FMD vaccine produced at the SAP Institute in which discrepant and disappointingly low potency results were obtained compared to those seen in Turkey. Further assistance with quality control and external testing of SAP vaccine would be appropriate.

6. The General Session noted with approval that the Bornova Vaccine Control laboratory had been partly commissioned and that it was intended that the unit would be fully functional for potency testing in 2004.

Recommendations

16. The Session recommends that the collaboration between the Tripartite Group and the Turkish animal health authorities should be continued with a view to further reducing the incidence of FMD. The Commission should work closely with the Turkish authorities on the feasibility of progressive containment of FMD and development of disease free zones in Turkey.

17. The Session acknowledges the progress made in Turkey and recommends the continued active role of Turkey in EUFMD activities in the region, and also that Turkey should further strengthen the collaboration with I.R. Iran.

18. The Session recommends that the Commission should with urgency assist Turkey to achieve an agreed international standard for FMD vaccines produced in Turkey.

19. The Session recommends that the Commission should consider the further independent potency testing of FMD vaccine produced in Turkey. It also recommends that the conditions of shipment for vaccines being dispatched for external quality assurance testing should always be monitored in respect of temperature during transport by the inclusion of appropriate recording devices.

Paper 5.2 - Overview of FMD control programme in Iraq with particular reference to the Northern Governorates - *A.H. El Idrissi*

Dr El Idrissi of the FAO support programme to Iraq presented a summary of the epidemiological situation and the control measures employed against FMD in that country. The full text is given as **Appendix 7.**

A severe epidemic of type O FMD had occurred in Iraq in 1998, affecting some 3 million cattle, sheep and goats and killing about 0.5 million immature animals. Mass vaccination was deployed using trivalent O, A and Asia 1 vaccine in cattle and monovalent type O vaccine in small ruminants. Between 1998 and 2002 more than 50 million doses of vaccine had been delivered under the "Oil-for-Food" programme to the southern governorates and 4.8 million to the northern governorates.

FAO had provided assistance through a Technical Co-operation Programme in the form of support in the field, the supply of vaccines and in public awareness measures. The main problems encountered had been the lack of control of animal movements, the near absence of disease surveillance and reporting in the field, the lack of laboratory capability, and the limited and irregular supply of vaccine because of the difficult procurement process.

In 2002 there had been outbreaks due to type A and investigation at the WRL showed that the virus involved was related to the A Iran 96 lineage. This necessitates the urgent review of the strain composition of vaccines for the programme.

Plans have been drawn up for a three year programme for the rehabilitation of agriculture in Northern Iraq including a wide variety of inputs, including contingency planning, vaccine procurement, laboratory capability and training of field and laboratory staff.

The present hostilities in Iraq could lead to the transborder dissemination of animal diseases and FAO has prepared an emergency plan to counter this possibility, including: increased measures for the early detection of disease in border areas; a guaranteed supply of vaccines and the strengthening of disease control measures in neighbouring countries. An additional FAO emergency plan has been prepared with the aim of sustaining imports and support services during any temporary disruption of the "Oil-for-Food" programme so as to maintain the production of food in the aftermath of the war.

Discussion

Although standard FAO policy does not normally permit the delivery of vaccine without charge, an exception had been made for some of the vaccine supplied to Iraq. However, the supply of vaccination without charge was under review.

Virtually the only control measure currently available for the control of FMD was of ring and barrier vaccination, since movement control was very difficult and there were no mechanisms for slaughter or compensation.

The FAO approach to the containment of the possible spread of animal diseases as a result of hostilities and the lessons learned in its implementation could form a useful basis for emergency intervention in any future incidents of a similar nature.

Conclusions

1. The General Session noted the important work conducted by FAO under the UN "Oil for Food" programme in animal disease control in Iraq, and the progress in control of FMD in the country, particularly in the 3 northern Governorates which border Turkey, Iran and Syria.

2. The General Session recognised the difficulties in the control of FMD in Iraq and especially the impact of the military situation upon deployment of the spring campaign of vaccination.

3. The Session noted the importance of the emergency preparations by FAO to counter the possibility of the spread of disease from Iraq due to the current military activities. Large

amounts of FMD vaccine have been and will be stockpiled for emergency use and precautions are being strengthened in the neighbouring countries.

Recommendations

20. That the Commission should maintain a close watching brief on the events in respect of FMD in Iraq during and after the war and be prepared to take a supportive role in disease control in the event of outward disease dissemination.

21. That the Commission, with FAO and the OIE should consider the supply of vaccine reserves for the international community in crisis situations to counter the problems of long delays in vaccine procurement for emergency actions.

Item 6. FMD control in Commonwealth of Independent States (CIS) Countries

Paper 6.1 - Progress report on the EUFMD supported actions In FMD control in the Republic of Azerbaijan - *Leos Celeda*

Dr Celeda presented his report on the third, joint, FAO/OIE/EUFMD/ARRIAH mission to the Trans Caucasus in March 2003 on the control of FMD. The full text is given as **Appendix 8.**

The report focused mainly on the situation in Azerbaijan. The objectives of the visit were: to prioritise activities in the buffer vaccination zone on the basis of risk; to organise and inspect the FMD vaccination activities; to identify high, medium and low risk areas for surveillance; to review contingency plans; to identify constraints and opportunities; and to plan sero-surveillance programmes.

In 2002 the EC had approved a short-term programme for the supply of 1.0 million doses of trivalent vaccine to Armenia, Azerbaijan and Georgia, and for funding for the monitoring of the field situation. Some 2.3 million cattle and 0.57 million sheep were vaccinated in Azerbaijan in the same year.

In the spring of 2003 trivalent type O, A and Asia 1 vaccine was delivered from ARRIAH for buffer zone vaccination in Azerbaijan under the FAO/OIE/EC project. The mission agreed the border vaccination plan with the local authorities and also drew up plans for the assessment of vaccination efficiency and for diagnostic procedures. Training courses will be organised by ARRIAH for local laboratory staff on ELISA methodology. Field samples will be delivered to the Russian Institute for examination, the costs of transport being met by ARRIAH.

Repairs were continuing at the National Veterinary Laboratory in Azerbaijan, but equipment is in short supply and staff recruitment and training remain as priorities.

The main cold storage facilities in Baku appear to be adequate, but deficiencies remain in the overall cold chain. Additional vaccination equipment and training is also required.

Although the law allows for the application of standstill orders there are serious problems in the control of animal movement, with no animal identification and a general lack of human and material resources. These deficiencies mean that ring vaccination is virtually the only weapon currently available against FMD, while vaccination of the southern borders continues

to offer an important measure of protection against the spread of disease from neighbouring endemic areas.

An interim report from Georgia indicated the vaccination campaign had been delayed, mainly because of the late snow. A local facility was producing lapinised FMD vaccine.

Discussion

Concern was expressed that the distribution of the FAO/OIE/EC supplied vaccine had apparently been equally divided between Georgia, Armenia and Azerbaijan, rather than being distributed on the basis of animal populations on the borders with Turkey and Iran. However, it was considered that role of the international consultants visiting each country was important in advising on the local use of vaccine after surveying the situation on the ground.

While there was a general appreciation that the disease needed to be controlled in the region, questions were raised about the effectiveness of the international aid to date. The point was made that the situation could not be improved without external assistance.

Conclusions

1. The General Session received the interim report of the FAO/EU/OIE activities in the Trans Caucasus carried out in March 2003, noting the difficulties inherent in the current socio-economic and political situation.

2. The Session noted that three hundred thousand doses of trivalent O, A and Asia 1 vaccine had been delivered from the Vladimir Institute in Russia to the Republic of Azerbaijan for use in the border areas with Iran. It also noted that a sero-surveillance programme had been agreed with the testing to be carried out by ARRIAH, who will also provide training in ELISA for staff in Azerbaijan.

3. The Session noted that the capacity of the national veterinary laboratory requires considerable strengthening since there was no staff trained in FMD work and ELISA testing is uncommon.

4. The Session expressed concern about the production and use of lapinised FMD vaccine in the region.

Recommendations

22. The Session recommends that the concept of the buffer zone and its creation and maintenance along the border with Turkey and Iran in the Trans Caucasian countries should be reviewed by the EUFMD and EC after the conclusion of the short term actions in 2003, and should take into consideration information obtained about the FMD situation within the 3 countries of the region in order to formulate a medium term control strategy for the region.

23. The Session recommends that southern border area of the Trans Caucasus be effectively vaccinated with appropriate vaccine. In the current short term programme, should a shortage in vaccine occur, the priority should be given to higher risk parts of the border.

24. The Session recommends that the feasibility of alternative measures to mass vaccination such as ring vaccination and 3 week quarantine should be considered, where appropriate, to reduce the need and cost of routine mass vaccination.

25. The Session recommends that the Commission should support increase technical co-operation with the region for FMD control, including strengthening of regional co-operation with Turkey and the OIE Regional Reference Laboratory.

26. The Session strongly recommends that lapinised FMD vaccines should not be used and that all FMD vaccines should meet recognised international criteria of safety and potency as specified by, for example, the *OIE Manual of Standards for Diagnostic Tests and Vaccines* and the *European Pharmacopoeia.*

Item 7. EUFMD activities related to FMD surveillance in neighbouring countries

Paper 7.1 - FMD surveillance support for Central Asia - *Keith Sumption*

The Secretary presented a report on the background and justification for the continuing support of the international organisations for FMD surveillance in Central Asia with special reference to the Islamic Republic of Iran. The full text is given as **Appendix 9.**

Serotypes O, A and Asia 1 FMD are endemic in I. R. Iran at high incidence. New variants of type A had been identified in successive years and type A and Asia 1 strains have spread into Turkey and as far west as Greece. The area has crucial importance for the control of the disease at source.

The EUFMD with support from the EC undertook an expert mission to I.R. Iran in October 2002 with representation from the EUFMD, FAO, OIE, EC, WRL, France and Turkey. The mission reviewed the epidemiological situation and the control and surveillance measures with a view to the eventual establishment of a regional surveillance centre for FMD. The Iranian Veterinary Organisation (IVO) has established an effective system of diagnosis and a national surveillance system, served by well-equipped and organised veterinary infrastructure. This would form a sound basis for the development of a regional surveillance centre.

The mission agreed a phased approach to the project with the IVO and the proposals were endorsed by the 68th meeting of the EUFMD Executive Committee in 2002. The first priority is seen as enhancing strategic surveillance in Iran and Turkey under a regional initiative with co-operation and facilitation in neighbouring Central Asian countries. The proposal was outlined, with an indicative budget of US$ 1.6 million, to run over a four year period. Sources of funding were under investigation for the proposal, including the EC, with possible project implementation during the period 2003 - 2007.

Discussion

The parallel project funded by Italy to the sum of $ US 3.8 million was noted, for support to the countries in Central Asia, but excluding I.R. Iran.

The difficulties of obtaining support for regional FMD surveillance initiatives was mentioned, relating to budgetary limitations and the different priorities of development related donors. The problem of negotiating across different EC Directorates were mentioned and a suggestion

made that an EC body should be established to facilitate support for FMD proposals which concern both the protection of European agriculture and international disease surveillance and control.

Conclusions

1. The General Session noted that FMD is endemic in I.R. Iran with types O, A and Asia 1 circulating widely at very high reported disease incidence. Moreover, new variants were continually emerging, particularly within type A successively in 1996, 1999, 2000 and 2001 and with Asia 1 in 1999. The A 96 strain had spread into Turkey and the Caucasus and Asia 1 into both Turkey and Greece.

2. The General Session received an account of the Expert Mission to I. R. Iran in October 2002 supported by the EU and with representation from EUFMD, FAO, OIE, EC, WRL Pirbright, France and Turkey. The objectives were to identify options for future international support for epidemiological investigation and the feasibility of developing a co-ordinating centre for the surveillance of FMD in Iran.

3. The General Session was informed that a potential programme was agreed in principle by the team and the Iranian Veterinary Organisation, envisaged as a phased approach. Firstly, the building of capacity in I.R. Iran for an epidemiological network based on active surveillance in high-risk areas. Secondly, the transfer of this capability to neighbouring countries and the establishment of National FMD Surveillance Centres. Thirdly, the extension of the surveillance system and the establishment of a Regional FMD Surveillance Centre in IR Iran.

Recommendations

27. In view of the strategic importance of the region for FMD, the Session strongly supported the initiative outlined for the strengthening of epidemiological surveillance in I.R. Iran and subsequently in neighbouring countries with the eventual establishment of a Regional FMD Surveillance Centre, and recommended that the EUFMD should continue to collaborate with the several relevant international organisations in this endeavour.

28. The Session recommended that the co-ordination of European Union support for third countries relating to FMD should be considered by the European Commission in Brussels. Initiatives such as outlined for Central Asia might best be supported through a special fund in view of the different responsibilities, focus and budgets of the Directorates concerned with European agriculture, animal health, food security, poverty alleviation and rural development.

Paper 7.2 - Clarifying disease spread in the Eurasian Ruminant Street

- Jan Slingenbergh

Dr Slingenbergh of FAO presented the concepts and results of a multifactorial pilot study on the factors involved in the transboundary spread of FMD across the Middle East and Central Asia (via the "Eurasian Ruminant Street"). The full text is given as **Appendix 10**.

Key points from the presentation were as follows:-

A 4 month pilot study, involving a range of experts from Turkey, Iran, FAO and European institutions, was conducted to explore the potential for better understanding the relationship between animal production, the trade environment and the incidence and spread of FMDV.

The study brought a great amount of information together and predictive geo-spatial models were developed to better explore FMD risk factors.

The study highlighted the potential of remote sensing and GIS based information systems to integrate the multiple factors driving animal movement in the region into a useful form.

Such systems might be extremely useful to analyse, and predict, the risk of FMD movement across the Near East and Central Asia.

In order to collate the missing information it is first required that strong regional networks become established for Early Warning and Early Reaction, based on enhanced information and communication functions and tools, including the application of Remote Sensing, GIS and spatial models, as applicable and relevant.

Discussion

The value of effective, rapid, two-way exchange of disease and associated information was emphasised, between those engaged in decision making on FMD control at local, national and international levels.

Maps additional to those included in the presentation could be made available on application to FAO.

It was noted that this presentation had close, common links with the joint FAO/OIE/WHO proposal for the development of an enhanced system for global early warning and response in order to improve the control of animal diseases, as described in **Item 3** and **Appendix 4.**

Conclusions

1. The General Session recognises that the pilot study on the spread of FMD in the Eurasian ruminant street is a novel and valuable exercise towards increased understanding of the environmental and other factors affecting the trade in livestock and the spread on disease in the Near-East and Central Asia.

Recommendations

29. The Session recommends that the programme be continued and developed, with the aim of creating a better understanding of critical control points for FMD in the region and that it should be supported by the EUFMD.

Item 8. FMD diagnostic capacity in Europe

Paper 8.1 - Contingency planning for FMD: Laboratory Aspects - *Tony Garland*

Dr Garland presented a paper outlining the requirements for laboratory preparedness against the threat, or the actual occurrence, of FMD. The full text is given as **Appendix 11.**

The presentation addressed the topics of Alert Levels, Financial and Legal Aspects, Human Resources, Biosecure Laboratory and Animal Facilities, Stocks of Equipment and Materials, Training, Quality Assurance, Management, Communications, Information Technology and Documentation and Biosecurity. A series of Check Lists were provided for the four Alert Levels.

The need for regular practice of the plans was emphasised. Stress was also laid on the requirement for continual review of the plans and their modification in the light of technological and methodological advances and the emerging epidemiological situation.

The paper reflected the experience of the WRL during and after the severe UK FMD epidemic of 2001, which had a number of novel and particular features. However, the principles were equally applicable as a basis for other countries and other diseases.

Discussion

The need and advantages of a single, computerised data base for field and laboratory investigations was emphasised in the management of infectious diseases. This should integrate data on the location of livestock species and numbers, field reports, sample details and results and other epidemiological information. This system should link the national central authority, the field and the laboratories involved in the control of an outbreak, and facilitate the tracking of collected samples and associated results.

Biosecurity is particularly important during an outbreak in both the field and the laboratory. Where it is necessary to increase the laboratory resource, a classification could be applied where high risk diagnostic samples are directed to the national, high security laboratory while samples of low risk, such as those taken for serological surveillance in the absence of clinical disease, are directed to subsidiary laboratories which are activated on a temporary basis with an appropriate level of biosecurity.

The aspect of laboratory preparedness could be included in the new EC Directive on FMD, which had been recently distributed for consultation.

Conclusions

1. The General Session noted the elements of contingency planning in the laboratory against the possible incursion of FMD.

Recommendations

30. The Session recommended that the National FMD Laboratory of each EUFMD member state should develop a contingency plan for diagnostic and serological surveillance

functions in an emergency and that the plan should be regularly rehearsed and modified as necessary.

31. The Session recommended that the EUFMD should consider the value of a workshop on contingency planning for the laboratory aspects of an FMD emergency.

32. The Session recommended that legislation such as the new draft EC Directive on FMD should address the topic of security standards for laboratories dealing with FMD, in particular to take into account the different bio-security level required for serology using inactivated reagents and samples from lower risk FMD risk zones. The alternative of a specific and detailed containment Directive should also be considered.

Paper 8.2 - Assessment of FMD testing requirements and Diagnostic laboratory capacities of EUFMD Member Countries - *Dónal Sammin*

Dr Sammin of the Secretariat presented the results of the questionnaire concerning the diagnostic capability of EUFMD member countries, conducted in 2003. The full text is given as **Appendix 12.**

The questionnaire had been circulated to 33 member countries and 25 replies had been received (79% positive response). The results were presented in a coded format.

Many more investigations of suspect herds and flocks had been effected in 2001 as compared to 2000 or 2002, reflecting the FMD outbreaks of 2001 in several European countries.

Eighteen countries had national diagnostic facilities for FMD. Of the other 7, three relied on the WRL at Pirbright, 3 on the Lindholm laboratory in Denmark and 1 on the Belgian laboratory.

Sixteen laboratories have one or more methods available for detection of FMD virus and 18 laboratories have capability for the detection of antibody, of which 8 are able to carry out tests for antibodies to non-structural proteins. Twelve laboratories can employ the RT-PCR reaction and 3 have facilities for animal inoculation.

The total sero-diagnostic capability of countries responding to the questionnaire was over one million sera per month, although 88% of this resided in 5 of the 25 laboratories.

Two countries have the capacity to test sera from 10% of the national herd per month while 5 can test 2-4% and the other 18 can test less than 1% per month.

Sixteen of 18 establishments participated in quality assurance exercises for the comparison of results in different laboratories and the establishment of cut-off points. Thirteen of 18 were involved in other quality assurance initiatives, with 6 mentioning ISO standards and 5 involved in national accreditation schemes.

Seven laboratories reported a desire for assistance in the sphere of biosecurity, 9 in respect of training (including a request for a workshop on quality control and validation of test

methods), 4 for assistance with laboratory equipment and 13 for support in relation to the supply of test reagents.

Results from 6 countries suggested that little or no laboratory testing surveillance had been undertaken, despite the presence of FMD in the Balkans and Northern Europe during the period under review.

The need for a pan-European bank of reference antigens and antibodies and standardised test reagents was apparent.

Discussion

It was recognised that the questionnaire contained data on the total test capacities but did not allow differentiation between samples tested by more than one method and that this could have given a false impression in some instances.

The questionnaire had produced useful information, but more data would be required to assess the feasability of short term or longer term testing at the levels indicated.

It would be of importance to establish an integrated policy for laboratory testing across member states and to draw up inter-laboratory contingency plans.

Where a national laboratory takes responsibility for FMD testing for other countries there should be a formal agreement between these countries and also co-ordinated contingency planning.

The current difficulties in arranging the carriage of FMD samples by air were reiterated (see **Item 3.1**) and it was again agreed that urgent action was required to resolve this problem. Such transport had to comply with IATA regulations. The United Nations Guideline 601 on Standards for Human Pathogens could be a useful point of reference for this issue.

Conclusions

1. The General Session noted the information collected on the existing diagnostic capability in the EU member states and acknowledged the effort that had gone into its preparation.

2. The information gathered should be assessed against the expected requirements for testing under different FMD control scenarios, and taking into account the issues concerning surveillance following the use of a vaccination-to-live policy.

Recommendations

33. The Session recognises the value of a regular review of levels of diagnostic activity for FMD and of the diagnostic capacity within the EUFMD region. The Session considers that the review be conducted annually and discussed by the Research Group, who should report their analysis of the findings to the Executive Committee.

34. The Session also recognises the expectation that this activity would be conducted in future for EU members by the Community Reference Laboratory. Since the CRL is not currently designated, and the duration of the contract uncertain, the General Session

recommends that the EUFMD continue to take a lead in this and recommends to the EC that the CRL should co-ordinate its activities in this respect with those of the EUFMD.

35. The Session recognises that sero-surveillance needs in future control policies will be substantially increased over the situation in the past and that testing will be required for the detection of antibodies to both the structural and non-structural proteins of FMD virus. It recommends that the EUFMD should conduct a questionnaire survey to ascertain the current situation in respect of current stocks of reagents and equipment for sero-surveillance.

36. The general Session recommends that further consideration should be urgently given to the establishment of an international bank of diagnostic kits and reagents to ensure that surveillance and sero-surveillance needs can be rapidly met across the region. The constituents of such a bank should include provision for the detection of antibodies to both the structural and non-structural proteins of FMD virus. The work should be a collaboration between EUFMD, IAEA, OIE, EC and WRL. The needs should be identified at the next meeting of the Research Group of EUFMD in September 2003.

Note: The Session again called for an investigation by the EUFMD, OIE and WRL of the current difficulties in the international transport of FMD samples by air in order to arrive at solutions for these problems (see also Item 3.1 and Recommendation 13).

Item 9. FMD Vaccine situation in the European Region

Item 9.1 - Report of the meeting at EDQM - the European Pharmacopoeia and the licensing of FMDV vaccines - *Kris De Clercq*

Dr De Clercq, Chairman of the EUFMD Research Group gave a report on the work which had been towards the modernisation of the European guidelines and regulations pertaining to the statutory testing of FMD vaccines. The report is given in full in **Appendix 15.**

Several meetings had been held with the European Pharmacopoeia, the European Directorate for the Quality of Medicines (EDQM), the European Medicines Evaluation Agency (EMEA) and vaccine manufacturers to address the deficiencies of the existing regulations and the guidelines concerning the production methods and the in-process and final product testing of FMD vaccines.

The existing Monograph required modernisation, particularly in respect of: outmoded methods of antigen production, inadequate inactivation procedures and innocuity test methods, testing of vaccine in pigs, alternative potency tests as a means of reducing the number of animals required to be subjected to live virus challenge, emergency vaccination, the requirements for repeat testing relative to minor changes in vaccine formulation, and the overall structure of the monograph. The question of the evidence required for the validation of manufacturer's claims, such as: the duration of vaccine shelf life, the longevity of vaccinal immunity, the advantages of a particular adjuvant, the ability of a vaccine to engender neutralising antibodies against the structural proteins of the virus but not against the non-structural proteins, etc needed to be addressed. The aspect of the existence or otherwise of a Marketing Authorization for a vaccine in emergency situations was also addressed and the

applicability of the Mutual Recognition Procedure for vaccine was discussed with the authorities.

Proposals were now being circulated for consultation and there would be further meetings with the relevant authorities.

Conclusions

1. The General Session noted the report on the deficiencies of the European Pharmacopoeia Monograph on the manufacture and testing of FMD vaccines.

2. The General Session noted with approval the proposals for the improvement of the Monograph and guidelines and applauded the efforts made by the Research Group to correct the deficiencies through meetings with the E P, the EDQM, the EMEA and vaccine manufacturers.

3. The General Session noted that some proposals had been accepted in principle while others had not, particularly in respect of the possibility of reducing the need for challenge testing in target species and the assessment of potency in pigs. The Session also noted that the proposal for a new and separate monograph on the testing of FMD vaccine in pigs had not been accepted.

Recommendations

37. The Session recommended that the efforts to update and improve the legislation and guidelines for the testing and use of FMD vaccines should be vigorously pursued by the Research Group.

Paper 9.2 - FMD vaccine stocks in Europe - *Dónal Sammin*

Dr Sammin of the EUFMD Secretariat presented the accumulated results from the latest questionnaire on the availability of FMD vaccine stocks in Europe. The full text is given as **Appendix 13.**

Twenty-five of the 33 member countries (76%) responded to the questionnaire. One country raised the matter of the confidentiality of the information and asked for this issue to be discussed at the General Session.

Nineteen of the countries had arrangements in place for the supply of emergency vaccines. Based on the replies received when the consolidated report was prepared, at least six members currently have no such arrangements. Since the last report there had been a trend to move away from the situation where a country held its own reserves towards the placing of contracts with commercial manufacturers for the holding and supply of reserves.

The European Union Vaccine Bank (EUVB) holds inactivated antigens equivalent to 39.2 million doses of vaccine consisting of 13 different strains held at three separate European locations. The International Vaccine Bank (IVB) at Pirbright holds stocks equivalent to 3 million doses consisting of six different viral strains. However, the status of some of the IVB antigens in respect of Marketing Authorisations is in doubt. Furthermore the facilities may

require investment to ensure compliance with GMP and the future of this bank will be discussed by its commissioners during 2003.

Reserves held by individual nations are equivalent to 52.03 doses, with 94% of these in the reserves of 3 member countries.

The antigens stored in the EUVB have minimum potency values of 6 PD 50.

Vaccine could be supplied within 3 to 7 days of deciding to deploy vaccine in an emergency.

The report raised a number of issues for discussion, including: consideration of the criteria for the selection of constituent strains in vaccine banks, vaccine formulation, Marketing Authorisations and the preparation of Guidelines for the transport, handling and administration of FMD vaccines (as previously called for at the 34th General Session).

Conclusions

1. The General Session received the report on the current status of vaccine and antigen stocks in member countries, as prepared by the EUFMD Secretariat by means of a questionnaire.

2. The Session noted with satisfaction the increase in the reserves held in the international banks and by member countries since the previous Session, but expressed concern over the fact that several member countries still did not have emergency supply procedures in place.

Recommendations

38. The Session recognises that the selection of vaccine strains for the bank will require considerable effort to ensure that information on antigenic character is available for regions or situations of highest risk. It recommends that the EUFMD Research Group continues to address priority setting for surveillance in relation to FMD risk, and to advise on which viral strains should be banked. This group should work closely with WRL and the EC CRL when designated.

39. Member states and those responsible for the international banks should urgently consider the issue of obtaining Marketing Authorisations for the use of the antigens in their banks as FMD vaccines and also investigate the applicability of the Mutual Recognition Procedure in this context. The EUFMD Commission should assist Members in this process in order that the value of the vaccine stocks currently held can be assessed in this respect.

40. The Session noted with concern that nine of the member states did not have arrangements in place for the suppy of emergency vaccine and recommended that they should urgently seek to establish these.

Paper 9.3 - Note on Animal Health Surveillance *- Preben Willeberg*

Dr Willeberg, CVO Denmark and Vice Chairman of the EUFMD Commission, presented a report on an OIE Technical Consultation held in Fort Collins, Colorado, USA in March 2003. The full text is given as **Appendix 14.**

The consultation had assembled to draft a Chapter for the International Animal Health Code, which might serve as a basic description of principles and methods which would lead to implementation in disease specific chapters of the Code. For this reason the principles and methods relevant to FMD surveillance, and in particular documentation of evidence of absence, were considered relevant to the current and future Commission activities. The development of novel methodology for estimating the confidence of absence of infection was of particular interest and importance for FMD, since it offered the possibility for the combination of multiple, non-random sources of data, for example from passive and active clinical surveillance.

The meeting is expected to produce a draft based on the conclusions of the consultation for consideration by the OIE Code Commission.

Conclusions

1. The General Session received with interest the information on the meeting of an OIE Technical Consultation to discuss principles of animal health surveillance as an aid to risk analysis and decision making and on the useful development of novel and practical methods of combining data from multiple, non-random sources for these purposes.

Recommendations

41. The Session recommends that the EUFMD should closely follow the development of the proposed new OIE Code Chapter on animal health surveillance and contribute to the development and application of appropriate new methodology in this sphere.

42. The Session recommended that the EUFMD Research Group should establish an ad hoc group to address issues relating to FMD surveillance raised by the General Session or the Executive Committee.

Note: the development of an ad hoc group for surveillance is also supported in Recommendation 1, with a specific task identified.

Item 10. Issues relating to the draft Directive on FMD control

The item was deferred to Item 14 as a paper was not available before the meeting for discussion by the Session.

Item 11.

Paper 11.1 Report of the activities of the Research Group for the period 2001, 2002 and the first quarter of 2003 - *Kris De Clercq*

Dr De Clercq, Chairman of the EUFMD Research Group, delivered a comprehensive report of the work of the Group since the last General Session. The full text is given as **Appendix 15.**

The Research Group had held two full Sessions during the period and its members had participated in numerous other meetings and projects outside of the formal meetings. Members had also been involved in the work of the Tripartite missions to Turkey and to the Caucasus. Full reports of the Research Group Sessions are available on the EUFMD web site.

The presentation focused on the main items addressed at the Sessions and other meetings: FMD control (epidemiology, surveillance and control measures); FMD transmission and epidemiological models; virus characterisation and vaccine strain selection; diagnostics for both virus and antibody detection; the development of FMD reference sera; FMD vaccines and vaccination; the modernisation of the European Pharmacopoeia Monograph on FMD vaccination; minimum requirements for the importation into Europe of the live animals, fresh meat and offal of bovine origin; risk analysis tools; agro-terrorism, and the workshop in Bulgaria on FMD and Bluetongue in March 2002.

Discussion

It was thought that the work of the Research Group would be facilitated by the prioritisation of the topics which it had been asked to address.

While it was appreciated that the Research Group was not primarily concerned with matters of trade it was considered that it could have a very useful input to the ongoing revision of the OIE Code in respect of recommendations concerning the import of animal products. The Session noted that EUFMD was involved in all relevant meetings of OIE, as was FAO.

Additionally, OIE operated a system whereby all proposed changes to the Code were circulated to the 164 member countries for comment during a 60-day consultation period. EUFMD members could request the Research Group to address issues relating to the Code, or other technical items, through the Secretariat.

Conclusions

1. The General Session accepted the report and heartily congratulated the Research Group on the excellent quantity and quality of work achieved during the period.

2. The General Session noted that the activities had included two meetings of the Research Group, meetings on agro-terrorism, on FMD vaccines with the regulatory and marketing authorisation organisations, and participation in the missions to the Caucasus and Iran.

Recommendations

43. That the Research Group should continue to work on the development of sampling schemes for the different purposes of both detecting virus at certain levels of prevalence and for the declaration of freedom from infection.

44. That the Research Group should consider the preparation of guidelines to cover incidents of agro-terrorism.

45. That the Research Group should contribute to the definition of proposals for work to further quantify viral excretion, environmental survival and transmission.

46. That the Research Group should develop proposals for the improvement of the methodology applied to the characterisation and matching of outbreak and vaccine strains of FMD virus, including the provision of standardised reagents, ELISA plates, determination of "r" values, nucleotide sequencing and MAB profiling.

47. That FMD laboratories should use the most sensitive cell systems for the detection of FMD viruses, should ideally replace the LPB–ELISA with the SPC-ELISA for the detection of antibodies, and should apply internal and external quality control criteria to all diagnostic and serological tests.

48. That the Research Group should encourage greater emphasis on the development of test methods which can be used for each of the major host species, such as those based on competition inhibition.

49. That the Research Group should encourage the provision of additional data as required on the detection of antibodies to NSP's from animals that have been both vaccinated and challenged.

50. That the Research Group should maintain close contact with the organisations involved in the production of standard reference sera, currently the subject of an EU tender.

51. That the laboratories involved in Phase XVII of the collaborative standardisation exercise should urgently prepare their own secondary standard sera.

52. That the Research Group should consider the quality control of diagnostic and serological surveillance tests as the theme for the next international workshop.

53. That the Research Group should continue with its critical review of the minimum standards governing the importation of animals and animal products and the discrepancies which exist between them in respect of conditions for the inactivation of the virus (such as pH and temperature) in different parts of the world, in order to report to the next Research Group Session.

54. That the Research Group should play a role in the scientific and technical consideration of proposed changes to the OIE Code.

55. That the work proposed by the General Session should be prioritised in full collaboration between the Research Group and the Executive Committee.

56. That the role of the EUFMD in public relations and in dealing with the media should be referred for consideration by the Executive Committee and that a paper should be prepared for circulation to EUFMD members.

57. That the EUFMD Secretariat should prepare a spreadsheet detailing all the recommendations of the General Session together with the responsibilities and timeframe in order to facilitate the monitoring of progress in their implementation. The summary spreadsheet should be made available to all EUFMD members.

Item 12 - Financial matters: accounts 2001 and 2002 and proposed budget for 2004 and 2005

Dr Keith Sumption, Secretary of the EUFMD presented the financial reports of the Commission. These are given in full as **Appendix 16.**

The reports had been prepared by the FAO Finance Division in two parts. The first part focused on the accounts for 2001 and 2002 and the second part on the proposed budget for 2004 and 2005 which were to be endorsed at the session.

He explained to those present that the budget of the Commission is agreed at the General Session every two years. He tabled the detailed statements for the Commission's three Trust Funds for 2001 and 2002. Accommodation and facilities were provided without charge by FAO in 2002, up to a total estimated amount of US$55,000. Trust Fund MTF/INT/004/MUL – the emergency aid programme, showed a balance of US$ 40,356 and Trust Fund MTF/INT/003/EEC showed a balance of US$ 207,257 as at 31 December 2002.

With regards to Trust Fund MTF/INT/011/MUL, which is made up of the contributions received from member countries, the balance was US$214,339. It was noted that there were a number of countries which were still in arrears. This has resulted in a large reduction in the overall balance as the actual expenditure was extremely close to the budget available in the Trust Fund. The issue of arrears is being followed-up by FAO. He thanked Iceland for having paid well in advance for the coming year. He drew attention to the fact that if a country does not pay its contribution for two years in succession, that country can technically result in losing membership.

The budgets were approved by the meeting.

He then tabled the proposed budget for the 2004–2005 biennium, pointing out that in 2002, the expected member contributions of US$ 325,000 was only $ 3,703 above the expenditure of US$ 321,297 up to 31 December 2002. The unallocated amount was smaller than that approved for the 2002 budget by the 65th Executive Committee of US$ 37,435. The rise in costs occurred despite a small reduction in staff emoluments, due to a rise in contracted activities and support work. Following the 2001 epidemic, the demand for services to be provided by the EUFMD has grown, and the recommendations of the Executive Committee usually had some cost implications.

He pointed out that the budget of the Commission has been the same since 1997 and stressed that the three higher levels of member contributions have not been changed since 1993. In addition, the Commission's budget is also affected by the dramatic fluctuation between the Dollar and the Euro, for example, an 18% depreciation of the dollar rate from March 2001 to April 2003. These fluctuations can affect the Commission's budget predictions.

With regards to country categorisation used for contributions, this is worked out based on the ruminant and swine population plus contribution to FAO. This was agreed by the 32nd Session

in 1997. No change to the categorisation has been proposed since then, although it was recommended at that Session that it be reviewed every 6 years. The proposal therefore for this session, is a pro rata increase for all categories. A proposed increase in the budget was approved, in principle, by the Executive Committee at the 68th Session.

The delegate of the UK indicated that in relation to the importance of the work programme and the number of recommendations to be followed up, the increase was a large one in monetary terms and was fully supported. He recommended that the budget be reviewed at each session and that increases in line with inflation would be preferable to less frequent but larger rises. He also indicated the UK supports the WRL and therefore strongly contributes to international efforts on FMD. The delegate of Italy suggested that the Commission review the categories to take into account change in livestock population.

Several delegates noted that an earlier notification of the budget increase would have assisted them in preparation for the meeting, and that the denomination of the budgets should be set in Euro. The Chairman considered the comments should be noted by the Secretariat but considered that Members had been notified through the circulation of the Report of the 68th Session which had been sent to all Members well before the General Session.

The delegate of France considered it very important that the Commission should establish priorities for the work to be conducted in the next biennium in order to justify the proposed budgets.

Dr Cheneau noted that it is for the General Session to make recommendations that will assist the Commission to set priorities. He also pointed out that to review the system for determining the levels of contributions would require considerable work and time to identify the most equitable approach. It was also noted that the Constitution of the Commission requires that the budget be set in Dollars and that proposed changes to the Constitution require a lengthy notification period and are themselves subject to the rules of FAO. One delegate noted that the minority of members were in the Euro zone and that the Commission should consider a review at a later stage.

The Session then voted on the proposal. No Members voted against, and 8 of the 31 Members present abstained (Bulgaria, France, Germany, Italy, Lithuania, Poland, Spain, and Turkey). The proposal was therefore approved.

Item 13 - Election of Chairperson, Vice-Chairpersons, Members of the Executive Committee and Members of the Research Group

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 of EU and non-EU countries in the membership of the EUFMD Executive Committee. Dr Cheneau then reviewed the membership of the Executive Committee elected in 2001.

Prior to this session, Dr. Panagiotatos, Dr. Soós and Dr. Sungur (because they are no longer the delegates representing their countries) had resigned from the Executive Committee.

The Commission then voted for the election of the Chairperson, two vice-Chairpersons and five members of the Committee.

Thirty of the 33 member countries were present. Israel, Luxembourg and Serbia and Montenegro were not represented.

		Proposed by	Seconded by
Chairperson	Mrs. Dr. Karin Schwabenbauer (Germany)	UK	France Spain
First Vice-Chairman	Dr. Yanko Ivanov (Bulgaria)	Romania	Hungary Lithuania
Second Vice-Chairman	Dr. Vasilios Stylas (Greece)	France	Cyprus FYR of Macedonia Portugal Spain

Mrs Dr Schwabenbauer was unanimously elected to the position of Chairperson.
Dr. Ivanov was elected as first Vice Chairman and Dr. Stylas as second Vice Chairpersons, both unanimously.

For the election of members of the Executive Committee the following persons were proposed, seconded and elected unanimously:

Members:	**Proposed by:**	**Seconded by:**
Dr Tibor Bálint (Hungary)	Czech Republic	Bulgaria Romania Slovenia
Dr. Slobodan Čokrevski (FYROM)	Slovenia	Bulgaria Turkey
Dr. Nihat Pakdil (Turkey)	UK	France Germany Greece Portugal
Dr. Preben Willeberg (Denmark)	Sweden	Bulgaria Hungary
Dr. Romano Marabelli (Italy)	Spain	Bulgaria Cyprus Greece

Election of the Research Group

Dr. Cheneau on behalf of the EUFMD secretariat proposed that the 12 members of the research group be re-elected unless any member country wished to propose another candidate. Dr. Ivanov (Bulgaria) proposed Dr. Claudiu Diaconu (Romania). There were no further nominations and a secret ballot was called.

The following members were elected to the Research Group:

Dr Kris De Clerq	Belgium
Dr Aldo Dekker	The Netherlands
Dr Franco De Simone	Italy
Dr Chris Griot	Switzerland
Dr Bernd Haas	Germany
Dr Per Have	Denmark
Dr François Moutou	France
Dr Vilmos Pàlfi	Hungary
Dr David Paton	United Kingdom
Dr José Sanchez-Vizcaino	Spain
Dr Nilay Ünal	Turkey
Dr Hagai Yadin	Israel

The Research Group subsequently elects its own Chairman.

Item 14. Any other business

1. Date and Venue of the next meeting of the EUFMD Executive Committee

The invitation from the Former Yugoslav Republic of Macedonia to host the next meeting of the EUFMD Executive Committee on 23-24 October 2003 was appreciated by the Session and gratefully accepted.

2. The draft EU Directive on FMD

This item was deferred from its original timing as **Agenda Item 10.** The Secretary reminded the Session of the important, ongoing consultation process on the new draft EU Directive on FMD which will replace the current legislation, Directive 92/46/EEC. He pointed out that the EUFMD was one forum for discussion of the draft and one route for the submission of comments to the EC. He also brought it to the attention of the Session that the Directive had many important implications for the EUFMD Commission. However, in the absence of any requests in advance of the General Session from the Commission members, or from the Executive Committee, for an opinion on the Directive by the Research Group or the Secretariat, it would be incorrect for the Secretary to present his own considerations on the draft Directive unless the Session so requested.

3. The role of the EUFMD in relation to the media

The Secretary called for suggestions to be submitted to the Secretariat on the possible role of the EUFMD in public relations and in dealing with the media. It was noted that there are established FAO policies governing this issue. The Session recommended (No. 56) that the role of the EUFMD in public relations and in dealing with the media should be referred for consideration by the Executive Committee and that a paper should be prepared on the subject for circulation to EUFMD members.

4. Organisation of the work of the EUFMD

The Session recommended (No. 57) that the EUFMD Secretariat should prepare a spreadsheet detailing all the recommendations of the General Session together with responsibilities and timescales in order to facilitate the monitoring of progress in their implementation.

Item 15. Adoption of draft report

The draft report was discussed and accepted, subject to the modifications agreed at the Session. These would be incorporated by the Secretariat and the final draft would be circulated to all member countries for final comment prior to publication.

Closure of the Session

Dr Cheneau thanked all the speakers, delegates and observers for their active participation in the 35th General Session.

He made special reference to the outstanding contribution made by Dr L. Celeda, the retiring Chairman of the Executive Committee, whose two-year term of office had been particularly demanding because of the return of FMD to Northern Europe. The Secretary then presented Dr Celeda with a token of appreciation from the Commission for his long term commitment to the Commission and to international FMD control.

Dr Celeda thanked the Executive Committee and the Research Group for their constant support over the ten-year period during which he had served with the EUFMD in various capacities. He preferred to say au revoir rather than goodbye.

Dr Cheneau welcomed the incoming Chairperson, Mrs. Dr. Schwabenbauer, the first lady to hold the position, and wished her every success in her term of office. She thanked the members for having elected her and looked forward to working with the Commission.

He also thanked the Secretariat - Dr Sumption, Dr Sammin and Mrs Fragiotta for the efficient organisation of the General Session and the Rapporteur, Dr Garland, for his work.

Dr Sumption thanked Dr Cheneau for his kind remarks. He pointed out that this would be the last General Session in which Dr Cheneau would participate, since he would be retiring after 12 years as Chief of the Animal Health Service of FAO in the autumn of 2003. On behalf of the Commission he thanked Dr Cheneau for the unfailing advice and support which he had provided to the EUFMD over the years, and for his unceasing efforts on behalf of FMD control around the world, a sentiment which was strongly supported by the delegates present.

APPENDIX 1

FMD situation in 2002 and the first quarter of 2003 in Europe and in other regions; events and perspective

K.J Sumption and Dónal Sammin, EUFMD Commission Secretariat
Animal Health Service, FAO

Key Points

1. Fifty one countries reported FMD in 2002, of 173 considered; as a result the disease free state was suspended in Botswana, Paraguay, and the Republic of Korea. Recovery of disease free status (DFS) in 2002 occurred for the UK, the Republic of Korea, zones of South Africa and Botswana, and the states of Santa Catarina and Rio Grande del Sul in Brazil. In 2003 the DFS of Botswana was again suspended.
2. In the absence of an established and accepted quantitative risk assessment method for entry into Europe, it is difficult to assign levels of relative significance of the official information available, and to the information gaps.
3. In relation to risk to export zones to the EU, circulation of SAT2 and SAT1 in parts of southern Africa, and of types A and O in parts of central South America is a concern.
4. In relation to the threat to Turkey, and south-eastern Europe, the circulation of multiple antigenic strains of type A in Iran and neighbouring countries is of great concern.
5. The PanAsia strain of type O continued as a predominant virus isolated from events in the near east to far –east Asia in 2001 and 2002, but a new lineage of type O, related to the PanAsia strain, has emerged, probably from India, and spread as widely as the Gulf States in 2001 and Bhutan in 2002.
6. Surveillance information for endemic zones with high potential for multiple virus circulation continues to be very limited. Co-circulation of multiple virus types, and often multiple topotypes, was observed in south-east Asia, in Iran and Turkey, in Ecuador in 2002 and can be expected in much of south Asia and west, central and eastern Africa.
7. At the global level, it must be recognised that an increasing number of disease free zones in proximity to endemic or high risk areas increases the need for effective surveillance in these areas and for confidence of trading partners, linked to early warning and response. These needs can only grow if progressive control is to become reality.

Introduction

Directly or indirectly, most EUFMD member states, and the international organisations concerned with FMD, experienced the devastating consequences of FMD outbreaks in this period, as a result of the severe and disseminated type O outbreaks first reported in the UK and which thereafter involved Ireland, France and the Netherlands. Immediately prior to the first reported outbreak in 2001, the EUFMD had warned EUFMD members of the deteriorating world situation with FMD and the increased risk to European nations. However in the immediately preceding EUFMD General Session in 1999, the issue of the deteriorating global situation had not been specifically addressed, instead focussing on FMD in north Africa, Turkey, the Caucasus and Iran.

In preparing this short review the authors are only too aware of the gaps in the information gathering or reporting systems that currently contribute to our world wide assessment. The

situation in 2003 appears similar to that of about 10 years ago, when a lack of "headline events" could easily be mistaken for reduced virus circulation and therefore reduced risk. Improvements to our systems for continuous risk assessment, taking into account the relationship between infection in source countries and the modes of virus entry and establishment in European livestock are needed, and for this reason the Secretariat has considered some ways forward for discussion at the General Session. Greater risk of entry from some regions or situations could be very important to guiding EUFMD actions to increase surveillance information and virus typing in future.

1. FMD events in FMD historically free countries

The Netherlands, Republic of Ireland and France regained their FMD free, non-vaccinating status in September 2001 after 26, 1 and 2 outbreaks of the PanAsia type O virus, respectively, and the United Kingdom regained DFS in January 2002 after officially recording 2030 cases.

The FMD free status of the Republic of Korea (with the exception of Cheju Island) was suspended after FMD (type O1, PanAsia topotype) was reported at two locations on 4 May 2002, at two pig farms. This was the second episode of a type O in just over two years, and caused by a different virus from those involved in the 2000 outbreak; the country had regained FMD status in September 2001 following earlier type O outbreaks in 2000, after many decades of freedom. The outbreaks were controlled by stamping out, and pen-side antigen tests were reported to have been a highly useful supportive tool. The last reported outbreak occurred on 23 June; at-risk and protection zones were lifted on 7 August 2002, on the basis of results from serological and/or virological testing conducted in the zones, and DFS was regained in November 2002.

2. FMD events in regions from which potential risk products are exported to Europe

a. Southern Africa

Circulation of SAT2 and SAT1 is a current concern.

Monitoring of the FMD situation in this region is very important in relation to the export of potential risk products to EUFMD members (EU and non-EU) from disease free zones of South Africa, Namibia, and Botswana.

The recent establishment and apparent persistence of SAT2, and probably SAT1 viruses in Zimbabwe, and as a result possibly also SAT1 in Mozambique, is of very high regional concern. The policy of containing SAT 1, 2 and 3 types to their wildlife reservoirs has generally continued to be effective in the other countries. In Zimbabwe the FMD control situation rapidly deteriorated during 2002 and into 2003. **Zimbabwe** reported SAT2 outbreaks at two foci, in April and June, and outbreaks of SAT2 in Manicaland and Masvingo in August, and suspect cases in the same provinces in late September/early October. Cases have apparently continued into March 2003. Continued circulation of SAT1 seems probable after the isolation of SAT1 virus from outbreaks in Mozambique close to the Zimbabwe border; this strain was genetically close to a strain isolated from buffalo in a distant location (Kariba) in Zimbabwe. The outbreaks in Botswana, close to the Zimbabwe border in 2003 were considered on serological grounds to be SAT1; it is unclear if this is another introduction. The control in Zimbabwe in 2002/early 2003 has been severely constrained through lack of resources, including a severe lack of vaccine. FAO has provided a short term supply of 340,000 doses in January 2003. The economic situation in Zimbabwe has led to strong risk factors such as price differentials in livestock products with neighbouring FMD free countries/zones, including Botswana.

In Botswana on the first occasion the SAT2 outbreak of foot-and-mouth disease (FMD) in late February 2002 was apparently a spillover from Zimbabwe, but was efficiently controlled and no new outbreaks were reported, and Botswana declared provisional freedom from FMD as of 20 May 2002, and regained zonal disease free status (DFS) at the OIE on the 29th November 2002. The status was suspended again on reporting FMD on the 20th January 2003. The rapid reporting and effective measures taken in Botswana, and to prevent entry in South Africa are to be congratulated and the incentives of an export market to promote good FMD control are important to national and regional FMD control.

The outbreaks in Mozambique detected in November 2002 were the first FMD reported in that country since 1975; a later outbreak occurred as far south as Maputo Province, and outbreaks continued (at least) into December 2002.
The situation in countries immediately to the north is also important, but data is more limited.
In May 2002 South Africa regained the DFS of the zones which had been suspended following the outbreaks in 2000 and 2001.

b. Southern Cone of South America

Risk of extension of types A and O from endemic zones in Bolivia is a concern.
Potential virus circulation in Paraguay is a concern; DFS was suspended on the 4th November 2002 after type O was isolated.
The type O and A viruses involved in 2000 and 2001 in Argentina appear to be representatives of previously recognised virus topotypes from the region, recognised as circulating since the late 1970's. The type O virus was antigenically closely related to O1 Campos.
A detailed report on the situation in 2001 is given in the Reports of the 66th and 67th Sessions.
The FMD risk for export zones requires continual and close monitoring, risk situations close to the borders of FMD free zones remain and regaining export trade following the 2001 set-backs has resulted in price differentials which might exacerbate illegal animal movements. Bolivia, for the first time (in 2002) applied for zonal disease free (with vaccination) status for a zone in the east, bordering Brazil and Paraguay.
As previously mentioned, progressive control requires progressive advances in risk monitoring if status and confidence is to be maintained.
The Paraguay situation in October 2002 was very unclear, with Argentina and Brazil closing their frontiers to Paraguayan cattle in the beginning of the month; the initial incident of vesicular disease was investigated on the 23rd September, and reported (as positive for IBR) on the 12th October to OIE. International pressure to investigate resulted in isolation by PAHO of virus and the suspension of DFS, over 5 weeks after first investigation. Type O was isolated and molecular typing indicated a virus genetically closely related to a virus isolated in a outbreak in the nearby region of Brazil (Mato Grosso del Sul) in 2000, either suggesting similar origins for these outbreaks, and more significantly either continued circulation in this region, or in a nearby source region; the virus was also part of the cluster that included the type O1 outbreaks in Argentina in 2000. Antigenic relatedness tests at the WRL indicate O1 Manisa could provide protection. Bolivia reported the occurrence of 8 type O and 1 type A outbreaks in 2002; interestingly 3 type O outbreaks occurred in Santa Cruz Province in October (the closest to Paraguay), but not in the zone proposed for DFS.

The widespread circulation of type A viruses that occurred between 2000 and January 2002 (last report) in Argentina, with spill-over in 2001 into Uruguay and the State of Rio Grande de Sul in Brazil, were controlled rapidly in the latter two countries through mass reactive vaccination, and sanitary measures. Uruguay recorded 2057 outbreaks, between April and August 2001, a similar number to that occurring in the UK but over shorter time period; vaccination, after a slow start, reached a rate of around 300,000 per day at peak after which outbreaks declined rapidly. Argentina recorded 2394 outbreaks in 2001, with the last reported outbreak in this epidemic in January 2002 in Cordoba. At least two type A viruses were involved; a second type A antigen derived from the field strain was required in the vaccine used in Argentina because of the low antigenic relationship with A Arg2000, A24 Cruzeiro, and other type A vaccine antigens. Over 187 million vaccine doses were delivered up to May 2002.

The Brazilian states of Rio Grande de Sul, and Santa Catarina States, regained FMD free (with vaccination) status on the 29 November 2002, well over a year after the last outbreaks were reported.

The were NO reported FMD outbreaks in Brazil in 2002, which is highly notable given the presence of infection in the country for most of the last century and the boundaries of the country with the endemic zones of Bolivia, Peru, Ecuador, Colombia, and Venezuela. In 2001 Brazil reported 37 outbreaks of type A. Thirty of these were the spillover that occurred in Rio Grande del Sul, bordering Uruguay and Argentina. Five outbreaks occurred in Amazonas province between February and April, one in Roraima in June, one in Maranhao in August.

In 2002 infection close to the Brazilian border in Paraguay appears not to have resulted in spillover, attributed in part to higher vaccination coverage/antibody levels on the Brazilian side. The State of Rondonia applied for DFS in 2002.

Disease free zones are recognised by the OIE in parts of Brazil, Argentina and Colombia; the zone situated south of the 42° parallel in Argentina is recognised as FMD free without vaccination, and in Brazil, the States of Bahia, Espírito Santo, Goiás, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Paraná, Rio de Janeiro, São Paulo, Sergipe, Tocantins and the Federal District are recognised as FMD free with vaccination.

3. FMD events in regions of south-eastern Europe and the Mediterranean littoral

1.*Mediterranean littoral*: there were no reports of FMD occurrence in 2002 from the following countries, date of last report in brackets; Egypt (06/2000), Libya (1994), Tunisia (03/99), Algeria (04/99) or Morocco (04/99).

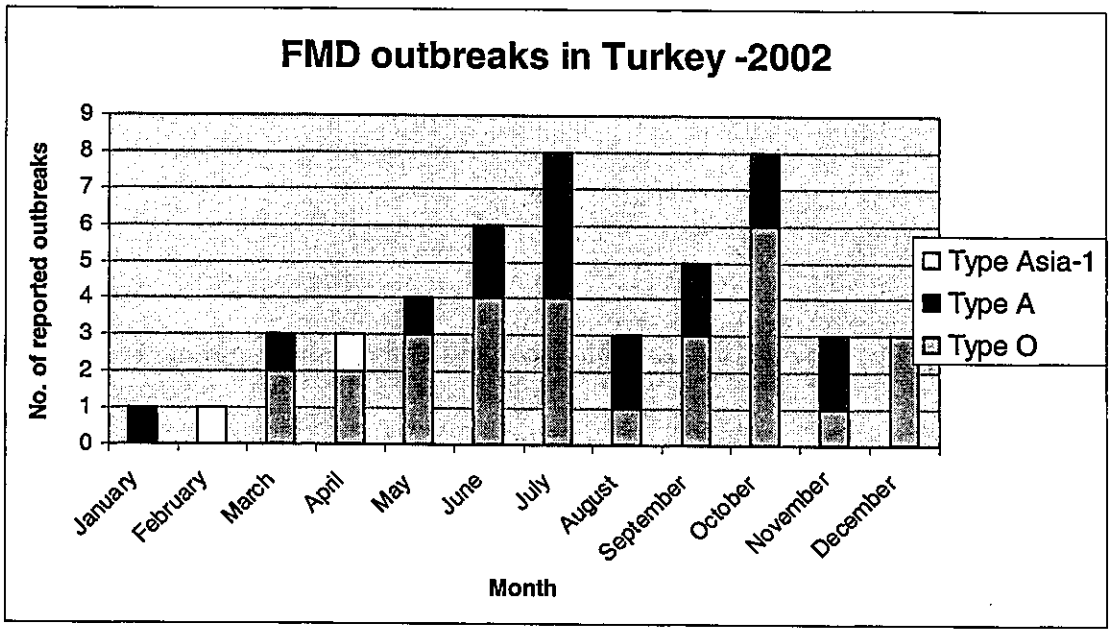
2. *Turkey*

Information for most of 2001 is given in the Appendix 6 of the 66th Session report.

The Republic of Turkey reported 48 FMDV outbreaks in 2002, down from 88 in 2001 and 110 in 2000. This number is in the order of the number of outbreaks recorded between 1997 and 1999 (54, 75 and 57 respectively). The recent reduction in number of outbreaks permits some optimism but the factors underlying this are not clear, particularly in relation to persistence and spread of the different types present. Type Asia-1 was not reported after 4/2002, but of great concern is the upsurge in type A infection (17 outbreaks in 2002) , with infection present in central and eastern Anatolia.

In January 2003 two type O outbreaks were considered active. No outbreak has been reported in Thrace region since June 2001. All of the FMDV isolates antigenically characterised which originated from outbreaks in 2002 were reported (68th Session report) to have a good antigenic relationship to vaccine strains used in Turkey. Fourteen virus isolates from 2002 had been characterised at the genetic level; type A viruses were closely related to A/Iran/96 group, and type O viruses were related to O Manisa, as previously found. However these O viruses from 2000-2002 fell into three genetic sublineages, suggesting multiple virus lineages may be circulating.
The risk of virus entry from Iraq in the event of military action is a major concern; the Turkish military presence in south-eastern Turkey may affect refugee and livestock movement into Turkey.

The occurrence of FMD outbreaks in Turkey in 2002, collated from reports to EUFMD and OIE:



4. Trans-Caucasus
The Republics of Georgia, Armenia and Azerbaijan did not report FMD in 2002. However reports of vesicular diseases resembling FMD were received by FAO from Armenia, and given the reported situation with trans-boundary animal movement across the Iranian and Turkish borders, current risk to these countries appears high. Potential for persistence through the year in these countries is not clear but should be assessed by the EUFMD expert mission. Incentives for farmer investment in FMD control and therefore private delivery of vaccine currently appear weak.
It is noted that as of 14/3/03, the monthly reports to OIE of Armenia were over 8 months behind the present (last monthly report June 2002), for Azerbaijan one month behind (01/03), and for Georgia over 14 months behind (2001 only).

5. Iran and west Asia
Iran continued to report a very high incidence of FMD, with over 1000 outbreaks in 2001. One reason for this is the effective and well supported veterinary organisation and diagnostic support services. This has resulted in a high number of isolations per year; in 2001 type O accounted for around half of the isolations, and about equal numbers of type A and Asia-1;

each of the types were very widely distributed. Type O isolates from Iran and Iraq have been recently of the PanAsia strain; type Asia-1 was not reported after February 2002, and possibly, the epidemic of this type may have been extinguished in both Iran and Turkey. The diversity of type A viruses from Iran is a major cause of concern, and interest; in 5 of the 6 years from 1996 to 2001, a genetically distinct virus lineage has been detected, but it is unclear if epidemics of one strain die out before replacement by a new entrant virus, or represent spread from reservoirs of type A virus variants within the country. In 1996, 97 and 98, type A viruses of the Iran-96 topotype were found, with this topotype subsequently being detected in Turkey in 1998. In such a large country and dispersed animal population, co-circulation of different genetic lineages of type A viruses might also be expected, and indeed viruses of the A-Iran96 and A-Iran99 topotype were detected in samples from 1999. In 2000 viruses of the Indian/Middle Eastern (A22-like) topotype were found and in 2001 A types from a quite different lineage were submitted from Iran, which appear genetically unrelated to other A viruses in the database, being intermediate between European/South American, and Indian/Middle Eastern topotypes. Two viruses from northern Iraq in 2002 form a new lineage in the Iran96 topotype, and for both these groups as well as A22 like Iranian viruses from 2000, there appear to be few suitable vaccine strains. The shift appears back towards the A_{Iran87} antigenic type, which had itself been seen earlier to supersede the A_{22} type in the 1980's, before replacement by the A Iran96 type in the late 1990's.
The number of virus isolates typed per year by the WRL from Iran and neighbouring countries is relatively few compared to the diversity and rate of variation observed. This is an area of concern which needs to be addressed.

Of interest in the table for West Asia is the predominance of cases in goats in Oman. In the northern regions of Iraq, through FAO co-ordination, FMD samples were collected from outbreaks in Erbil and Dohuk Governates and sent to Pirbright. Type A viruses were isolated and two isolates sequenced formed a unique, as yet, lineage within the Iran-96 topotype, distinct from those previously recognised in the region or elsewhere.

4. Situation in regions with endemic FMD

a. Andean region of South America

Dramatic deterioration occurred in Ecuador in 2002 (108 confirmed outbreaks, 104 type O and 4 type A), with widespread distribution; typing at PAHO indicates an O1 type, genetically distinct, and type A related to previously typed Peruvian virus from 1999-2000. The situation possibly accounts for FMD in the neighbouring area of southern Colombia; the southern neighbour, Peru, however, reported no FMD outbreaks in 2002 to PAHO or OIE. The situation in Venezuela appears difficult, and 8 FMD outbreaks with type A were reported in 2002.

General progress in Colombia must be noted; in Colombia the zone of Choco is zone free without vaccination, and a zone on the Atlantic coast is free with vaccination; an extension of the FMD free zones were proposed in early 2003. Type O cases occurred in Cundinamarca y Narino Departments.

b. West and East Africa

Surveillance information, and virus typing information is extremely limited. Kenya and Uganda reported multiple SAT type circulation, O type and in Uganda, type A.

FMD was reported from almost all of the countries in this region which are not island states, in 2002 or in 2001. Six of the seven types of virus were reported, including type C from Nigeria in the start of 2002; if the latter was to be confirmed it would suggest type C is not extinct.

c. Asia

Three of the seven types of virus were reported in 2002. FMD was reported from almost all of the countries in this region which are not island states, in 2002 or in 2001, and at 14th March 2003 only the Republic of Korea, was recognised by the OIE as FMD free, of all the countries whose territories have land borders on the Asian continental landmass.

Type O infection has the widest distribution, and particularly the PanAsia topotype, indicating that the factors that favour transmission of this topotype have remained. In addition a new lineage has emerged and apparently started to replace it, at least in India, and which has also appeared in the Gulf States and in Bhutan. The role of south Asia as a source of FMDV variants for the near east is well established and eventual appearance in other near-east countries, and entry into Turkey, would appear probable. Type A viruses are highly important in south Asia, but in east Asia were only reported from Thailand and Malaysia in 2002.
The FMD situation in the P.R. of China remains a source of speculation since information was not available through the OIE in 2002, and was last officially reported in 1999. The Official Veterinary Bulletin of the P.R of China for July 2002 indicates no FMD or SVD outbreaks were reported. The recurrence entry of the PanAsia topotype into Korea in 2000 and 2002 can only add to the speculation.
In south-east Asia four multiple and distinct virus lineages appear to be circulating.
OIE approved FMD Free zones are present in part of the Philippines. The latter country has an active FMD campaign and is reported to have made significant progress in dealing with the pig adapted strain that spread to that country in 1995. At the time of writing the disease was considered to be present only in Luzon Island; the target for final eradication is 2004.
East (i.e. non-peninsular) Malaysia has no history of FMD and SEAFMD reports that they are planning to do additional surveillance and put a case for FMD Freedom to OIE within the next year. For many years the southern part of Peninsular Malaysia has been free of FMD with occasional outbreaks; the northern states have a long standing problem with re-infection mainly due to movements of animals from southern Thailand.

Information Sources and Acknowledgements

The authors drew upon the following sources of information: the Weekly and Monthly Reports to the OIE; The Reports of the FAO WRL presented to the Executive Committee of the EUFMD, and to the Research Group, and other reports of the WRL to FAO; information presented at the OIE FMD and other epizootics Commission meetings; information supplied by PAHO and SEAFMD, and by the Iranian Veterinary Organisation (IVO). The authors wish to acknowledge the enormous importance of these international organisations and centres in FMD surveillance, and especially those contributing to the molecular and antigenic characterisation of FMDV.

Additional Information

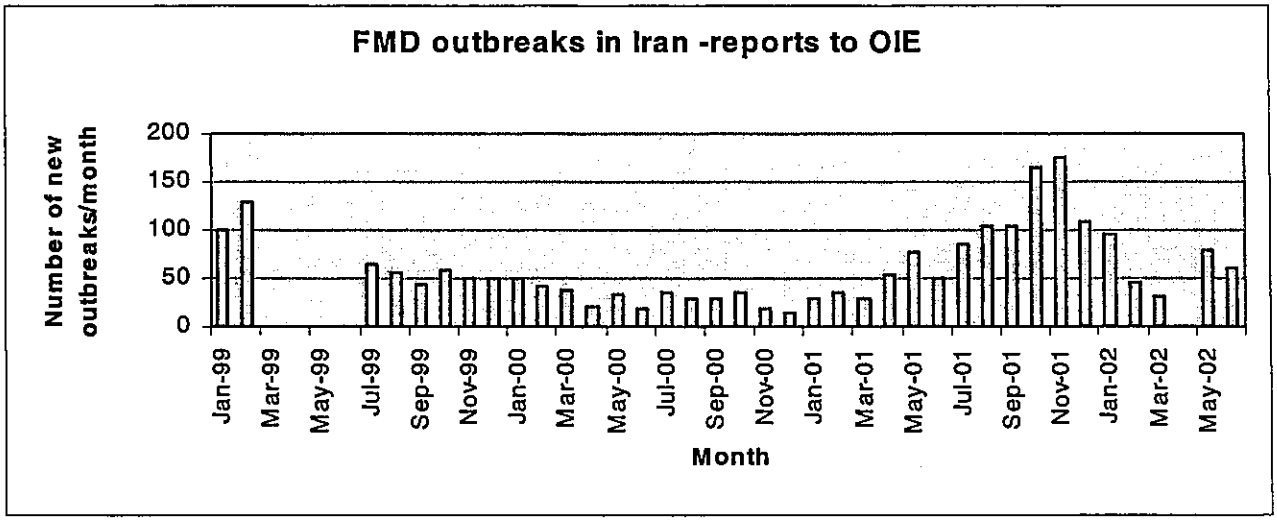
1. FMD in South America - information from PAHO, March 2003, and OIE Handistatus II, 14/3/03

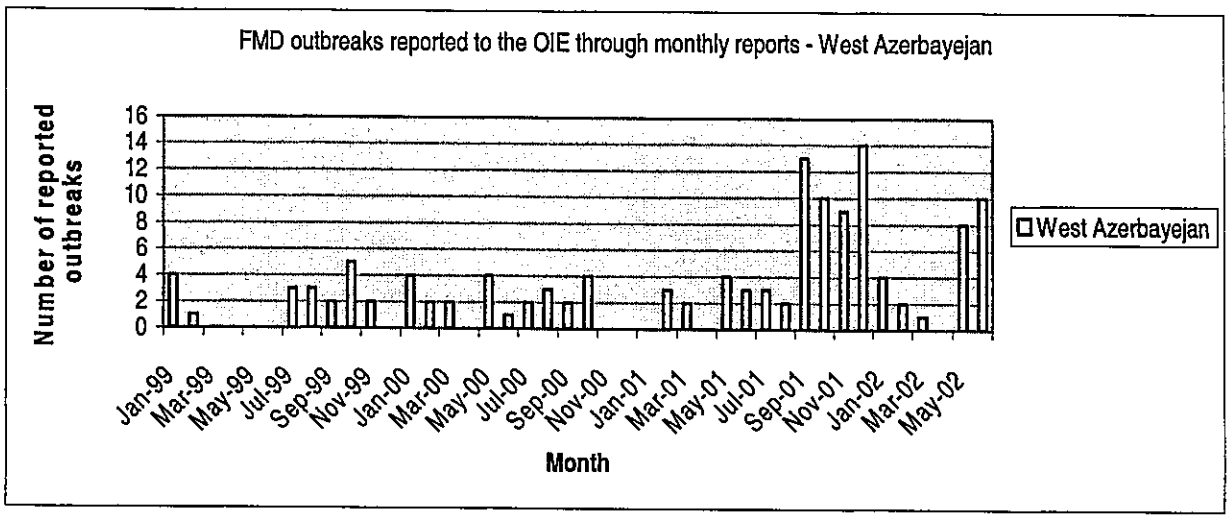
[1] Information reported to PAHO for 2002.

Country	FMD 2002-2003	Latest monthly report to OIE available (mo/yr)	Diagnosis/Serotype[1]	Comment
Bolivia	18 in 2002, 9 confirmed[1]	01/03	8 Type O, 1 type A	Four Provinces, mainly cattle
Brazil	No FMD in 2002[1]	12/02		
Colombia	9 outbreaks to Nov. 02, 8 confirmed[1]	11/02	8 Type O, 137 without diagnosis	Cattle cases
Ecuador	108 confirmed in 2002[1]	07/02	4 type A, 104 type ,O, 148 without diagnosis	Cases almost all in cattle; 9 locations/provinces involved in June 2002
Peru	No FMD in 2002[1]	12/02		47 suspected herds investigated
Venezuela	14 outbreaks, 8 confirmed type A[1]	12/02	8 type A, 42 without diagnosis	

2. FMD in Iran and parts of west Asia

FMD in Iran, 1999-mid-2002; from reports to the OIE. Data for West Azerbeyejan is shown as this Province has an extensive border with eastern Turkey, Armenia and parts of the Republic of Azerbaijan. Data was not available for March to June 1999 and April 2002.





Information on countries in west Asia

From information reported on the *Handistatus II database* of the OIE at 14th March 2002.

Country	FMD in 2002-2003	Latest monthly report to OIE available	Diagnosis/Serotype (No.)	Comment
Afghanistan	No monthly reports in 2002	2001		
Iran	497 outbreaks to 9/02	9/02	A, Asia-1 & O in each month	Cattle, SR each month; wide distribution
Iraq	Numbers not recorded	09/02	Type A	In cattle
Israel	No FMD	01/03		
Kazakhstan	No FMD	01/03		
Kyrgyzstan	No FMD	01/03		
Lebanon	Yes, +.. in month 7	12/02	Type O	Cattle
Oman	>93 outbreaks	12/02	Not given	GOAT cases predominate
Palestinian Auton. Territories	Outbreaks month 7 and 11	11/02	Type O	SR
Qatar	No FMD	01/03		
Saudi Arabia	16 to end 08/02	08/02	Type O in months 2,3	Cattle
Tajikistan	No FMD	11/02		
Turkmenistan	No FMD	12/02		
Yemen	3 outbreaks, 04-05/02	09/02	Not given	Cattle

SR, small ruminants

3. FMD in sub-saharan Africa, excluding SADC countries

Information reported on the *Handistatus II database* of the OIE at 14th March is summarised below.

Country	FMD in 2002-2003	Latest monthly report to OIE available (mo/yr)	Diagnosis/Serotype (No.)	Outbreaks in 2001 or status
Benin	>12 outbreaks	10/2002	Not given	+
Burkina Faso	42 to Sept 02	09/02	Not given	12
Burundi		2001		10
Cameroon		2001		2
Congo, Rep. of	No FMD	04/02		(1998)
Cote d'Ivoire	No FMD	12/02		+
Eritrea	1 in 12/02	12/02	Not given	3
Ethiopia	26 to 11/02	11/02	Not given	88
Gabon	No FMD	12/02		-
Ghana	4 to June 02	06/02	Not given	3
Guinea	No FMD	10/02		10
Kenya	Total not recorded	11/02	SAT1&2, O	54
Mali	Total not recorded	12/02	Not given	18
Mauritania		2001		+
Niger	52 to 10/02	11/02	Not given	22
Nigeria	3 to end 07/02	07/02	Type C	30
Senegal	11 outbreaks	11/02	Type O	19
Sudan	No FMD	01/03		(1990)
Togo	27 to end of June/02	06/02	Not given	+
Uganda	16 to end 11/02	11/02	Types A, O, SATs 1,2,3	38

4. Information on FMD in East Asia.

Compiled from information reported on the *Handistatus II database* of the OIE at 14th March 2002 .

Country	FMD 2002-2003	Latest monthly report to OIE available (mo/yr)	Diagnosis/Serotype (No.)	Comment
Hong Kong	3 in January 2003	01/03	Type O (2)	Pigs only
Korea, rep. of	16 outbreaks, May-June 02	12/02	Type O	Mainly in pigs
Mongolia	21 in July	09/02	Type O	Mainly cattle, also SR
Taipei China	No FMD	01/03		

5. Information on FMD situation in South Asia in 2002

Complied from information reported on the *Handistatus II database* of the OIE at 14th March 2002

Country	FMD 2002-2003	Latest monthly report to OIE available (mo/yr)	Diagnosis/Serotype	Comment
Bangladesh	Number not recorded	12/02		
India	Number not recorded	2002 annual.	A, O Asia-1	
Pakistan	Number not recorded	09/02	A, O, Asia-1	more reports from buffalo
Nepal	546 outbreaks in 2002	12/02	A, O, Asia-1	Cattle.buffaloes
Sri Lanka	40 outbreaks to 11/02	11/02	Type O	Cattle.buffaloes

6. FMD in South-East Asia in 2002

Complied from information reported on the *Handistatus II database* of the OIE at 14th March 2002

Country	FMD 2002-2003	Latest monthly report to OIE available (mo/yr)	Diagnosis/Serotype	Comment
Cambodia	Number Not recorded	05/02		Pigs also affected
Laos	14	10/02		Pigs involve in April
Myanmar	27	11/02	Type O	Cattle only
Philippines	254 to end Nov/02	10/02	Type O	Pigs only
Thailand	59	10/02	Type O or A	Cattle/buffaloes
Vietnam	17 to Oct/02	10/02	Type O	cattle/buffaloes
Malaysia	Total not recorded	07/02	Type O	Cattle only
Indonesia				
Singapore				

APPENDIX 2

GLOBAL FMD SITUATION DURING 2001/2002

Report of the FAO/OIE World Reference Laboratory for FMD, Institute for Animal Health, Ash Road, Pirbright, Woking, Surrey GU24 ONF, United Kingdom

Tables 1 and 2 show the results of tests on samples received for diagnosis in 2001 and 2002 at the FAO/OIE World Reference Laboratory for FMD (WRL-FMD). FMD remains endemic in parts of Asia, Africa and South America, but the known distribution is an under-representation of the true situation.

Europe

The PanAsia strain of FMD serotype O was responsible for 2,026 outbreaks in Great Britain between February and September with collateral outbreaks during March and April in Northern Ireland (4 outbreaks), Eire (1 outbreak), France (2 outbreaks) and the Netherlands (26 outbreaks). The virus involved was very closely related to those responsible for outbreaks in South Africa and Japan.

Africa

In 2001/2, there have been no reports of FMD in Northern Africa and no virus isolates have been received from this part of the world at the WRL-FMD. Information on the prevalence of infection and the viral variants involved is incomplete for much of sub-Saharan Africa. Serotypes SAT 1, SAT 2, O and A are probably widespread. Viruses isolated from samples collected in Botswana in February 2002 were serotyped as SAT 2 and a virus from this group was found to be closely related to one obtained from Zimbabwe in 2001. In June and August 2002, SAT 2 viruses were recovered from cattle in different provinces of Zimbabwe. In September 2002, a serotype O virus was received at the WRL-FMD from an outbreak affecting cattle in Burkina Faso. Serotype O, SAT 1 and SAT 2 viruses were received from Kenya in November 2002 and viruses of serotypes SAT 2, A and O were received from Uganda via Ondestepoort. No type C viruses have been received at WRL-FMD from anywhere in the world since the mid-1990s, but OIE Handistatus records serotype C from Nigeria in early 2002 (and from Kenya in 2000).

Asia

The PanAsia strain continues to predominate, having been isolated during 2001 and 2002 from many countries throughout Asia. A new sub-lineage has evolved, probably in India, and this has also been found in some of the Gulf States (Oman, United Arab Emirates, Bahrain and Saudi Arabia) in 2001 and Bhutan in 2002.

In Turkey, there have been no FMD outbreaks in Thrace since June 2001, but serotypes O, A and Asia 1 have been isolated in other parts of the country. In 2001/2, the WRL-FMD received many type O viruses from the Middle East (Bahrain, Iraq, Qatar, United Arab

Emirates, Yemen, Saudi Arabia, Turkey, Kuwait, Iran, Syria, Lebanon and the Palestine Autonomous Territories) as well as type A isolates from Turkey, Syria, Iraq and Iran, and type Asia 1 viruses from Georgia and Iran.

In May and June 2002, 16 outbreaks of FMD virus serotype O occurred in pigs in South Korea due to the PanAsia strain, the viruses appearing to be distinct from previous lineages present in that country in 2000. In July 2002, 21 outbreaks of FMD virus serotype O occurred in Western Mongolia, affecting cattle, sheep and goats. Samples were received at the WRL-FMD from S Korea, but not from Mongolia. Additionally, the WRL-FMD received samples collected in 2001/2 from Afghanistan (type Asia 1), Bhutan (types O and Asia 1), Pakistan (types O, A and Asia 1), south-east Asia (types O, A and Asia 1) and Hong Kong (type O).

South America

FMD is believed to remain endemic in parts of some of the north-westerly Andean countries of south America. The type A viruses which caused extensive outbreaks in Argentina, Uruguay and southern Brazil during 2001 were closely related to each other and part of a larger group of viruses which have been isolated in Argentina and Paraguay since the late 1970's. The 2001 outbreak viruses were distinct from the type A virus, which caused a number of cases in Argentina in 2000. The last outbreak of type A FMD reported from Argentina was in January 2002. A limited outbreak of FMD type O was reported from Paraguay in November 2002, caused by a virus related to earlier isolates from neighbouring countries.

Table 1

OIE/FAO World Reference Laboratory for Foot and Mouth Disease*

CUMULATIVE REPORT FOR JANUARY - DECEMBER, 2001

COUNTRY	No. of samples	FMD virus serotypes							SVDV (a)	NVD (b)
		O	A	C	SAT 1	SAT 2	SAT 3	Asia 1		
AFGHANISTAN	4	-	-	-	-	-	-	4	-	-
ARGENTINA	7	-	7	-	-	-	-	-	-	-
BAHRAIN	8	7	-	-	-	-	-	-	-	1
BHUTAN	5	1	-	-	-	-	-	-	-	4
BRAZIL	1	-	1	-	-	-	-	-	-	-
FRANCE	1	1	-	-	-	-	-	-	-	-
GEORGIA	1	-	-	-	-	-	-	1	-	-
GUINEA BISSAU	2	-	-	-	-	-	-	-	-	2
HONG KONG (PRC)	17	11	-	-	-	-	-	-	-	6
IRAN	59	31	7	-	-	-	-	13	-	8
IRAQ	5	4	-	-	-	-	-	-	-	1
IRELAND	297	6	-	-	-	-	-	-	-	291
ITALY	5	-	-	-	-	-	-	-	5	-
MALAYSIA	6	6	-	-	-	-	-	-	-	-
MAURITANIA	37	5	-	-	-	-	-	-	-	32
NETHERLANDS	4	4	-	-	-	-	-	-	-	-
NIGER	30	9	-	-	-	-	-	-	-	21
OMAN	7	7	-	-	-	-	-	-	-	-
PHILIPPINES	10	8	-	-	-	-	-	-	-	2
PORTUGAL	5	-	-	-	-	-	-	-	-	5
QATAR	6	6	-	-	-	-	-	-	-	-
SAUDI ARABIA	14	12	-	-	-	-	-	-	-	2
SENEGAL	11	1	-	-	-	-	-	-	-	10
TURKEY	17	10	4	-	-	-	-	-	-	3
UGANDA	17	2	-	-	-	-	-	-	-	15
UNITED ARAB EMIRATES	9	4	-	-	-	-	-	-	-	5
UNITED KINGDOM	15307**	1856	-	-	-	-	-	-	-	12027
URUGUAY	1	-	1	-	-	-	-	-	-	-
YEMEN	1	1	-	-	-	-	-	-	-	-
TOTAL	**15894****	**1992**	**20**	**0**	**0**	**0**	**0**	**18**	**5**	**12435**

* Institute for Animal Health, Pirbright Laboratory, Woking, Surrey GU24 ONF, U.K.

(a) swine vesicular disease virus

(b) no foot-and-mouth disease, swine vesicular disease or vesicular stomatitis virus detected

** Processing of 20 samples was not completed and 1400 were not processed; 3 samples given consecutive reference numbers were processed as one sample; 2 pairs of samples each pair given 2 consecutive reference numbers were each processed as 1 sample

1367 out of 1565 positive samples tested as original suspension were typed by enzyme linked immunosorbent assay (87%) and the remainder (13%) were typed as tissue culture

The following samples were additionally received by the OIE/FAO World Reference Laboratory for Foot and Mouth Disease in 2001 :

COUNTRY	Sample Year	No. of samples	FMD virus serotypes							SVDV (a)	NVD (b)
			O	A	C	SAT 1	SAT 2	SAT 3	Asia 1		
ABKHAZIA	2000	1	1	-	-	-	-	-	-	-	-
ARGENTINA	2000	2	2	-	-	-	-	-	-	-	-
ARMENIA	1998	1	-	1	-	-	-	-	-	-	-
GEORGIA	2000	1	1	-	-	-	-	-	-	-	-
HONG KONG (PRC)	2000	6	5	-	-	-	-	-	-	-	1
ITALY	2000	2	-	-	-	-	-	-	-	2	-
KYRGHIZIA	1999	1	-	1	-	-	-	-	-	-	-
MAURITANIA	2000	13	1	-	-	-	-	-	-	-	12
RUSSIA	1995	1	1	-	-	-	-	-	-	-	-
	2000	1	1	-	-	-	-	-	-	-	-
TURKEY	2000	1	-	-	-	-	-	-	1	-	-
UGANDA	2000	1	-	-	-	-	-	-	-	-	1
URUGUAY	2000	1	1	-	-	-	-	-	-	-	-
TOTAL		**32**	**13**	**2**	**-**	**-**	**-**	**-**	**1**	**2**	**14**

(a) swine vesicular disease virus
(b) no foot-and-mouth disease, swine vesicular disease or vesicular stomatitis virus detected

8 out of 10 samples tested as original suspension were typed by ELISA (80%) and the remainder (20%) were typed as tissue culture

Table 2

OIE/FAO World Reference Laboratory for Foot and Mouth Disease*

CUMULATIVE REPORT FOR JANUARY - DECEMBER, 2002

COUNTRY	No. of	FMD virus serotypes							SVDV	NVD
	samples	O	A	C	SAT 1	SAT 2	SAT 3	Asia 1	(a)	(b)
BHUTAN	36	19	-	-	-	-	-	4	-	13
BOTSWANA	28	-	-	-	-	5	-	-	-	23
BURKINA FASO	3	1	-	-	-	-	-	-	-	2
CHINA (HONG KONG)	10	5	-	-	-	-	-	-	-	5
GHANA	9	-	-	-	-	-	-	-	-	9
IRAN	2	-	2	-	-	-	-	-	-	-
IRAQ	112	-	20	-	-	-	-	-	-	92
ISRAEL (PAT)	2	1	-	-	-	-	-	-	-	1
KENYA	7	4	-	-	1	1	-	-	-	1
KUWAIT	2	2	-	-	-	-	-	-	-	-
LAO PDR	1	-	-	-	-	-	-	-	-	1
LEBANON	2	1	-	-	-	-	-	-	-	1
MALAYSIA	2	1	1	-	-	-	-	-	-	-
MYANMAR	8	8	-	-	-	-	-	-	-	-
PAKISTAN	17**	4	3	-	-	-	-	2	-	9
PARAGUAY	2	2	-	-	-	-	-	-	-	-
SAUDI ARABIA	37	2	-	-	-	-	-	-	-	35
SENEGAL	12	-	-	-	-	-	-	-	-	12
SINGAPORE	9	-	-	-	-	-	-	-	-	9
SOUTH KOREA	2	2	-	-	-	-	-	-	-	-
SUDAN	1	-	-	-	-	-	-	-	-	1
SYRIA	11	6	3	-	-	-	-	-	-	2
THAILAND	7	-	7	-	-	-	-	-	-	-
TURKEY	10	5	4	-	-	-	-	-	-	1
UGANDA	6	3	1	-	-	2	-	-	-	-
UNITED KINGDOM	275	-	-	-	-	-	-	-	-	275
VIETNAM	13	12	-	-	-	-	-	-	-	1
ZIMBABWE	4	-	-	-	-	4	-	-	-	-
TOTAL	**630****	**78**	**41**	**-**	**1**	**12**	**-**	**6**	**-**	**493**

* Institute for Animal Health, Pirbright Laboratory, Woking, Surrey GU24 0NF, U.K.

(a) swine vesicular disease virus

(b) no foot-and-mouth disease, swine vesicular disease or vesicular stomatitis virus detected

** One sample from Pakistan contained a mixture of foot-and-mouth disease virus types O and Asia 1

PAT Palestinian Autonomous Territories

75 out of 114 positive samples tested as original suspension were typed by enzyme linked immunosorbent assay (66%) and the remainder (34%) were typed as tissue culture

The following samples were additionally received by the OIE/FAO World Reference Laboratory for Foot and Mouth Disease in 2002 :

COUNTRY	Sample year	No. of samples	FMD virus serotypes							SVDV (a)	NVD (b)
			O	A	C	SAT 1	SAT 2	SAT 3	Asia 1		
BHUTAN	2001	3	1	-	-	-	-	-	-	-	2
CHINA (HONG KONG)	2001	4	1	-	-	-	-	-	-	-	3
IRAN	2001	14	9	-	-	-	-	-	1	-	4
LAO PDR	2001	8	7	-	-	-	-	-	-	-	1
MALAYSIA	2001	1	1	-	-	-	-	-	-	-	-
MYANMAR	2001	2	1	-	-	-	-	-	1	-	-
THAILAND	2001	3	1	2	-	-	-	-	-	-	-
TOTAL		**35**	**21**	**2**	**-**	**-**	**-**	**-**	**2**	**-**	**10**

* Institute for Animal Health, Pirbright Laboratory, Woking, Surrey GU24 0NF, U.K.

(a) swine vesicular disease virus

(b) no foot-and-mouth disease, swine vesicular disease or vesicular stomatitis virus detected

15 out of 24 samples tested as original suspension were typed by ELISA (63%) and the remainder (37%) were typed as tissue culture

Visitors to the Institute for training or collaborative discussions

2001

Name	Country	Date of visit
Dr A M Espinosa	Peru	February
EU Delegation	Brussels	February
Australian Animal Health Delegation (11)	Australia	June
Dr D Boyle	Australia	July
Dr J Hammond	Australia	July
Dr M Barrera-Valle	Cuba	September/October

2002

Name	Country	Date of visit
Dr G Dulac	Canada	February
Dr T Konishi	Japan	March
Dr W Doughty	Australia	May/June
Mr B Christie	Australia	June
Mr P Abraham	Australia	June
Dr L Gleeson	Australia	June
Dr D Boyle	Australia	July
Dr T Yamaguchi	Japan	October
Dr Thanh Long To	Vietnam	October
Prof M Elvander + 7 colleagues	Sweden	October
Dr Lung-Sang	Hong Kong	October
Dr Lok-Ting Lau	Hong Kong	October
EU FVO Delegation	Eire	November
Dr Ji Hoon Kim	Korea	November
Dr Jong-Hyeon Park	Korea	December

The following people were seconded by overseas organisations to provide support during the 2001 FMD Epidemic

Ms B Van Der Heide	CSIRO, Australia
Ms G Meehan	CSIRO, Australia
Dr D Clery	DARDNI, S Ireland
Mr R O'Neill	DARDNI, S Ireland
Mr P Raleigh	DARDNI, S Ireland
Dr J Ryan	FAO

Note: IAH employed additional staff on a temporary basis from Australia, New Zealand and Portugal.

WRL for FMD staff visits

Staff made visits to the following countries to run or assist with training courses, provide advice, for co-ordination/co-operation meetings or to attend conferences: Australia, Bulgaria, Denmark, France, Japan, Lithuania, Malaysia, The Netherlands, New Zealand, Russia, Spain, Turkey, USA.

Supply of Reagents

Reagents were supplied to national FMD laboratories for diagnosis, research or vaccine production in France, Sweden, Pakistan, Botswana, Taiwan, Hungary, Korea, Germany, Turkey, Greece, Saudi Arabia, Kenya, South Africa, Slovenia, Netherlands, Canada, Spain, Philippines, Belgium, Italy, Denmark, Qatar, Lithuania, Romania, Indonesia, Jordan, Malaysia, United Arab Emirates, Bulgaria, Australia, Lao PDR, Poland, Hong Kong, USA, Tunisia and Japan.

APPENDIX 3

Risk Assessment for the Import of Meat and Meat Products Contaminated with Foot and Mouth Disease Virus into Great Britain and the Subsequent Exposure of GB Livestock[1]

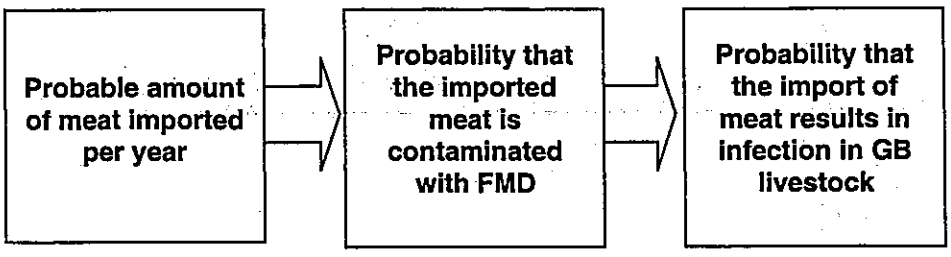
E. Hartnett[2], M. Seaman[3], A. Adkin[1], J. Cooper[2], E. Watson[1], T. Cox[2] & M. Wooldridge[1]

[1] Risk Research, Veterinary Laboratories Agency, UK, and [2] Safety Craft Ltd, UK

Background, model outline and general approach

This study aims to assess the disease risk posed to the livestock population of Great Britain (GB) from the illegal importation of meat and meat products and to estimate major contributors to this overall risk. The risk assessment considers importation of meat and meat products that are derived from susceptible animal species from all inhabited territories of the world, into GB. The assessment is conducted up to the point of infection of one susceptible animal; the spread of this initial case is not considered in this assessment. Given exposure, all strains of FMD are assumed to pose an equal risk of infection to GB livestock.

For this complex risk assessment, a model has been developed in a modular manner, consisting of three modules describing distinct stages in the processes that lead to the undesired outcome. The model framework is shown in Figure 1. To estimate the risks associated with importation of illegal meat, the modules are: 1) Estimating the flow of illegal meat into GB; 2) Estimating the probability that illegally imported meat is contaminated with FMD virus (FMDV); and 3) Development of exposure pathways and estimation of the probability and frequency with which contaminated, illegally imported meat results in an infection in GB livestock. Together, these modules represent the various transfer pathways of the virus from its country of origin to livestock in GB via the illegal importation of meat, and have been integrated to estimate the overall risk.



[1] Summary Prepared for 35TH General Session of the EU FMD. The full report is available at www.defra.gov.uk/animalh/illegali or from risk.assessment@defra.gsi.gov.uk

Figure 1: Model framework showing the three stages of the risk assessment

Main findings, results, and conclusions

This risk assessment estimates the frequency of infection in GB livestock of FMD as a result of the importation of meat. There are numerous model variables that are associated with a high degree of uncertainty. To reflect this uncertainty the risk model is stochastic in nature, therefore input variables are described by probability distributions that reflect the degree of uncertainty associated with that input. As a result, estimates of risk are also described by probability distributions. These distributions describe our uncertainty associated with the estimate of the frequency of infection in GB. Therefore, for each of the key results, the mean value from the associated probability distribution is reported, along with the 90% uncertainty interval. All results should be considered in the context of their associated uncertainty.

Entry of illegal imports of meat products to GB

From model results, the total amount of illegal meat entering GB each year is estimated to be 7,431 tonnes, with 90% certainty that this is between 2,771 and 17,484 tonnes per year. This is equivalent to approximately 3% of the total volume of legally imported meat per year from non-EU countries or 0.6% of the total meat imports, including that from other EU countries (based on 2001 year end figures). It is estimated that 85.2% of the total weight of illegal meat enters GB via personal baggage. 11.2% is smuggled in sea freight and the remainder via air freight (3.2%) and post and courier (0.3%). Of this total flow, it is estimated that 55% is actually intended for commercial use (distribution through wholesalers, street markets and other retailers). The five major contributing regions to the total flow are Eastern Europe, Eastern Asia, West Africa, Near & Middle East, and Southern Africa which together account for 83% of the total estimated flow of illegally imported meat.

By definition, there are no records of attempted illegal importation which are actually successful. Not surprisingly, no importers of illegal meat products volunteered information to the risk assessment team. Therefore, underpinning this estimate is the derivation of the scale factors that indicate the proportion of illegally imported meat consignments that are detected per year. Generic scaling factors were derived based upon data and expert opinion. In cases where there is evidence of targeting to detect meat or for other purposes, the scale factors were adjusted accordingly.

- These scale factors are the greatest contributors to the uncertainty in the estimate of the volume of illegal meat entering per year.

Level of contamination of illegal meat product imports

The amount of meat entering GB illegally each year which is contaminated with FMDV is estimated to be, on average, 95 kg with 90% certainty that the

amount is between 30 kg and 244 kg per year. This corresponds to, on average, 0.001% of the total flow of illegally imported meat.

This estimate is influenced by the estimate of prevalence of FMD in each region which is in turn based upon country level estimates of prevalence. Countries fall into two main categories; those considered internationally to be free from FMD, and those considered to have endemic FMD. For countries considered to have endemic FMD, module 2 estimates the probable prevalence of FMD in each country. For countries categorised as free, the model estimates both the probability of an incursion, and the probable prevalence before detection in free countries should they suffer an incursion. For both categories, historical outbreak occurrence data reported to the Office International des Epizooties (OIE) is used as the primary data source, supplemented with data from the United States Department of Agriculture (USDA), the European Commission for the Control of Foot and Mouth Disease (EUFMD), and FMD World Reference Laboratories, especially Pirbright, with the data adjusted for suspected under-reporting largely based on information from Pirbright. For a number of countries considered, there is no source of direct data on their FMD status and assumptions based on their regionality are made. This is a key area of data deficiency.

- The situation regarding under-reporting is another key area contributing to the model uncertainty.

Exposure and infection in GB

Estimates of risk are obtained through the integration of the estimation of the flow of illegal meat and levels of contamination, with a mathematical description of the routes by which livestock may be exposed to FMDV which enters the country as a contaminant of meat. These estimates are based upon consideration of the exposure routes by which livestock may be exposed to any FMDV which is contaminating imported meat and meat products. Throughout model development, extensive investigations were undertaken to ensure all possible risk pathways were considered. The pathways considered in the model are illustrated in Figure 2. The estimates give, with 90% certainty, the result that the current annual probability of infection in GB livestock is between 0.0009 and 0.02 with a mean value of 0.008. This translates to a 90% certainty interval ranging from 1 infection in 41 years to 1 in 1,100 years to with a mean of 1 infection in 130 years.

The results indicate that approximately 95% of the estimated risk to susceptible animals from illegal meat is associated with illegal meat arriving in personal baggage. However, there is evidence that meat is arriving in personal baggage in quantities that are destined for commercial use.

Of the estimated volume of contaminated illegal meat entering per year (95 kg), the majority does not actually reach livestock; in fact only 0.013% of the flow is ingested by susceptible livestock. Due to the various processes and delays inherent in the exposure routes, the level of FMDV associated with contaminated meat is also reduced through the stages from importation

through to livestock exposure. Consequently, the vast majority of does not reach livestock, with 0.01% of the total influx of virus per year ingested by livestock. Therefore, given the levels of contaminated illegally imported meat and meat products per year, the processes which occur inland following importation, for example distribution, human consumption and waste disposal, greatly reduce the level of virus to which livestock are likely to be exposed.

Once the meat has passed through all stages considered by the model, resulting in livestock exposure, it is most likely that infection will occur in pigs. Of the predicted levels of FMD infection per year, on average, 95% of the risk in susceptible animals from illegally imported meat is associated with pigs, 3% with cattle, 1% with sheep and goats and a negligible risk in 'backyard animals' (defined here as pigs).

A large proportion of the risk is attributed to exposure to FMDV contaminated bone-in fresh products and de-boned dried products, with ~71% of infections attributed to the import of such products. This suggests identification of these products either at ports of entry or inland at the distribution and retail level, and removal from the exposure chain, would mitigate the risk. However, sensitivity analysis shows that a general increase in the amount of illegal meat of all product types identified at the port of entry, and subsequently seized, has only a small impact upon estimates of risk.

Scenario analyses

Scenario analyses have been undertaken to assess those data deficiencies to which the final levels of uncertainty are sensitive. A time intensive process, the scenarios selected focus upon the pathways which contribute the most to risk, The most significant pathways inland contributing to the overall risk of infection are the various ways in which people might take or dispose of meat to rural areas or areas where there are livestock, including outdoor activities, illegal waste disposal and the direct feeding of animals for example at city farms or by farmers and farm workers. This pathway consists of all possible routes through the 'human carriage' node on the risk pathway (Figure 2) and accounts for just under 85%, on average, of the total risk; and illegal swill feeding accounts for, on average, just under 15%. There is an overlap of uncertainty between these two routes and it is not possible to be certain that the "human carriage" route dominates so clearly.

In addition, the feeding of scraps to backyard livestock is investigated to test the impact of underlying assumptions upon the contribution of this route to the final estimates or risk. The results of the analysis indicate that adjustment of current model inputs and assumptions may impact current estimates of risk, in particular in association with the 'human carriage' route.

Perhaps of particular importance to this audience is the fact that underlying the estimate of risk is an estimate of the levels of disease in each of the regions considered. This involves an estimation of the proportion of the animal population affected each year in the FMD-affected countries. Due to suspected under-reporting of disease occurrence an under-reporting factor

was estimated based upon available data, however there is considerable uncertainty associated with this estimate. To investigate the impact of the level of under-reporting upon estimates of risk, the level of under-reporting level was varied and the impact upon risk measure. The results of this investigation are given in Table 1 and summarised in Figure 3. This shows the impact of the detection efficiency, that is the rate at which infected establishments within a given country are identified and reported, demonstrating that an improved knowledge base regarding the levels of FMD throughout the world are essential to further refine estimates of the risk posed by illegal imports of meat.

This study was commissioned by the Animal Health and Welfare Directorate General of the Department for Environment, Food, and Rural Affairs (Defra), GB.

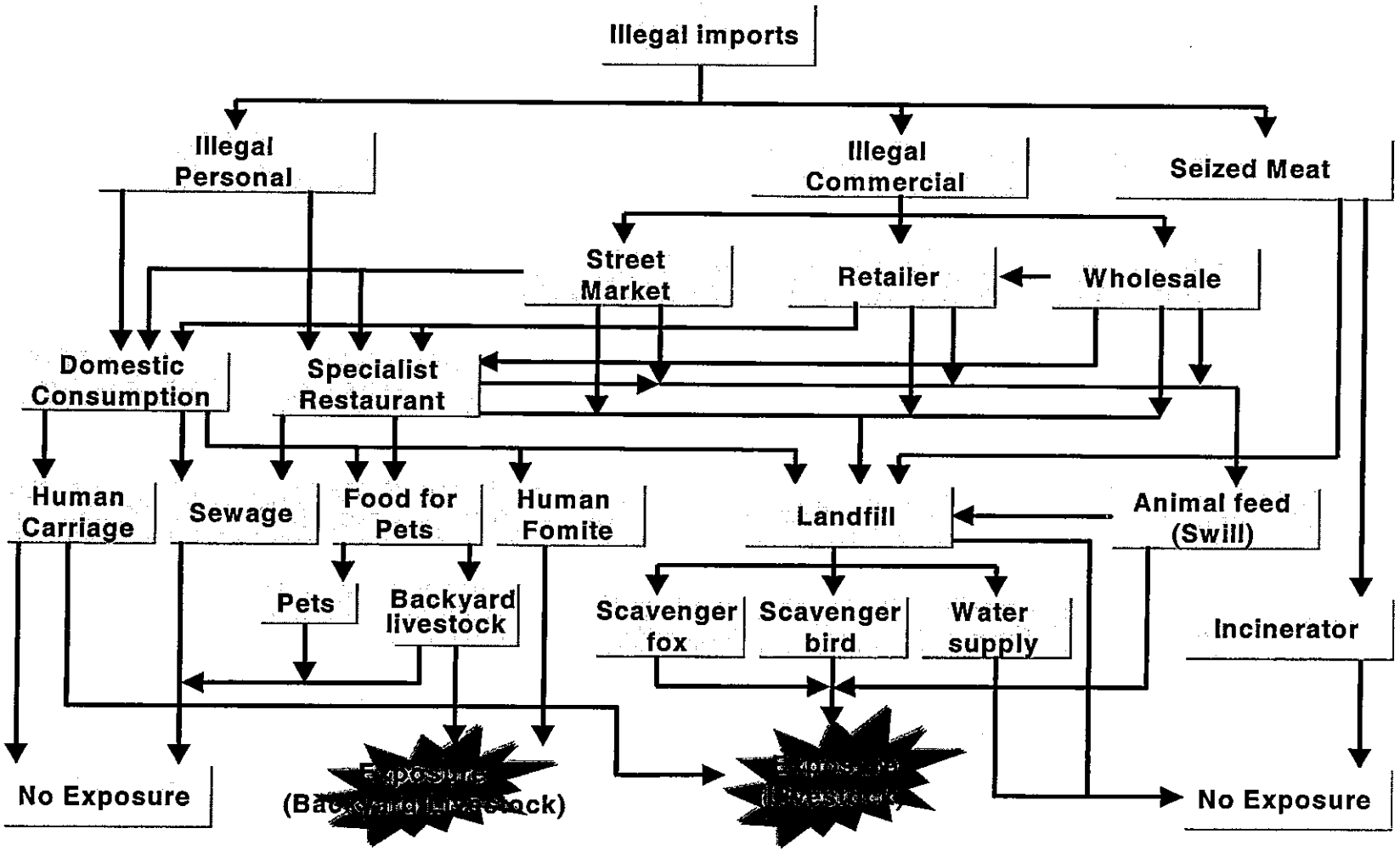


Figure 2: Model framework for the quantitative modelling of flow of illegal, contaminated meat from import to livestock exposure, both farmed and 'backyard' livestock

Table 1: Summary statistics describing the frequency of infection as a result of different detection rates

Detection rate	Mean	5th %ile	50th %ile	95th %ile
0.01	0.290	0.035	0.130	0.969
0.1	0.028	0.003	0.013	0.090
0.2	0.013	0.002	0.007	0.043
0.4	0.008	0.001	0.004	0.024
0.5	0.006	0.001	0.003	0.021

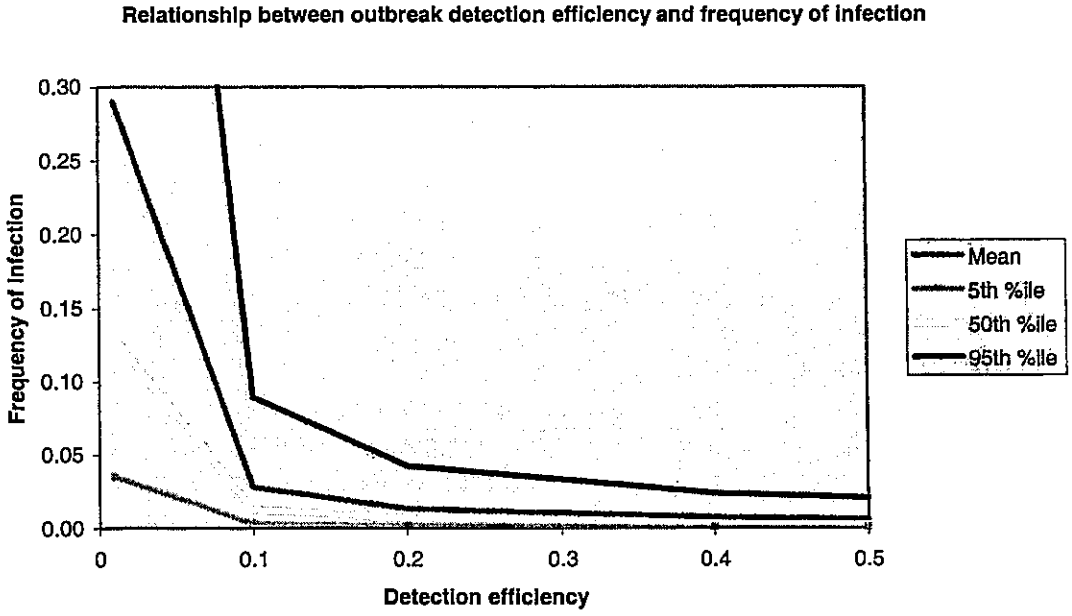


Figure 3: The relationship between the estimate of the frequency of infection and the detection efficiency of outbreaks

APPENDIX 4

Global Early Warning and Response system for Major Animal Diseases
A joint initiative to better combat diseases at source

V. Martin and J. Lubroth, FAO/AGAH
Emergency Prevention System (EMPRES)

Background information

Early and accurate detection of new outbreaks of epidemic livestock diseases, and the capacity for prediction of spread of such diseases to new areas, is an essential pre-requisite to their effective containment and control. As experienced recently throughout much of the globe, weaknesses of disease surveillance systems and the inability to control major diseases at their source, along with the globalisation of trade, has been responsible for the spread of diseases such as foot-and-mouth disease (FMD) and classical swine fever (CSF). Other diseases continuously threaten the livestock sector on a world-wide basis, some with public health implications.

In an effort to adapt to a changing world, several initiatives have been developed recently to anticipate or mitigate the negative impact of animal diseases or natural disasters on the livestock health and production as well as on human population that depend on animal production for sustenance and commercial enterprise. The Famine Early Warning system (FEWS), the Livestock Early Warning System (LEWS) and Regional early warning activities for the surveillance of Rift Valley fever in West Africa are some examples. At an international level, organisations such as the OIE, FAO or WHO have also strengthened their own early warning capacities, to better respond to member state needs with regard to disease emergencies. Regional institutions and specific projects have also played and will continue to play a major role in the coordination of disease control strategies and surveillance programmes. However, in light of the new challenges National Veterinary Services are facing (decentralisation and privatisation schemes, globalisation of trade, increased tourism, new routes of disease introduction, apparition of new agents), it is deemed necessary to better integrate surveillance initiatives and programmes at national, regional and international levels into a global system that would drastically improve the capacity of early detection of infectious diseases of epidemic nature.

A joint Global Early Warning System (GIEWS) for Transboundary Animal Diseases (TADs)

The need for global information on livestock epidemics was forwarded in the conclusions of the 1996 World Food Summit and further endorsed in 1998 by the International Committee of the OIE through its Resolution no. XIII, chapter VI and repeated during the WFS:fyl (World Food Summit - five years later). It was therefore considered as the responsibility of the international community to implement a Global Early Warning System[1] for TADs aiming at

[1] The concepts of Early Warning and Early Reaction which are at the core of the objective of effective prevention and progressive control of Transboundary Animal Diseases, are based on the concept that dealing with a disease epidemic in its early stages is easier and more cost-effective than having to deal with it once it is widespread.

providing national animal health authorities with epidemiological information enhanced by an in-depth analysis on the occurrence and spread of major diseases.

The Global Early Warning System is defined as a tool to be co-developed by FAO/OIE/WHO for the international community and stakeholders alike to assist in predicting and preventing livestock animal disease threats through epidemiological analysis and the integration of additional factors that might have an impact on the occurrence and spread of such diseases (e.g. socio-economic factors, human migration, animal movement, civil unrest, climatic changes, etc.). The Global Early Warning System for major animal diseases will have to take into consideration regional strategies for disease control as they may differ from one region to another and subsequently influence the nature of information to be collected and analysed.

Building up the system will be an evolving process that likely takes several years before it reaches maturity and is fully functional. Eventually, the system should:

- Improve the quality and accuracy of the information disseminated
- Enhance analytical capabilities by joining efforts of all partners
- Enhance global, risk-based surveillance in order to expand specific knowledge of where TADs occur and to use this information to generate sound intervention strategies for their containment and control.

The way forward

Although more collaboration at international level will be immediately beneficial to the international community, the success of the above-mentioned system will heavily depend upon the quality of information collated at grass-root level including the ability of national veterinary authorities to report disease occurrence in a structured and timely manner and share information at all levels. All initiatives aiming at strengthening national disease surveillance systems, disease reporting mechanisms, database management and analysis will therefore contribute to improve the quality of the information delivered by the global system and demonstrate its relevance. In order to succeed in this endeavour, substantial resources (personnel, information technology and management) would be required.

Within the envisioned system, regional Early Warning nodes are to be created. An Early Warning node for Europe would be most advantageous to the EUFMD Commission and its stakeholders. As the system takes shape, consultations with commission members and Europe as a whole will become essential to ensure that the system responds adequately to end-user specific needs and integrates the already developed expertise in the field of disease surveillance and early warning. These consultations should address more specifically the interactions of the system at national, regional and global level and define the technical and institutional requirements to make it effective and minimise the threat of FMD – or any other TAD - incursion and spread into Europe.

APPENDIX 5

REPORT ON THE COMMISSION'S ACTIVITIES IN 2001 AND 2002

Keith Sumption, Secretary EUFMD

Key Points

1. The situation of FMD control in Turkey and the Caucasus was kept under continual review through the mechanism of Tripartite group meetings, and at the 3 meetings of the Executive Committee, resulting in decisions to resume buffer zone vaccination/surveillance support in the Caucasus in 2003 and to supply vaccine for Thrace in 2003 and to support surveillance activities in Turkey.
2. The principle of progressive control of FMD in Turkey over a 5-10 year period, with the aim of creating progressively extensive disease free zones over the next 5 years, was agreed by the Tripartite group members as a regional component of the Global Framework for Progressive Control of Trans-boundary animals diseases, prepared by FAO and OIE.
3. Increasing engagement with the situation in Iran, in response to the high level of circulation of types A, O and Asia-1 and the threat of the type A antigen variants which contributed to a continually high risk situation. Technical and financial support for technical co-operation between Turkey and Iran in FMD surveillance, diagnostics and vaccine production was provided under an FAO TCP, managed by EUFMD, which concluded in 2002. A Mission to Iran in 2002 identified strong potential FMD for following this up with support for active field surveillance and for the establishment of co-ordination centre in Iran.
4. The events of 2001 created an enormous demand on the Secretariat for information to support national decision making and international policy on FMD control. The past and current Secretary have been continued to work closely with the OIE in the OIE FMD Commission, particularly in the development of international standards for surveillance.
5. The Secretariat has initiated a review of diagnostic capacity to respond to FMD crisis situations, following the crisis of 2001 and the recommendations of the research Group and Executive.
6. The regular EUFMD review of the status of vaccine banks in the EUFMD region was initiated in early 2003. Concerns over agro-terrorism affect the willingness of some member states to supply this information.
7. FMDV surveillance information for much of the endemic areas of the world remains in critically short supply. The Secretariat has identified with the FAO WRL some practical support mechanisms to increase FMDV sample delivery to WRL from areas of concern. The Secretary has also been invited by the OIE to co-ordinate efforts to identify how FMDV genetic and antigenic information can be more rapidly be made available from the global network of reference centres and laboratories engaged in FMDV characterisation.
8. A pilot study on mapping of risk factors for FMDV spread in the Eurasian ruminant street"" has been conducted which has supplied valuable information and possible ways ahead for FMDV risk assessment and management.
9. Risk analysis expertise in Europe has been relatively under –utilised in the period by EUFMD; following the 2001 events, the Secretariat has sought to

identify ways ahead for the Commission to support this area, especially where the risk of illegal importation remains the "known unknown".

10. A meeting was held on agro-terrorism and it was agreed that the possibility of establishing an EUFMD ad-hoc group on this be kept under review.
11. The Research Group met on two occasions and continued its position as a pre-eminent, and unique, international forum for review of progress in FMD diagnostics and vaccination issues. The Chairman was highly involved in issues relating to validation of DIVA tests (differentiation of infection from vaccination) tests and in licensing of FMD vaccines for European use (Eur.Pharm, and CVMP working party).
12. Extensive changes to the EUFMD web-site have been initiated, and in addition to the full Session Reports and technical papers, it is planned that the FMD global information will in future be updated on a 2 weekly basis, and that in the biennium 2003-4, the database facilities be expanded in line with risk assessment requirements for estimated true incidence and infection prevalence rates.
13. Dr Yves Leforban resigned from his position as Secretary of the Commission, leaving office 31st August 2002, and a successor was recruited who entered the position on 1st September, with no gap in coverage.
14. In preparation for the 50th Anniversary of the foundation of the EUFMD Commission is in 2004, and as part of this, the Secretariat proposes to mark the historical progress with a CD-ROM of 50 years of the EUFMD, including Research group Technical papers and Session Reports. Much of the technical findings and recommendations of the research group remain extremely relevant.
15. No new member countries joined the Commission in the period. Invitations to the Republics of Latvia, Estonia and Slovakia were extended.

General Situation

The general situation of FMD in the world in 2003 appears similar to that of the early-mid 1990's; a relative calm, with few major incidents in previously free countries. As in the 1990's, the relative lack of headline forming incidents is most likely a very poor guide to true level of virus circulation, and to the situation of the underlying risks for movement of infection between countries. In most of the world, the risk factors for FMDV spread remain, and in the context of rapidly expanding pig production in many FMDV endemic countries, and of the low and often diminishing state investment in disease control, of the unstable political situations in the near east which might trigger cross-border movements of infected animals , and of little prospect of change in the control of animal movements within and often between endemically infected countries in Africa and in Asia, the lack of headline events should not be taken as any evidence of security or reduction in risk to Europe in 2003. The current situation in Zimbabwe in 2003 is also a tragic reminder of how rapidly FMD control can deteriorate even in countries with a long history of effective control.

The available information on FMDV circulation in most endemic countries is currently so scarce that the prevalence of infection in animals at slaughter whose products could entry Europe illegally, can only be estimated with a wide margin of uncertainty. Nevertheless, the uncertainty in our information on FMDV on a global basis demands a response from the EUFMD Commission that will assist better assessment of risk from legal and illegal entry of livestock products, and in connection, targeting of surveillance towards areas of greatest identified risk.

Risk analysis of illegal entry might require EUFMD responses to the situation in areas other than those in Turkey, the trans-Caucasus and the near east. However, at present these areas do continue to represent a credible risk with an established history as a source of infection for south-eastern for the Balkans, with several events in the last 12 years, including the very rapid movement of Asia-1 across Iran and Turkey into Greece (in 2000) and the Caucasus.
In the context of changing policies towards use of vaccination in the emergency response, early detection of antigenic variants from potential medium-high risk source countries is critical. In this respect the threat to Europe of the circulation of type A viruses of Iran-86 antigenic type, against which the type A vaccine used in Turkey is poorly protective, is of great concern. For this and other reasons, the situation in Turkey, and in Iran and the Caucasus, is currently of primary concern for EUFMD.

FMD in the European region

The last reported outbreak ("case") in the devastating type O epidemic in Europe in 2001 occurred on 30/9/01, in England, and the United Kingdom regained its FMD free status with the OIE on 22nd January 2002, and the EU member states have been FMD free following this.
The Republic of Turkey reported 48 FMDV outbreaks in 2002, down from 88 in 2001 and 110 in 2000. This number is in the order of the number of outbreaks recorded between 1997 and 1999 (54, 75 and 57 respectively). The recent reduction in number of outbreaks permits some optimism but the factors underlying this are not clear, particularly in relation to persistence and spread of the different types present. Type Asia-1 was not reported after 4/2002, but of great concern is the upsurge in type A infection (17 outbreaks in 2002) , with infection present in central and eastern Anatolia. Potency tests commissioned by EUFMD (12/02) on trivalent vaccine produced in Turkey revealed lack of potency in the sample tested, for types Asia-1 and type A, and therefore EUFMD with EC support have supplied trivalent vaccine for immediate use in Thrace region in 2003. Support for addressing the vaccine potency issue, and for improved understanding of the epidemiology and persistence of type A and O viruses in central and eastern Anatolia is clearly very important to better identification of risk of spread and of critical control points in control. The tools and results of the FAO/EUFMD/Iran/Turkey pilot study on spatio-temporal mapping of FMDV risk in Turkey and Iran could strongly assist targeting areas for FMDV surveillance.

The Republics of Georgia, Armenia and Azerbaijan did not report FMD in 2002. However reports of vesicular diseases resembling FMD were received by FAO from Armenia, and given the reported situation with trans-boundary animal movement across the Iranian and Turkish borders, current risk to these countries appears high.
The situation in Iran, with over 1000 outbreaks in 2001, of types A, O and Asia-1 (and over 450 to September 2002), remains of great concern to the EUFMD Commission. Iran has an excellent record of FMD reporting, and has one of the highest annual incidence rates of recorded FMD in the world (usually > 10 outbreaks/10,000 cattle). The widespread distribution of infection and high internal animal movement, continues to pose a very considerable risk to Turkey and the trans-Caucasus, particularly because of the circulation of type A viruses to which type A Iran 96/A Aydin98 vaccines confer little cross-protection. These type A viruses have as yet not been detected in the northern regions of Iraq, although vaccine use in that

region would not be expected to confer protection. The prospects for collaborating with Iran in FMD surveillance are excellent, providing some additional funding can be assured, and for further co-operation between Turkey and Iran in this respect.

The destabilisation in FMD control in Iraq and in neighbouring areas, particularly of Iran, Turkey, Syria and Jordan is being seriously by FAO in preparation of contingency plans for the consequences of military action. Of particular concern is the potential for very high virus transmission and challenge, following an expected reduction in vaccination cover at the time of unusual animal movement/mixing, at the time of year when the lamb crop is losing maternal immunity and which usually is the peak period for FMDV occurrence in the region.

Activities relating to the inquiries into FMD control in Europe.
The consequences of the 2001 epidemics created a heavy work programme for the Secretariat, which continued into the post-outbreak period of scientific and other inquiries. The APO, Dr Ryan, assisted two member states (the UK and Republic of Ireland) in FMD information systems during the outbreaks in 2001. The EUFMD/EC Workshop on Contingency planning and simulation exercises in 2001 was extremely well attended, and the past and current Secretary and the Chairman of the Research Group have contributed to development of international norms and standards for the OIE for FMD surveillance, and for the European Community (European Pharmacopea). The past and current Secretary have also worked on Regional FMD control planning for the European components of the FAO/OIE Global framework for the progressive control of FMD and other transboundary animal diseases (GF-TADS).

2. Implementation of the 34th Session recommendations

1. Almost all of the 41 recommendations made by the General Session were directed at the member states.
2. The EUFMD Commission has not sought to determine if the recommendations have been acted upon by member states. The reasons for this are in part because there was not a specific recommendation to the Secretariat to do so and also that the human resources in the Secretariat are very limited.
3. Regarding the recommendations for EUFMD activities, Recommendations regarding support to Turkey have been partly acted upon, although Commission activities have been confined to Turkish Thrace. Involvement of the Commission with the Turkish authorities to support FMD control in Anatolia is an open question that requires to be addressed. EUFMD supported sero-surveillance activities in Thrace for monitoring of vaccination and the presence of recovered animals as an indicator of circulating infection. EUFMD in 2002 commissioned potency tests on Turkish vaccine, and is currently supporting vaccination in Turkish Thrace in 2003, and capacity building for sero-monitoring of vaccination performance. Proposed missions in 2003 are to address vaccine quality(potency) problems, and to identify surveillance support needed to address gaps in the knowledge of FMD epidemiology and persistence in Anatolia.
4. Recommendation 5.1, that there should be a follow up to the FMD Control activities in the trans-Caucasus in 1999 and 2000, has been acted upon through meetings in 2002, and implementation of the support for buffer zone vaccination and sero-surveillance in 2003.

5. Recommendation 6.4, that risk analysis be developed further, was not specifically acted upon but it is proposed that this becomes a much more significant feature of activities in the biennium 2003-4, particularly in relation to illegal imports and to assist prioritising vaccine bank antigens, and EUFMD and FAO support for surveillance in highest risk regions.
6. Recommendation 1.10 relates to contingency planning for FMD diagnostic capacity for crisis situations. The Secretariat has organised a survey on this, with two papers to be presented at the General Session.
7. The EUFMD Research Group has placed great effort to develop diagnostic standards will be required to fulfil, in part, the recommendations 1.11 and 6.7. The potential need for a European diagnostic FMDV kit and reagent bank for crisis situations should be addressed following the current EUFMD survey on diagnostic capacity, and following assessment of the implications of the Draft EC Directive on FMD control.
8. Recommendation 9.2, that the Commission prepares guidelines on the correct protocols for the transport, handling and administration of emergency FMD vaccines has not been specifically addressed. In response to the various inquiries, and analysis of the 2001 epidemics, these guidelines could be extended to address the issue of planning for mass deployment of vaccination under timescales expected of emergency campaigns. The Secretariat proposes to undertake this in the biennium 2003-2004.

3. Specific Activities

1. The **Executive Committee** held three ordinary Sessions, the 66th in Heelsum, The Netherlands, 15-16th November 2001, the 67th in Budapest, 25-26th April, 2002, and the 68th in Vilnius, 7-8th November 2002. The Reports of the Sessions, in English and French, were sent to all member countries and are available on the EUFMD website.
2. The **Research Group** of the Standing Technical Committee of the Commission held two Sessions during the biennium; one with restricted participation, held at the Island of Moen, Denmark, 12-14th September 2001, attended by 26 persons, and Session which was open to observers in 2002 in Izmir, Turkey, 17-20th September 2002, attended by over 90 participants. The latter were almost all from National FMD laboratories in Europe, in north and south America and in the near east, highlighting the importance of these meetings for stimulating technical improvements and capacity building in EUFMD member states and in neighbouring (mainly infected) countries in the region. The reports of the two sessions were sent to all European FMD Research Institutes and laboratories and were posted on the EUFMD website. The Chairman of the Research group was also actively involved in the activities of the Commission, representing the Research group at internal and external meetings.
3. Two **workshops** were held in the 2001-2002 biennium.
   A joint EUFMD/EC workshop on FMD Contingency Planning/simulation exercises was held between the 5-7th June 2001, in Brno, Czech Republic, with experts from 4 member countries and 49 participants representing 23 countries including every Eastern European country (with the exception of Slovakia), the Baltic States, Cyprus, Malta and Iceland. The report and recommendations were published in the 66th Session report.
   A diagnostic workshop was held in Bulgaria, 18-22 March 2002, funded by EUFMD and EC, covering advances in FMD serological tests (SPC-ELISA,

3ABC (Chekit) ELISA, Ceditest type O), and in bluetongue diagnostics (antigen and antibody tests), and with comparison of the tests performed with panels of sera supplied. Participants were from 7 countries, mainly from eastern Europe.

4. The **EUFMD/EC/OIE Tripartite Group** for the Balkan countries

The Group met on 12th October 2001 in Bulgaria. The meeting was important for the review of the use of vaccination in FMD control in Turkish Thrace, and recommended an expert mission which occurred in November 2001. The Mission comprised the Secretary, experts from Bulgaria and Greece, and one EC expert, and reported to the 67th Executive Committee. The apparent drop in immunity levels was considered to result from sampling errors and a set of recommendations to improve the sero-surveillance were given. The report is given in the 67th Session report. Following the recommendations of the 67th Session, a sero-surveillance plan for monitoring of vaccination/presence of recovered animals was prepared under a commission from EUFMD, and accepted by the Turkish authorities for implementation following the Spring campaign in 2003. The tripartite Group meeting recommended that vaccination be used a routine monitoring tool for vaccination and that the results should be obtained in sufficient time to enable remedial measures to be taken in the case of low population immunity levels. The request of Turkey to EUFMD to supply additional support for sero-surveillance was approved by the 68th Session and the requested kits and equipment will be supplied in Spring 2003, from the EUFMD/EC Trust Fund.

The 68th Session strongly expressed the demand for information on the results of potency tests conducted at the WRL under EC funding, on vaccine produced in the SAP Institute. The Session was informed of the lack of induction of antibody responses to any of the three antigens and it was therefore recommended that a repeat of the potency tests was conducted immediately to enable decisions to be made on the vaccine to be used in Spring 2003. A repeat potency test was conducted at the Tubingen and on the basis of the failure of the vaccine for types Asia-1 and A, the EC agreed to supply trivalent vaccine for immediate use and this offer was agreed with the Executive Committee ad with Turkey.

An activity resulting from the Tripartite group is the series of workshops for national FMD and exotic disease laboratories in the region. A workshop was held in Sofia, Bulgaria in spring 2002.

Arising from the Tripartite group, the 3 countries have, for the first time as a joint action, proposed a regional Technical Cooperation Project (TCP) to FAO on FMD and other exotic disease surveillance in Thrace Region. The TCP has been agreed in principle for support by FAO with EUFMD to manage and should commence in 2003.

A **longer term strategy for FMD control in Turkey** was considered by the Tripartite members, as part of the initiative being developed by FAO and OIE – the "Global Framework for Progressive Control of FMD and other trans-boundary animals diseases" (GF-TADS). The principle agreed by the Tripartite at the 25th October 2002 meeting, was that progressive control could establish disease free zones in Turkey by 2008, and "the aim for 2008 would be that FMD is no longer endemic in the region, and that epidemics as a result of trans-boundary spread are limited in number, occur only in identified high risk zones and can be rapidly eliminated without extension out of these zones". The strategy and measures to address this require further elaboration.

5. The OIE/EUFMD-FAO/EC Tripartite Group for the Trans-Caucasus countries

The group did not meet in 2001, but following the request to resume support for the Buffer Zone from ARRIAH, Armenia and the CIS, the 66th Session recommended the Tripartite group reconvene to evaluate the situation and discuss options for supporting FMD control in the region. The Tripartite Group meeting on the 7th of February 2002 recommended support for vaccination and sero-surveillance in the border regions of the three countries with Iran and Turkey, to be implemented by EUFMD, and the EC announced they would provide funding of US$500,000 for these activities. The proposed control strategy and support was endorsed by the Executive Committee at the 67th Session and the further planning meeting of the Tripartite group as proposed by the Session were subsequently held in May 2002 at the OIE, and the proposed meeting to discuss long term control, at the OIE on 5th November 2002.

The longer term program proposed a 5 year control program, and therefore a similar time-scale to that discussed above for Turkey.

The implementation of the short term programme in 2003 is reported in Item 6.

6. Activities relating to FMD control in Iran and Central Asia

The exceptional importance of this region as a source of FMDV antigenic variants for Turkey and neighbouring region is well recognised. For example, Asia-1 swept through Iran in 1999 into Turkey and travelled as far as Greece in 2000.

EUFMD managed a TCP project aimed at strengthening co-operation in FMD control in Turkey and Iran, which concluded in 2002. The TCP involved EUFMD expert missions to Iran, joint workshops, the training of scientists at the WRL, the supply of cell lines to Iran for vaccine production, and identification of common strategies. Iran requested a follow-up project to continue the good progress. An expert mission was conducted in October 2002 to identify the opportunities for increased surveillance activities and FMD surveillance co-ordination for the region based in Iran. This is reported further in Item 8. The opportunity for strategic surveillance was seen as clear, but currently funding opportunities much less obvious, although DG-SANCO has expressed interest particularly in part of the program, the proposed component in western Iran.

7. Collaboration with the Office International des Épizooties (OIE)

The Commission has worked closely with the OIE, in FMD control through the two Tripartite groups and in development of new initiatives in Iran/central Asia. The past and the current Secretary have participated as Observers in the meetings of the OIE Commission on FMD and other Epizootics, and this has included development and review of scientific documents for the OIE, for example in the development of guidelines for surveillance for FMD, assisted by the Chairman of the Research Group who has also contributed to ad hoc groups of the OIE on the validation of NSP tests. It is hoped the collaboration in the development of norms, standards and guidelines will grow, if human resources allow. The Secretary and 3 members of the Executive worked on the Development of the Regional Framework for the Progressive Control of FMD and other trans-boundary animal diseases in south-eastern Europe, as a component of the Global Framework being developed by FAO and OIE.

The Secretary is also working with OIE to identify how FMDV genetic and antigenic information can be more rapidly made available from the global network of reference centres and laboratories engaged in FMDV characterisation.

8. Collaboration with the WRL and other national laboratories

The FAO World Reference Laboratory for FMD continues to play a very important role in the Commissions activities, with the WRL represented at each of the EUFMD Sessions and providing services through a contract with EUFMD and with the FAO regular programme, and experts for workshops. Some of the expected services in FMDV strain typing under the contract were not possible or were delayed in 2001 and into 2002 through the exceptional level of required activities for the national UK FMD programme. This was unfortunate and in retrospect the assistance under a subcontract of other laboratories in Europe might have assisted. The experience of the UK staff in upscaling serology and diagnostic activities should be invaluable for the future. The greatly increased facilities in sequencing at Pirbright enable more rapid turnaround time in virus typing in future. A need to increase the submission of samples from under-represented regions is recognised, and ways to address were identified with the EUFMD Secretariat which will be discussed at the General Session. The Commission also financed the WRL PhaseXVII project, which continued development of international standards (and can be considered to remain the pre-eminent international initiative in FMDV diagnostic standardisation).

9. **Agro-terrorism** –the threat of intentional FMDV introduction
A meeting was organised by EUFMD in Rome on the 7th February 2002 on the way to protect Europe against intentional introduction of FMDV (agro-terrorism), and attended by 5 members of the EUFMD Executive Committee, 4 members of the Research Group, and representatives of OIE, EC, and FAO. The meeting recommended that EC/EUFMD should refrain from disclosing information that of strategic importance for AT, and decided not to create a AT working group at that stage but to keep the option open, and that AT be considered as a regular item at the EUFMD Sessions.

9. Information systems - Web-site

The EUFMD web-site was exceptionally heavily used in 2001 and for this reason the FAO Home Page contained a specific ""FMD link"" to the EUFMD site, which thus far has been retained because of demand. The rate of updating has dramatically increased in 2003. In response for requests for information and for updated maps, the Secretariat plans the following:

1. Updating of the EUFMD global FMDV database on a 2 weekly basis, with updated maps on approximately a 2 weekly schedule.
2. A e-mail update service to inform users of updated information, availability from the web-site of new Reports of Sessions, etc.
3. In the biennium 2003-4, to develop an online database analysis capability, in line with risk assessment requirements. These requirements, such as estimated true incidence and infection prevalence rates, should be identified by the risk assessment interest group within the EUFMD Research Group.

4. Searchability for technical documents (Research Group reports) and recommendation to increase recognition/use of the Reports and Recommendations, and technical annexes.
5. For the **50th anniversary in 2004**, and in response to the lack of availability and therefore, recognition, of EUFMD Technical Documents and reports, to create **a CD ROM and place on the website** ALL of the past reports and technical papers of EUFMD Sessions, back to 1954 (funding permitting).

4. NEW MEMBER COUNTRIES

No new country has joined in the biennium. Following the 68th Session in Vilnius, the CVOs of the Republics of Estonia, Latvia and Slovakia have been contacted to ascertain their interest in membership of the Commission. The Republic of Latvia has expressed interest but no response has been received from the other states. Under the current Constitution of the EUFMD, countries are eligible for membership if they are served by the FAO regional office for Europe and are either members of the FAO, or if not FAO members, they are members of both the OIE and the UN. The table below illustrates the position of non-members states of the EUFMD in the European region. The membership of other European states, whose proximity to FMD infected countries ensures that their role in FMD control will remain significant, is an open question.

Country	*FAO member*	*OIE and UN members**
Armenia	Yes	Yes
Azerbaijan	Yes	Yes
Belarus	No	Yes
Bosnia-Herzegovina	Yes	Yes
Georgia	Yes	Yes
Russian Federation	No	Yes
Moldova	Yes	Yes
Ukraine	No	Yes

5. MISSIONS undertaken by the EUFMD Secretariat and by non-staff members on behalf of EUFMD

2001
Travel Undertaken By EUFMD Secretariat

Traveller	Dates	Location	Purpose	Funding
YVES LEFORBAN	22-26 Jan	Paris, France	OIE FMD and other epizootics Commission meeting	TF
YVES LEFORBAN	13-18 Apr	Paris, France	*ad hoc* meeting of the Executive Committee; OIE/FAO emergency meeting on FMD	TF
YVES LEFORBAN	26/5-2/6	Paris, France	69th General Session of the OIE	TF
YVES	10-16	Island of	Session of the Research	TF

LEFORBAN JOHN RYAN (APO) EGIZIANA FRAGIOTTA (AA)	Sept	Moen, Denmark	Group	
YVES LEFORBAN	17-20 Sept	Paris, France	OIE FMD and other epizootics commission meeting	TF
YVES LEFORBAN	12 Oct	Sofia, Bulgaria	FAO/EC/OIE Tripartite Group meeting on FMD and other exotic diseases in the Balkan region	EC TF
YVES LEFORBAN YVES CHENEAU EGIZIANA FRAGIOTTA (AA)	14-16 Nov	Heelsum, the Netherlands	66th Executive Committee meeting	TF
YVES LEFORBAN	25/11-1/12	Turkey	To lead a EUFMD/EC mission in Turkish Thrace to assess progress made in the implementation of FMD vaccination campaign + prepare regional programme for FMD between Turkey, Bulgaria and Greece	EC TF
YVES LEFORBAN	11-13 Dec	Brussels, Belgium	To attend the International Conference on prevention and control of FMD	TF
JOHN RYAN (APO)	1-14 Mar	UK	Technical assistance to WRL and UK Min. of Agr. during FMD crisis	TF
JOHN RYAN (APO)	26/3-4/4	Ireland	Technical assistance to National Veterinary Service of Ireland during FMD crisis	APO funds
JOHN RYAN (APO)	18-20 May	Hungary	To address Federation of Veterinarians in Europe General Session on FMD	APO funds
JOHN RYAN (APO)	2-8 June	Czech Rep.	EUFMD/EC Workshop on Simulation Exercise	TF

Non-Staff Travel

2001

Traveller	Dates	Location	Purpose	Funding
Tony Garland	18-25 Mar	Rome	Rapporteur at 34th General Session	TF
Kris De Clercq	20-23 Mar	Rome	As Chairman of RG attend 34th General Session	TF
Kris De Clercq	17-18 Apr	Paris	Attend the OIE/FAO International Scientific Conference on FMD	TF
Tony Garland	12-19 Apr	Paris	Emergency FMD outbreaks in Europe; *ad hoc* meeting of Executive Committee; OIE/FAO emergency meeting on FMD	AGA RP
Jan Smak J.P. Vermeersch Francois Moutou J. Fiedler	4-8 June	Brno, Czech Rep	(4 non-staff travellers) Attend EUFMD/EC Workshop	EC TF
De Clercq	6 June	Brussels	Attend a meeting on European Pharmacopoeia (no DSA paid – travelled by car ; didn't claim mileage)	Own
Yadin Unal Palfi Griot Alexandersen Crowther (IAEA)	11-16 Sept	Island of Moen, Denmark	Session of the Research Group	TF
De Clercq Dekker De Simone Haas Moutou Sanchez Ahl	11-16 Sept	Island of Moen, Denmark	Session of the Research Group	EC TF
Kris De Clercq	18-20 Sept	London	Attend FMD Vaccines meeting in UK	TF (DSA only)
Caporale, V. Danevski, Z. Dobric, G. Panagiotatos, D. Sanchez-	12 Oct	Sofia, Bulgaria	FAO-EUFMD/EC/OIE Tripartite meeting in the Balkans	EC TF

Esteban Polat, H. Tufan, M				
Kris De Clercq	14-16 Nov	Heelsum, the Netherlands	66th Executive Committee meeting	TF
John Ryan	14-16 Nov	Heelsum, the Netherlands	Invited to attend 66th Executive Committee meeting	TF
Mustafa Tufan (DSA only) Panagiotatos, D Ivanov, Y.	26/11-1/12	Turkey	EUFMD/EC mission in Turkish Thrace	EC TF

2002

SECRETARIAT TRAVEL

Traveller	Dates	Location	Purpose	Funding
YVES LEFORBAN	18-27 Jan	Paris	As Secretary of EUFMD, participate at the OIE FMD and other epizootics Commission meeting	TF
YVES LEFORBAN YVES CHENEAU EGIZIANA FRAGIOTTA (AA)	24-28 April	Budapest, Hungary	67th Executive Committee Meeting	TF
YVES LEFORBAN	26-31 May	Paris & Lyon, France	70th General Session of the OIE; Lyon: attend international symposium on FMD	TF
YVES LEFORBAN	17 June	Brussels, Belgium	Take part in public hearing on premises of European Parliament in Brussels	TF
KEITH SUMPTION	10-17 Jul	Bergamo-Rome	Invited to FAO HQs for briefing	TF
KEITH SUMPTION	8-13 Sept	Kuusamo, Finland	Attend 20th Conference of the OIE Regional Commission for Europe	TF
KEITH SUMPTION EGIZIANA FRAGIOTTA (AA)	15-22 Sept	Izmir, Turkey	Session of the Research Group	TF
KEITH SUMPTION	5-15 Oct	Iran	FMD expert mission to Iran	EC TF

KEITH SUMPTION	24-26 Oct	Athens, Greece	FAO-EUFMD/EC/OIE Tripartite Group Meeting on the Balkans	EC TF
KEITH SUMPTION	1-10 Nov	Paris, France Vilnius, Lithuania	Meetings at the OIE 68th Session of the Executive Committee	TF
KEITH SUMPTION	18 Nov 19-23 Nov 23/11-2/12	Dublin, Ireland London, UK Rio, Brazil	Interviews for APO position VLA, discuss FMD risk research project Attend OIE FMD and other epizootics commission meeting	split between TF and AGA RP

NON-STAFF TRAVEL

Traveller	Dates	Location	Purpose	Funding
Kris De Clercq	12 Feb	London, UK	As Chairman of the RG attend an EMEA meeting with OIE, EUR Pharm and EUFMD to discuss Eur Pharm. Monograph and guidelines for FMD vaccine production	TF (terminals and airticket only)
Leos Celeda Kris De Clercq Yanko Ivanov Tiina Vares, SEUR	7 Feb	Rome	Meeting on risks of intentional introduction of FMD into Europe	TF
Stéphan Zientara David Paton Chris Hamblin Sofie Diez Kris De Clercq Leos Celeda Emiliana Brocchi Kubakli Ozden Abdulnaci Bulut	18-22 March	Sofia, Bulgaria	Expert input to joint EUFMD/EC Regional Workshop on the diagnosis of FMD and bluetongue	EC TF 2 from Turkey covered by TF
Leos Celeda	15-17	Rome	Take part in interview panel	TF

Kris De Clercq	Apr		for selection of Secretary of EUFMD	
Kris De Clercq	24-28 Apr	Budapest, Hungary	67th Session of the Executive Committee	TF
Leos Celeda	25-29 May	Paris, France	As Chairman of EUFMD, attend the OIE/EC/EUFMD-FAO Tripartite Group Meeting	TF
Keith Sumption	2-5 June	Lyon, France	To participate at the International Symposium on FMD	TF
Keith Sumption	10-17 July	Rome	Invited to FAO HQs for briefing	TF
Kris De Clercq	11-12 July	Rome	Briefing of new Secretary	TF
Kris De Clercq	22 July	Strasbourg, Fr	Participate in FMD standards for antisera project formulation	TF
Kris De Clercq Per Have Aldo Dekker Franco De Simone Bernd Haas Francois Moutou Esther Blanco Reinhard Ahl	17-20 Sept	Izmir, Turkey	Session of the Research Group	EC TF
Chris Griot Vilmos Palfi Nilay Unal Hagai Yadin Alex Donaldson	17-20 Sept	Izmir, Turkey	Session of the Research Group	TF
Akyuz Garland Geiger Have Leforban Sibartie	4-15 Oct	Tehran, Iran	FMD expert mission	EC TF
Celeda Sungur Ivanov	24-26 Oct	Athens, Greece	FAO-EUFMD/EC/OIE Tripartite Group meeting on the Balkans	EC TF
Kris De Clercq	6-9 Nov	Vilnius, Lithuania	68th Executive Committee meeting	TF

APPENDIX 6

REPORT ON THE SITUATION OF FMD IN TURKEY

Sinan Aktas

1. Introduction

Foot-and-mouth disease (FMD) is economically the most important disease causing significant losses in Turkey. FMD continued to be endemic in Turkey where 48 outbreaks have been reported in 2002. 3 FMDV serotypes (O, A and Asia 1) have been detected in Turkey during 2002, but no Asia 1 case reported since April 2002.

The geographical situation of Turkey is always a risk factor for the dissemination of the contagious diseases mainly from the eastern and south-eastern neighbours. Turkey has increased its efforts to control illegal animal movements through borders. Although very strict measures have been implemented to prevent illegal animal movements, occurrence of illegal animal movements can not be ruled out totally. Especially the war in Iraq increased the risk of spread of diseases from Iraq and strains which are currently not present in Turkey can be introduced through the intensive movement of humans and animals. Animal movements within the country are also from east to the western parts of the country, where big consumption areas are located.

National veterinary services are spending great efforts to control FMD in recent years. To increase the farmer participation in disease control programs, it was decided to charge farmers for FMD vaccines in 1995. This increased the budget of FMD Institute significantly and some major investments have been realised since than.

2. Disease control strategy

Active surveillance and monitoring, vaccination, quarantine, restrictions on animal and animal product movements are being applied for the control of the disease. Our aim is to reach at least 70 % vaccination coverage in large ruminants. Based on regionalisation approach Turkey will continue to apply this control programme.

The list of reported FMD outbreaks for 2001 and 2002 is given in Table 1. Types O and A was responsible for most of these outbreaks.

Table 1: FMD Outbreaks in 2001 and 2002

	2001				2002			
	A	O	Asia	Total	A	O	Asia	Total
January	1	4	3	8	1			1
February		6	3	9			1	1
March	1	17	8	26	1	2		3
April		2	2	4		2	1	3
May		5	6	11	1	3		4
June		9	9	18	2	4		6
July		3		3	4	4		8
August				0	2	1		3
September		1	1	2	2	3		5
October		2		2	2	6		8
November	2	1	2	5	2	1		3
December				0		3		3
Total	4	50	34	88	17	29	2	48

Outbreaks of FMD due to serotype Asia 1 was notified by OIE with an emergency case message on September 1999 in Iran. First occurrence of FMDV type Asia 1 was on October 1999 in Turkey. The disease was gradually spread westwards from Eastern Turkey near the Iranian border, in 1999 to Western Buffer Zone, in 2000. The last case of FMDV type Asia 1 was reported in April 2002 and since than no new case was detected. In addition no FMD outbreak has been reported in Thrace since June 2001.

A total of 20 virus samples were sent to Pirbright Laboratory for the confirmation of our results and further characterisation. Genetic characterisation of FMD viruses in Sap Institute showed that type A viruses were related with A Iran 96 genetic group and type O viruses were still related with O Manisa. Antigenic characterisation studies showed that the virus strains currently circulating in Turkey can be covered by the vaccine strains of Sap Institute (O Manisa 69 and A Ankara 98).

2.1. Active surveillance

Due to the critical situation in Iraq and presence of virus strains which can not be covered by vaccine strains currently in use in Turkey, active surveillance and monitoring activities have been intensified in the field especially in Eastern and South-Eastern borders of Turkey (Borders with Iran, Iraq and Syria). Based on the active surveillance carried out, there was no evidence of clinical FMD in Thrace. Main components of the active surveillance can be outlined as follows:

- Training of the technical personnel on FMD, mainly in the provinces close to the borders with Iran and Iraq.
- The farmers were encouraged to slaughter their animals in local slaughterhouses in Eastern and South-Eastern Anatolia to minimise the risk of spread of disease through long distance transport to the Western parts of Anatolia.
- Investigation of all susceptible cases,
- Disinfection of all vehicles at border inspection points.
- All animal markets were closed and strict restrictions were applied on the movements of livestock from these provinces,
- More strict security and traffic controls of the trucks on the overland routes,
- Regular controls and disinfection of the animal markets,

2.2. Vaccine Production

The vaccine production has normally continued at the FMD Institute (SAP Institute). Vaccine production figures for 2002 are given in Table 2. A total of 24,600,000 monovalent cattle doses of FMD vaccine was produced in 2002.

Table 2. Vaccine production in 2002

Vaccine strain	Amount of vaccine produced (cattle doses)
O Manisa 69	9,400,000
A Aydın 98 (homologue Iran 96)	6,000,000
Asia 1 74	9,200,000
Total	24,600,000

Turkey has been investing significant amounts of money to increase the quantity and the quality of FMD vaccines which will in turn, contribute for the control of FMD in Turkey. The activities that can be mentioned in this context are as follows:

- Construction of a Class II clean room for the vaccine bottling area.
- Refurbishment of Control Department.
- Reduction of vaccine dose for cattle from 5 ml to 3 ml and for sheep from 2 ml to 1 ml.
- Introduction of 60 ml PET bottles.

Turkey will continue to invest in FMD Institute to improve the conditions further. These investments will be:

- Refurbishment of Diagnosis Department.
- Installation of air filtration and air conditioning system for Control and Diagnosis Departments.
- Improvement of animal isolation unit.
- Installation of ultrafiltration and concentration system for the production of oil adjuvanted FMD vaccines.
- Repair of liquid waste treatment system.

2.3. Vaccination Program

2.3.1. Spring Vaccination Programme

The spring 2002 vaccination programme in Turkey was applied as follows:

2.3.2. Thrace and Marmara Region

Vaccination of all ruminants with a trivalent vaccine containing serotypes O, A and Asia 1 supplied by EU in Thrace region (Edirne, Tekirdag, Kırklareli, Istanbul and Canakkale) and with a trivalent vaccine produced by Sap Institute in provinces surrounding the Marmara Sea (Balıkesir, Bursa, Yalova, Kocaeli, Sakarya, Bilecik, Bolu, Anatolian parts of Istanbul and Canakkale).

2.3.3. Black Sea Region

Strategic vaccination of large ruminants with a trivalent vaccine in the coastal areas of Black Sea region. (Artvin, Giresun, Gumushane, Kastamonu, Ordu, Rize, Samsun, Sinop, Trabzon, Zonguldak and Bartin Provinces). Disease has not been reported for many years in this region.

2.3.4. In the other regions

Vaccination of all large ruminants with a trivalent vaccine in the remaining parts of Anatolia. Spring vaccination campaign was completed within two months, March and April, in all Provinces. Spring vaccination figures are given in Table 3.

Table 3. Results of spring vaccination campaign in Turkey in 2002

Provinces	Programme		Vaccination		Percentage %	
	Large Rum.	Small Rum.	Large Rum.	Small Rum.	Large Rum.	Small Rum.
EDIRNE	94,692	172,000	100,856	97,506	107	57
KIRKLARELI	66,320	157,850	64,937	130,059	98	82
TEKIRDAG	88,500	120,100	86,682	92,114	98	77
CANAKKALE	81,378	348,720	74,366	275,746	91	79
ISTANBUL	64,080	66,200	55,426	38,475	86	58

TOTAL	394,970	864,870	382,267	633,900	97	73
ANATOLIA	7,509,556		5,255,487		70	

2.3.2. Autumn Vaccination Program

2.3.1. Thrace Region and Marmara Region

In Thrace and Marmara Region vaccination of large ruminants with a trivalent vaccine.

2.3.2. Other regions

Same as Spring 2002 vaccination campaign.

Table 4. FMD vaccination figures for Autumn 2002 campaign

Provinces	Programme	Vaccination	Percentage %
EDIRNE	94,692	99.879	105
KIRKLARELI	66,320	62,286	94
TEKIRDAG	88,500	78,540	89
CANAKKALE	81,378	62,546	77
ISTANBUL	64,080	58,927	92
TOTAL	**394,970**	**362,178**	**92**
ANATOLIA	**6,983,370**	**4,521,914**	**65**

3. Vaccination strategy in 2003

3.1. The vaccination strategy for 2003 will be as follows:

- Application of routine mass vaccination using trivalent vaccine to all ruminants in the Thrace and Marmara regions,
- Application of routine mass vaccination using trivalent vaccine to all large ruminants in other regions,
- Application of strategic vaccination using trivalent vaccine to large ruminants in the Black Sea region,

The vaccination campaign for Spring 2003 campaign has started at the beginning of March and will be completed at the end of April, the Autumn campaign will be carried out between September and October 2003.

Five hundred thousand doses of trivalent FMD vaccine (Aftowax pur) to be used in Thrace was supplied by EU and was received on 19.03.2003 and was distributed to the provinces as follows:

Table.5. Distribution of vaccine for Spring 2003 campaign in Thrace

Province	Vaccine	Dose
Tekirdağ	Aftowax pur Aftowax	136.000 4.000
Kırklareli	Aftowax pur	110.000
Canakkale	Aftowax pur	105.000
Istanbul	Aftowax pur	60.000
Edirne	Aftowax pur Aftowax	84.000 106.000
Total		606.000

3.2. Serosurveillance programme for 2003

Following the Spring 2003 vaccination campaign serosurveillance will be conducted both in Thrace and Anatolia.

The serosurveillance plan for Thrace was discussed and agreed during the Research Group meeting in September 2002 in Izmir. According to this programme a total of 4800 sera will be collected and tested both by LPB-ELISA and 3ABC-ELISA as follows:

One hundred villages were selected randomly from Thrace and from each village 24 cattle (8 animals <1 year of age, 8 animals between 1 and 2 years of age, 8 animals >2 years of age) and 24 small ruminants(8 animals <1 year of age, 8 animals between 1 and 2 years of age, 8 animals >2 years of age) will be bled 60 days post vaccination. These sera will be tested for the for the presence of antibodies following vaccination and infection. In order to carry out this serosurveillance reagents and some equipment are required and will probably be supplied by EUFMD.

A serosurveillance was also planned for Anatolia and 200 hundred villages were selected randomly and from each village 24 cattle sera will be collected 28 days post vaccination (8 animals <1 year of age, 8 animals between 1 and 2 years of age, 8 animals >2 years of age). 4800 sera will be collected and tested both by LPB-ELISA and 3ABC-ELISA.

3.3. Vaccine quality control

3.3.1. Tubingen QC results

A trivalent FMD vaccine produced in Sap Institute was initially controlled at Pirbright Laboratory, UK. The vaccine was sterile and safe but in potency testing found to be negative for all three serotypes. Following this result a retesting was decided and Tubingen Laboratory, Germany, conducted this testing. The vaccine was safe and no toxicity due to the vaccine was detected. The result of potency testing was as follows;

Type O: about 3 PD 50
Type Asia 1: about 1.5 PD 50
Type A: following challenge 3 out of 10 animals were protected.

The control procedures and the summary results obtained in Sap Institute for the same vaccine were as follows:

3.3.2. Routine in-process and final product controls applied in Sap Institute:

- Antigenic (CFT and/or ELISA) and infectivity (plaque test) titers of viruses used for vaccine preparation.
  - Before clarification (dicalite filtration)
  - After clarification
- Determination of 146S amount.
- Determination of inactivation kinetics.
- Sterility test.
- Safety test

- In vivo (cattle)
- In vitro (elution test)

- Protection test.
  - Challenge test: Full dose of every monovalent vaccine is applied to three FMD antibody negative cattle and challenged with 10.000 homologous infective virus particles 21 days pv. Animals are bled at days 14 and 21 and tested for antibody levels by ELISA and/or VNT.
  - Herd immunity test: At least 20 cattle vaccinated with trivalent vaccine and the antibody levels are determined at days 0 and 21 dpv.

3.3.3. Results of the tests applied to the vaccine that was sent to Tubingen :

***Type O*:**

***Batch No*: 2002-8**
***Amount*: 1.200.000 cattle doses**
***Sterility test result*: sterile.**
***Safety test result*: safe.**
Challenge test:

No	Animal No	Serum titer			
		Day 14		Day 21	
		SNT	ELISA	SNT	ELISA
1	8572	1/128	1/3096	1/256	1/3096
2	8589	1/32	1/362	1/64	1/362
3	8783	1/32	1/192	1/128	1/192
Virus Cont	8574	Neg.	Neg.	Neg.	Neg.

All three vaccinated animals were protected.

Herd immunity test: 157 cattle vaccinated
86.63 % protection level detected by ELISA (>1/100).

***Type A*:**

***Batch No*: 2002-10**
***Amount*: 1.600.000 cattle doses**
***Sterility test result*: sterile.**
***Safety test result*: safe.**
Challenge test:

No	Animal No	Serum titer			
		Day 14		Day 21	
		SNT	ELISA	SNT	ELISA
1	8573	1/64	1/96	1/128	1/128
2	8575	1/96	1/192	1/128	1/192
3	8782	1/128	1/192	1/256	1/362
Virus Cont	8790	Neg.	Neg.	Neg.	Neg.

All three vaccinated animals were protected.

Herd immunity test: 193 cattle vaccinated
88.05 % protection level detected by ELISA (>1/100).

***Type Asia1*:**

***Batch No*: 2002-12**
***Amount*: 2.200.000 cattle doses**
***Sterility test result*: sterile.**
***Safety test result*: safe.**
Challenge test:

No	Animal No	Serum titer			
		Day 14		Day 21	
		SNT	ELISA	SNT	ELISA
1	661	1/192	1/512	1/64	1/1024
2	662	1/128	1/712	1/128	1/1400
3	663	1/32	1/362	1/32	1/1024
Virus Cont.	602	Neg.	Neg.	Neg.	Neg.

All three vaccinated animals were protected.

Herd immunity test: 20 cattle vaccinated
94.7 % protection level detected by ELISA (>1/100).

FMD vaccine which was produced in Sap Institute was initially tested in Pirbright and because of the negative results obtained against all three serotypes, it was decided to repeat the test in Tubingen. Although the results obtained in Tubingen were better, when compared with the results obtained in Sap Institute, which were presented here in detail, there are still significant differences.

The results obtained in Tubingen showed that only Type O component of the vaccine had a value of 3 PD 50. The results of Type A and Type Asia 1 were below 3 PD 50 and type A was the lowest. When we compare these results with our results it was a great surprise for us, because over the years our main problem was lower protection values which were obtained against type O vaccines. When we look at the results of the vaccines which were produced in 2002, it was clear that types A and Asia 1 vaccines performed better when compared with type O vaccines. Therefore we were expecting better results for types A and Asia 1. In addition there were no type Asia 1 outbreaks reported since April 2002.

Tubingen is a very experienced institute and we believe that the results obtained in this institute are reliable. But following the results obtained in Sap Institute and the performance of the vaccine in the field on one hand and the results of Tubingen on the other hand, we are ready to work together closely with EUFMD for the control methods applied in Sap Institute and conduct another test together either in Turkey or in a European Laboratory for the vaccines to be produced for Autumn 2003 vaccination campaign.

Turkey has been trying to continue to have a close relationship with EUFMD and be transparent and open as much as possible. Sap Institute gave all control results and we

believe that there is nothing to worry provided that current virus strains continue to circulate in Turkey. But we will definitely need assistance if exotic virus strains are introduced into Turkey due to the war in Iraq.

Following the increase in the number of type A outbreaks in Turkey in 2002 Sap Institute has decided, to increase the amount of type A antigen in FMD vaccines, before the result of Tubingen was available. The amount of type A antigen has been increased 20-25% compared to those included in 2002. We are also trying to obtain virus purification and concentration system this year and therefore by the end 2003 we are hoping to store concentrated antigens and therefore overcome the problems of vaccine storage and also to produce oil-adjuvanted vaccine to prolong the duration of immunity.

EUFMD can provide assistance to Turkey for the improvement of vaccine quality control in Turkey:

- Training for two personnel (one from Sap Institute and one from Bornova Institute) on the quality control of FMD vaccines in a well known laboratory.
- Conduct another vaccine control either in Turkey or in a European Laboratory with the participation of Turkish experts as soon as possible.

3.3.4. Bornova Vaccine Control Institute

The construction of the laboratory in Bornova is almost completed and will be fully functioning in 2004. The laboratory in Bornova can now perform sterility tests. The experts of Bornova Institute and Sap Institute have currently been working to adopt the control methods for safety and potency. Initial studies will start for the vaccines to be produced for Autumn 2003 vaccination campaign. Bornova Institute will start routine controls of FMD vaccines in 2004.

4. Contingency plans for the control of FMD in South-Eastern Turkey

Turkey took the following measures to control all animal diseases, including FMD, which might be introduced to Turkey due to the increased movements because of the war in Iraq:

- A crises center has been established at the Ministry to follow all developments closely and take necessary measures for the control of animal diseases.
- The Provincial Directorates on the border areas were informed for the risks of disease spread.
- The Provincial Directorates on the border areas were supported by additional staff and vehicles for active surveillance.
- Turkey will try to stop the animal movements on the buffer zone in Iraq and if possible to control these animals for the presence of diseases. Samples will be taken for diagnosis.
- The animals will be slaughtered on the border area for human consumption. The infected animals will be destroyed.
- The vaccination programme has been started in March and will be completed as quickly as possible.

APPENDIX 7

Overview of the foot-and-mouth (FMD) disease control programme in Iraq with particular reference to the Northern Governorates

Ahmed El Idrissi, AGAH-FAO

Foot-and-mouth disease outbreak (1998/99)

A severe epidemic of foot and mouth disease occurred in Iraq in 1998, affecting 3 million ruminants (about 25 % of the population) and caused heavy losses in newly born animals. It is estimated to have killed about 500,000 animals. The epizootic was due to the subtype O1 Middle East strain which was unanimously considered as extremely severe, affecting not only cattle and buffalo but sheep and goats as well, which was not the case before in Iraq.

Vaccination campaign

To contain the disease a mass vaccination programme was initiated. All ruminants were vaccinated with two injections of vaccine and after ward regular vaccination was carried out once a year. Cattle were vaccinated wit the trivalent vaccine (O1, A22, Asia1) while sheep and goats were vaccinated with the monovalent O1 type vaccine. Since the start of the vaccination campaign up to 2002, a total of 51,000,000 doses (trivalent and monovalent) of FMD vaccine have been delivered to the 15 Central/Southern Governorates and about 4,820,000 cattle doses to the three Northern Governorates[1] through the different phases of the programme. The Last vaccination campaigns were carried out in spring/autumn 2002 both in the centre/south and the north. During 2001 and 2002, a vaccination coverage higher than 70% for all susceptible animals was achieved in the Governorates of the centre/south of Iraq. In the three Northern Governorates, about the same rate was achieved in 2002 but in 2001 the vaccination coverage was too low due to vaccine shortage and the focus on cattle vaccination as a priority.

Disease surveillance and characterisation of field isolates

Despite the near-absence of disease surveillance and reporting in the field due to the presently poor status of veterinary services, efforts are being made with the assistance of FAO to detect and investigate any FMD-like disease. According to reports from the field, the disease is endemic in the country but seems to be contained since 2000.

In the three Northern Governorates, 10 FMD-like incidents in cattle were reported in 2002. No mortalities were recorded and the disease did not seem to spread beyond the primary foci neither did it seem to affect resident cattle vaccinated with the trivalent

[1] Three Northern Governorates: Suleimanyah, Erbil and Dohuk

vaccine (OManisa, A22, Asia1). Type A virus was isolated from most the samples submitted to the FAO/OIE World Reference Laboratory (WRL). It is pertinent to mention that the virus isolates appear to belong to a genetic lineage within the Iran-96 topotype. In addition, the analysis by ELISA of four isolates showed poor match with the A22 and Iran-96 vaccine strains but a better reaction was found with Iran-87 and 4164 vaccine strains. These results showed that a variant of type A, distinct from those previously recognised in the region, is probably emerging in Iraq which require an urgent review of the antigen selection for the vaccines being provided to Iraq.

Major constraints of the FMD control programme in Iraq

- Limited and irregular supply of vaccine. Late arrival of vaccines by small quantities over long periods of several months due to the nature of the procurement process of under the Oil-For-Food programme made the campaign against FMD more ad hoc than part of any long term plan with known objectives.
- Difficulties to restrict animal movement throughout the country and with the neighbouring countries, in spite of the law and the UN sanctions.
- The absence of laboratory capabilities for seromonitoring and disease investigation.

Role of FAO as UN agency

Under the Security Council Resolution 986-"Oil for Food" programme, FAO is mandated to monitor the distribution of all agricultural inputs in the Centre and South to ensure the effectiveness of the operation. The Government of Iraq manage the programme and FAO has no involvement in planning the country animal health strategies, policies or sectoral requirements. ***In the Northern Governorates, however, FAO acts on behalf of the Government of Iraq in collaboration with the Local Authorities[1] in planning, implementing and monitoring all agricultural services including technical assistance for planning and management of animal disease control programmes.***

Immediately after the start of the FMD outbreak in November 1998, FAO responded promptly to the request by the Ministry of Agriculture (MOA) and provided 475,000 cattle doses through a Technical Cooperation Programme project. FAO prepared a special film (15 minutes programme) both in English and Arabic languages, which documented FMD outbreak in Iraq and as a part public awareness campaigns.

Under the Oil for Food Programme, FAO fielded several missions, supported by MOA technical staff and a number of local consultants. These missions helped in establishing the FMD control strategy and collection of specimens for virus identification at the World Reference Laboratory.

FAO has played a major role in the unblocking for approval of different contracts put "on hold" by the sanctions committee and release of the vaccine under the condition of end-use verification and monitoring.

[1] Local Authorities represent the local political parties in the three Northern Governorates

Medium term strategy for the control of FMD in the three Northern Governorates

In view of the diverse constraints to import the vaccine from outside markets under the prevailing circumstances in Iraq a rational policy was identified for addressing FMD. The plans made before the latest conflict concentrated on continuing the mass vaccination programme for 2003 for all cattle, sheep and goats with two vaccination campaigns, April/May and again in October/November. Thereafter, vaccination would be done only in established buffers zones along the endemic and high risk areas, in which a large proportion of animals are regularly vaccinated and then carry out ring vaccination in case of disease outbreaks. If correctly implemented, this will achieve a reasonable level of immunity among vaccinated animals, create a barrier against further FMD incursions and reduce the risk to the unvaccinated stock. The serological response to vaccination will be regularly monitored.

To support this strategy, plans were made under the three year programme for rehabilitation of agriculture in Northern Iraq[1] to:

- Strengthen disease surveillance and early reaction capability. Contingency plans for transboundary diseases (FMD) will be completed and agreed upon. They will be translated in Kurdish and Arabic and reflected into policy statement and administrative orders of Local Authorities and Government of Iraq.
- Ensure a long term and regular vaccine procurement of the number of FMD vaccine doses needed to maintain the buffer zones in addition to a vaccine reserve for use in emergencies.
- Provide training of veterinarians from the three Northern Governorates in disease recognition and investigation. A series of training workshops are being planned for 2003-2004 to increase the technical knowledge and awareness of national veterinary staff.
- Facilitate routine detection of FMD outbreaks and the frequent submission of suitable samples to the World Reference Laboratories. For FMD control it is essential that the circulating strains be constantly monitored and characterised in order that vaccines be matched to the FMD viruses they are required to protect against.
- Strengthen laboratory capability for FMD testing and serosurveillance programmes. Three veterinary laboratories have been equipped and provided with ELISA kits. In service training of laboratory staff through short term consultancies is planned for 2003.

The three year programme recommends also to review the progress made by the North and South/Centre FMD programmes and propose a harmonised and clear strategy to be in line with and the establishment of a practical regional control strategy.

[1] A programme for rehabilitation of the agriculture in the Northern Governorates was recently prepared by FAO at the request of UN Office of Humanitarian Coordination for Iraq (UNOHCI)

Emergency preparedness plan for FMD in Iraq

In view of the current Iraq crisis, it is anticipated that transboundary livestock migration will intensify towards the neighbouring countries. Such a situation would cause a threat to the livestock both within Iraq and in the region as a whole. Transboundary animal diseases particularly foot and mouth disease are of primary concern.

To counter the risk of transboundary animal diseases, particularly FMD, FAO has prepared an emergency preparedness plan to provide a framework that will facilitate early detection of an emergency disease, minimize the risk of establishment and spread, and provide for a rapid and effective response. The action plan fall into three priorities:

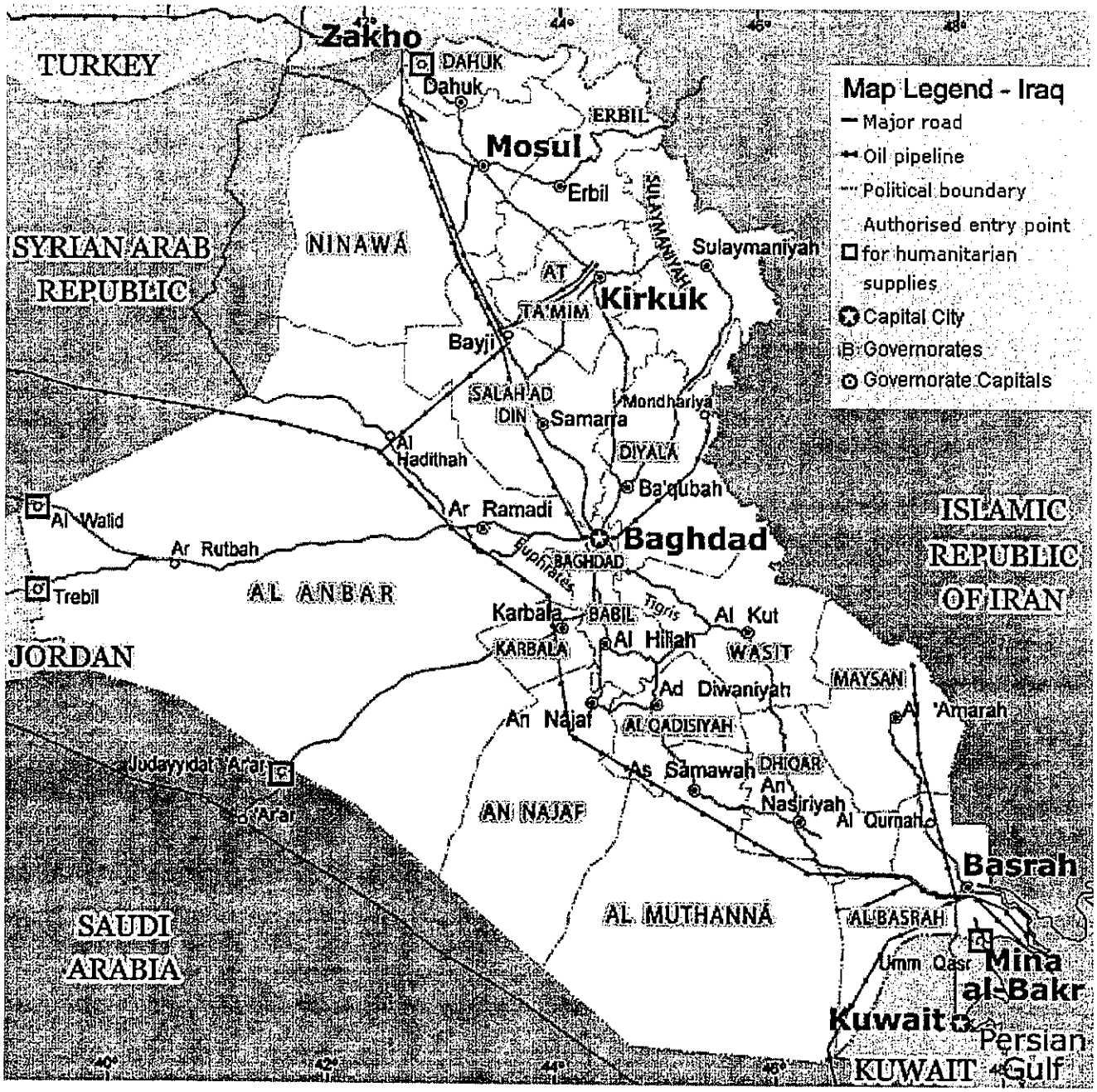
- ***Strengthening capabilities for early detection and warning of disease events along the Iraqi borders where there is a potential for livestock migration and refugee movements.***

- ***A ready source and guaranteed supply of quality assured vaccines and essential supplies for emergency vaccinations in the event of disease outbreaks.*** *A total of 2,000,000 doses of trivalent FMD vaccine are under order and will be soon delivered and stored in a FAO warehouse in Jordan. Similarly, an additional 7 million doses are requested through a U.N. interagency appeal for Iraq.*

- ***Strengthening quarantine capacities, disease surveillance and vaccination activities in the surrounding countries that may receive large number of animals from Iraq.***

In parallel to this emergency planning for disease events along the borders, FAO has prepared a comprehensive preparedness programme to handle the effect of a temporary disruption of the ongoing activities in Iraq under the Oil for Food programme. The objective of this plan is to sustain the ongoing imports and support services for the agricultural sector to maintain the current level of contribution to food production. ***Continuation of disease control and surveillance activities within Iraq, including FMD control, is a priority of this plan.***

MAP OF IRAQ



Source Website of the office of the Iraq programme –oil-for-food

Number of FMD vaccine doses procured for Centre/South Iraq under the SCR 986 programme

SCR 986 phases	Arrival dates	Number of doses	Strains
I		250,000	Trivalent (O1, A22, Asia1)
IV		250,000	O1, A22, Asia1
V[1]	17/06/99 – 29/09/99	1,000,000	O1, A22, Asia1
		21,000,000	Monovalent (OManisa/O1)
VI	16/12/99 – 17/02/00	7,000,000	Trivalent (O1, A22, Asia1)
VII	15/08/00	2,500,000	Trivalent (O1, A22, Asia1)
VIII	28/02/02	2,500,000	Trivalent (O1, A22, Asia1)
X	25/11/02	1,250,000	Trivalent (O1, A22, Asia1)
	30/12/02	1,500,000	Monovalent (O1)
Total		**51,000,000**	

Source: Dr. Khaled Ben Khaled end of assignment report (January 2003)

[1] Start of FMD vaccination campaign after FMD outbreak

Number of vaccine doses procured for the three Northern Governorates under the SCR 986 programme

SCR 986 phases	Arrival dates	Number of cattle doses	Strains
I-V	11/02/98	90,000	Trivalent (O1, A22, Asia1)
	24/05/98	350,000	Trivalent (O1, A22, Asia1)
	21/02/99	200,000	Trivalent (O1, A22, Asia1)
	05/09/99	950,000	Trivalent (O1, A22, Asia1)
DPVI	17/11/01	1,500,000	Trivalent (O1, A22, Asia1)
DPVII	13/08/01	230,000	Trivalent (O1, A22, Asia1)
DP VIII	05/11/02	1,500,000	Trivalent (O1, A22, Asia1)
Total		**4,820,000**	

Source: TCES (FAO)

Number of animals vaccinated against FMD in the 15 Governorates of Centre/South of Iraq (Campaign 2001)

Governorates	Cattle	Sheep and Goats
Anbar	72,500	1,691,200
Babylon	163,000	259,800
Baghdad	112,700	531,600
Basrah	32,500	241,100
Diyala	80,500	1,312,600
Kerbala	36,800	195,900
Missan	45,200	623,700
Muthanna	56,700	642,100
Najaf	48,800	134,800
Ninava	85,800	1,793,900
Qadessiya	65,300	328,900
Salah Al Deen	77,300	898,100
Tameem	117,700	1,168,900
Thi Qar	62,900	335,000
Wasit	119,700	1,304,200
Total	***1,177,400***	***11,461,800***

Source: Dr. Khaled Ben Khaled end of assignment report (January 2003)

Number of animals vaccinated against FMD in the three Northern Governorates (Campaigns 2001 and 2002)

	Estimated Population[1]	Vaccination in 2001		Vaccination in 2002	
		Number	%	Number	%
Cattle	511,644	403,635	79	551,973	100
Sheep and goats	5,868,823	494,592[2]	8.5	3,624,025	61
Total	**6,380,467**	**898,227**	**14**	**4,175,998**	**65**

Source: Dr. T. Obi end of assignment report (February 2002 & 2003)
[1]Population as estimated by FAO Coordination Office, Erbil
[2]Due to insufficient number doses of FMD vaccine, vaccination focused mainly on cattle.

FMD cases in the three Northern Governorates in 2002

Governorate	Period	Species	No. animals in herd	No. animals affected	Mortality	WRL[1] results
Erbil	Jan	Cattle	30	3	0	Type A
	Feb	Cattle	5	3	0	NVD[2]
	July	Cattle	202	34	0	Type A
	Sept	Cattle	3	3	0	Type A
	Oct	Cattle	69	34	0	-
Dohuk	Feb	Cattle	4	2	0	Type A
	May	Cattle	36	15	0	NVD
	July	Cattle	8	8	0	NVD
Suleimaniyah	Feb	Cattle	4	2	0	Type A
	May	Cattle	85	3	0	Type A
Total			**4 46**	**107**		

Source: Dr. T. Obi end of assignment report (February 2003)
[1]*FAO/OIE World Reference Laboratory for FMD at Pirbright*
[2]*No virus detected*

APPENDIX 8

Progress report on the EUFMD supported actions in FMD Control in the Republic of Azerbaijan

Leos Celeda, Chairman EUFMD

I. Introduction

The mission was undertaken as part of the FAO-EUFMD planned mission programme and represents the third FAO-EUFMD/OIE/ARRIAH mission to the countries of the Trans-Caucasus. This report refers to the first visit to the Republic of Azerbaijan, 16-28 March 2003. It was preceded by a visit to ARRIAH, Vladimir to discuss the proposed programme and surveillance support to be conducted under the Letter of Agreement with FAO.

II. Objectives of the mission

- Prioritise vaccination activities in the buffer zone on basis of risk.
- Organize and inspect the FMD vaccination activities in the buffer zone.
- Identify high, medium and low risk areas for FMD surveillance and control.
- Review contingency plans and preparedness to FMD outbreak control.
- Identify constraints and opportunities in the surveillance system for FMD.
- Plan sero-surveillance activities (with ARRIAH).

III. Background of the mission

The third mission (the first in 1999, the second one in 2000) is part of action taken by FAO Working Programme in Caucasus Region in the year 2003, based on the recommendations of the Tripartite Meeting, held on 7 February 2002 in Rome, which were discussed further during the 70th OIE General Session in Paris and followed by the meeting at the OIE Headquarters in Paris on 5 November 2002.

During the 68th Session of the Executive Committee of the EUFMD (7-8 November 2002) it was also recommended that consideration of longer-term FMD control programmes should depend on the progress of the short-term activities in the first half of 2003.

In order to support the short-term project, the European Commission adopted Decision of 5 December 2002 on a Community financial contribution to emergency measures to control foot-and-mouth disease in Armenia, Azerbaijan and Georgia and amending Decision 2001/300/EC.

The Trust Fund 911100/MTF/INT/003/EEC was used to cover following measures:

a) To purchase 1 000 000 doses of aluminium hydroxide adjuvanted trivalent vaccine against the foot-and–mouth disease virus of types O1, A-Iran 96 and ASIA-1 with potency of 6 PD_{50}.

b) The delivery of vaccine to the central veterinary authorities of Armenia, Azerbaijan and Georgia for emergency vaccination in the districts along their southern borders in accordance with the vaccination programme to be set up.

c) On-the-spot supervision of vaccination campaign and organisation of serological surveillance.

d) The supply of test kits for the detection of antibodies against NSP, the monitoring of the vaccination campaign and the substantiation of the disease situation.

IV. Azerbaijan-National FMD vaccination programme in 2002:

There were 2 276 537 cattle vaccinated (trivalent vaccine) and 576 879 sheep (bivalent A,O) around the whole country last year.
Booster campaign was organized in seven districts close to Georgia last autumn.

V. Programme implementation- 2003

Buffer Zone Vaccination and sero-surveillance plan, Spring 2003:

The trivalent vaccine used in the project consists of following strains: O_1 (isolated in Georgia, 2000), A (Armenia 98) and Asia-1 (Georgia, 2001). Nucleotides sequences diagrams are available in part four (annexes). The O and A antigen are produced routinely whereas Asia-1 strain was prepared for this vaccines batch. Aziridine was used for inactivation.

The protective doses were determined as follows: O-8 PD_{50} at least, A-10,5 PD_{50} at least and Asia 1 – 6 PD_{50} at least. Vaccines were filled into glass bottles (150 ml, 50 doses for cattle) and labelled as requested in the contract.

The vaccine stock for the project was delivered from Moscow on 27–28 February 2003 and shipped by two consignments (by air via Istanbul). The shipment was inspected on the spot by the Netherlands Superintending and Sampling Company on 12 March 2003 and an audit report was prepared. The **Gosvetsnab** organization is responsible for vaccines and veterinary medicines supply in the country. All vaccines to be used for prophylactic measures are kept here and distributed as needed; there are two cold rooms available, which were rebuilt recently at the former Veterinary Institute facilities. The inside temperature records are kept. Vaccine delivery around the country is by means of three cars equipped with cooled cabins. Three hundred thermo-boxes were obtained recently and are in use at district Veterinary Offices.

After mutual discussion and exchange of views with the staff from the Department of epizootology, the following plans were agreed for buffer zone creation, and selection of districts where samples will be collected – see following tables and maps in annexes.

Vaccine distribution started immediately after our visit. The stock was delivered according to the prepared plan agreed and signed by the Minister of Agriculture.

LIVESTOCK POPULATION AND VACCINE DISTRIBUTION (FAO/OIE/EC PROJECT)

District	Large ruminants	Small ruminants	Doses of vaccine received (Cattle)
Nakhichevan A.R.	79.108	461.655	24.000
Fizuli	14.478	50.906	14.400
Beilagan	38.807	213.575	38.400
Imishli	60.591	186.047	62.100
Bilasuvar	34.761	106.647	36.300
Djalilabad	96.209	118.683	100.400
Yardimli	21.799	60.297	22.700
TOTAL	**345.753**	**1.197.810**	**298.300**

LIVESTOCK POPULATION AND VACCINE DISTRIBUTION (NATIONAL PROJECT)

District	Large ruminants	Small ruminants	Doses of vaccine received (Cattle)
Astara	27/147	14.096	27.800
Lerik	34.648	124.675	35.500
T O T A L	**61.795**	**138.771**	**63.300**

SERO-SURVEILLANCE MONITORING PLAN (SPRING – SUMMER 2003)

District	Proposed sample size	Status
Astara	200	Vaccinated – nat. prog.
Djalilabad	200	Vaccinated – project
Imishli	200	Vaccinated – project
Nakhichevan A.R	100	Vac.project + nat. prog.
Zaqatala	200	Outbreak in 2001
Apsheron	200	Declared as free

Plan for assessing vaccination efficacy in the Republic of Azerbaijan, and diagnostic procedures in the case of suspected FMD

The following document was prepared and agreed by all participating parties.

1. Within the framework of joint FAO/OIE/EC programme altogether 300.000 doses of FMD vaccine (A, O, Asia-1) produced by ARRIAH (Russian Federation, Vladimir) have been delivered to the Republic of Azerbaijan.

Vaccines were distributed to seven districts of the Republic of Azerbaijan according to the provisions on 17.03.2003 (see above).

Vaccination campaign is foreseen to start in designated districts on 18. 03. 2003, large ruminants will be vaccinated in size based on census results of 01.01.2003.
In order to assess the vaccination efficacy and vaccine immunogenity in field conditions it is planned:

- to perform twice repeated blood collection in 7 districts of the country within an interval of 2 to 3 months;
- the first sampling is foreseen from 30 to 45 days after vaccination;
- Re-sampling within 90 – 100 days, laboratory tests will be performed at ARRIAH (Russian Federation, Vladimir);
- At the same time ARRIAH experts will organize a training course for the Republican Veterinary Laboratory (Azerbaijan, Baku) staff on ELISA methods for FMD typing and FMD antibodies detection in blood samples.

2. In the case of FMD suspicion in the Republic of Azerbaijan and pathological materials delivery to the ARRIAH in order to perform virus typing and molecular studies, the ARRIAH is obligated to cover related travel expenses to college from the Azerbaijan Veterinary Services, who will bring samples to Vladimir.

Agreed : Dr. SAFAROV, Dr.CELEDA, Dr.DUDNIKOV

Republican Veterinary Laboratory

The main laboratory building is being reconstructed. The water and energy supply was restored last year and some other repairs are in progress.
General discussion on main laboratory tasks was held. Tests are mainly oriented to the cattle and poultry diseases and to the control of imported food. One reconstructed laboratory room was presented, but equipment seemed not to be routinely used.
There is no trained staff for FMD diagnosis available and ELISA methods are generally not applied. Possibilities of staff training in this respect during the first sampling period was discussed and offered. Staff recruitment and its stabilization including appropriate training in FMD diagnostic procedures (not only) is of crucial importance.

Field visits

Visits to inspect and audit the vaccination in the buffer zone took place to Bilasuvar, (South – East of the country), to Djalilabad, to Lankaran District Veterinary Office, and to Imishli district. The latter area was selected in order to audit vaccination campaign in this area close to the Iranian border.

Conclusion from field visits

Based on the national prophylactic plan, there is a vaccination procedure against anthrax scheduled usually at the beginning of each year (end of January – February). Blood samples for brucellosis detection in cattle are collected at the same time. FMD

prophylaxis was planned 14 days thereafter. As animal movements to the pasture are starting at the end of March and cold chain regimen for vaccine storage might be still problem in final stage of its distribution, it is desirable to keep vaccine stocks on the spot at the end of February latest. Unusually cold climate this year is an advantage in this respect.

A majority of herds are moved depending on pasture availability during the whole season. The animal movement is out of veterinary control except for the situation during epizootic periods when restrictive measures could be imposed by legal basis.

CONCLUSIONS AND RECOMMENDATIONS

1. VACCINATION

The concept of FMD buffer zone creation and its maintenance along the southern borders (with Turkey and Iran) in Caucasian countries is desirable.
However, taking into account all related difficulties and huge live animals and animal products movement in the region it is advisable to create and keep all internal control measures including preventative vaccination of susceptible animals along the main trade flows areas in the Republic of Azerbaijan.

The total requirements for FMD vaccine for the Republic of Azerbaijan are estimated as 4.8 million doses for cattle (two vaccinations per year) and 6.6 millions for small ruminants (once a year).
Internal funds allocated by the Veterinary Services of the Republic of Azerbaijan were used to cover expenses related to the vaccination of cattle and sheep in several districts this year.

The role of small ruminants as potential FMD virus carriers is of high importance in this region.

Strict registration and approval procedures should be in place for FMD vaccines to be used in the country. The OIE recommended criteria for safety and efficacy should also be applied during tendering for vaccine procurement.

Vaccination campaigns must be planned and organised during early spring (end of March latest) and later autumn (November preferably) when climate conditions are favourable for vaccine stock storage, as cold chain is not fully available and vaccines must be kept in cellars only to be protected from temperature changes in many places of destination.

The appropriate equipment for mass vaccination is desirable.
Vaccination teams should be instructed and trained in advance.
On-the-spot audits and record keeping checks should be organized by the Main Veterinary Department.
The leaflets in each box of vaccines should include the Azery language.

2. SURVEILLANCE

The FMD surveillance and control priorities should be re-evaluated and clearly ranked by competent authorities.
The main attention is paid to the brucellosis and anthrax control in ruminants and it is recommended to prepare appropriate up dated prophylactic plans for FMD control.
Veterinary information are retrieved mainly from District and Regional Veterinary Centres at present. There is a good potential on data collection by use of passive or active surveillance methods, which could be used for further analyses on real situation thereafter.

3. CONTROL METHODS

In the case of a FMD outbreak, the ring vaccination and quarantine (3 weeks at least) seems to be only applicable and effective control method for near future.
Fodder shortage could be a serious obstacle during such episode in winter season as usually no fodder reserves are prepared in advance.
Vaccine stock for ring vaccination should be kept and stored in Baku facilities.
As this is a corresponding facility available in Baku, the keeping of remaining 100 000 vaccines doses for emergency vaccination could be considered here.

In the case of further buffer zone support in future, the number of vaccines needed should be based on census of animals reared in zones to be vaccinated in all three participating countries.

4. FMD DIAGNOSIS

Appropriate equipment for samples collection including transportation media should be prepared, distributed and kept in places designated by Veterinary Authorities.
Laboratory staff should be recruited and trained for FMD laboratory diagnostic at the Republican Veterinary Laboratory.

The supply of appropriate laboratory equipment and technology transfer for ELISA methods for FMD sero-typing and antibody detection should be supported.

In the case of an outbreak, the samples collected should be properly transported to the ARRIAH for typing as soon as possible.

5. VETERINARY INFRASTRUCTURE

Options for the organisation of veterinary services in future should be discussed and prepared. All aspects of consequences (budgetary, social etc.) should be taken into account by all corresponding competent authorities. Cost/benefit studies of future District Veterinary Centres activities should be encouraged.

Appropriate staff training on major diseases control programmes should be in place.

As a generation gap was evident in many places visited and shortage of young staff was also repeatedly mentioned, options for future development should be discussed as soon as possible.

6. ANIMAL IDENTIFICATION

No animal identification system is in place. Principles of its implementation in future should be considered.

7. VETERINARY EDUCATION

A closer co–operation of competent authorities should be established as soon as possible on criteria determination for veterinary education in the Republic of Azerbaijan. It seems that the present system does not fully correspond to internal needs of the country and a comparison of curriculum vitae to an accredited veterinary university in Europe is advisable and options for veterinary education in future should be discussed.

8. REGIONAL CO–OPERATION

Exchange of information on real FMD situation should be in improved in the region (directly or indirectly).

More attention should be paid to areas in the region where scarce information on FMD control are available (Abkhazia, South Osetia, Nagorno Karabakh).

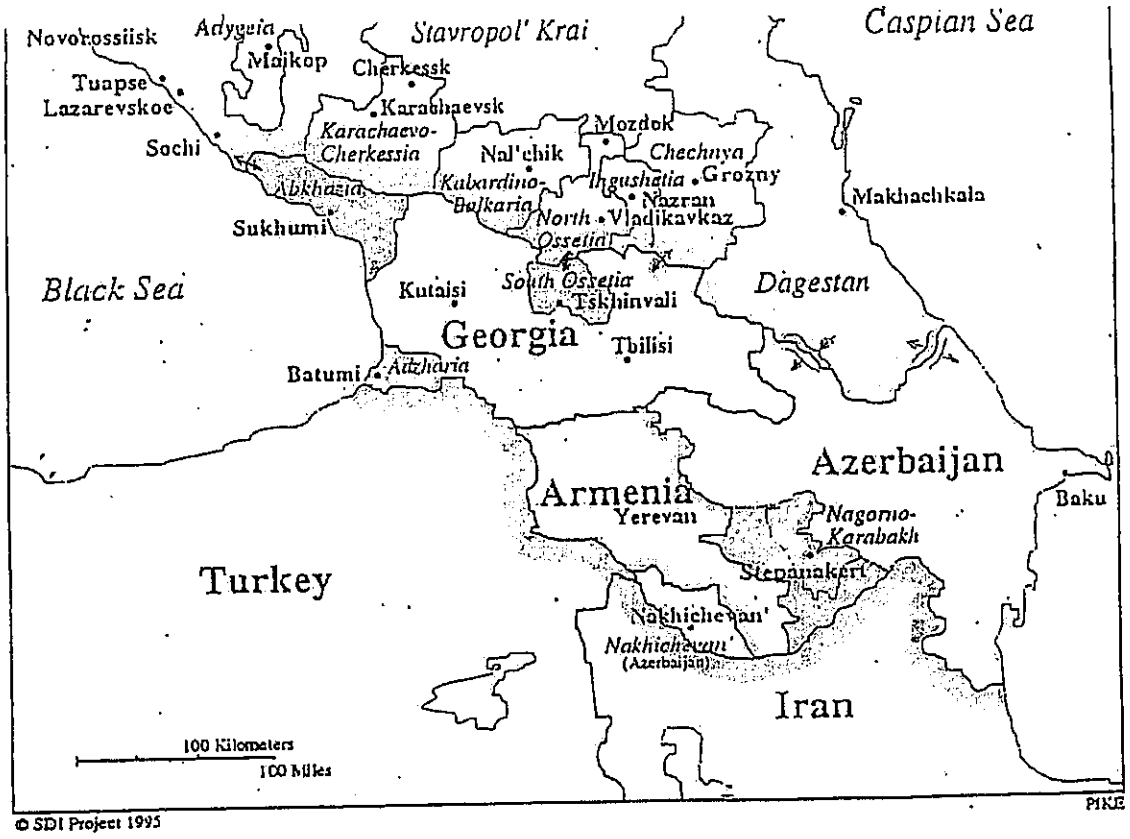
Part four - Annexes

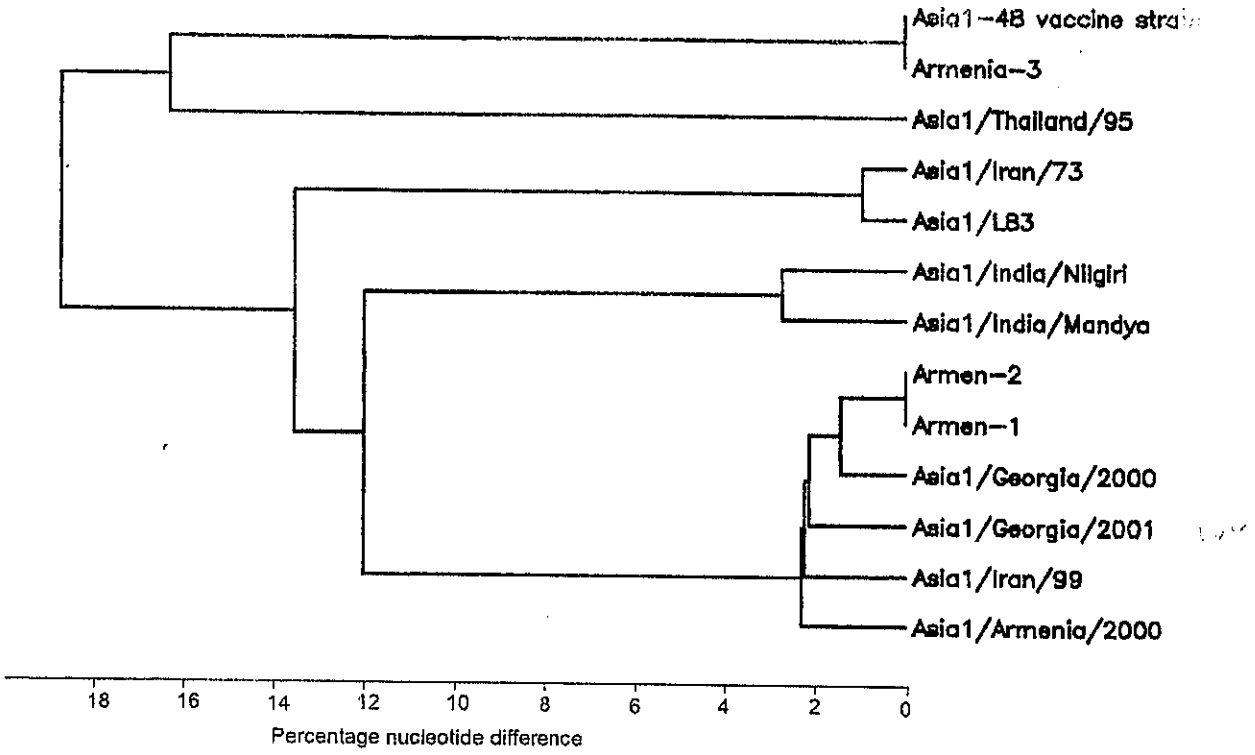
1.Map of the region

2. Dendrograms indicating genotype characteristics of strains used for vaccine production (A,.O,Asia 1)

3.FMD vaccination zones in the Republic of Azerbaijan (FAO/OIE/EC project) and FMD vaccination zones in the Republic of Azerbaijan (national programme)

4.Sero-surveillance plan in the year 2003

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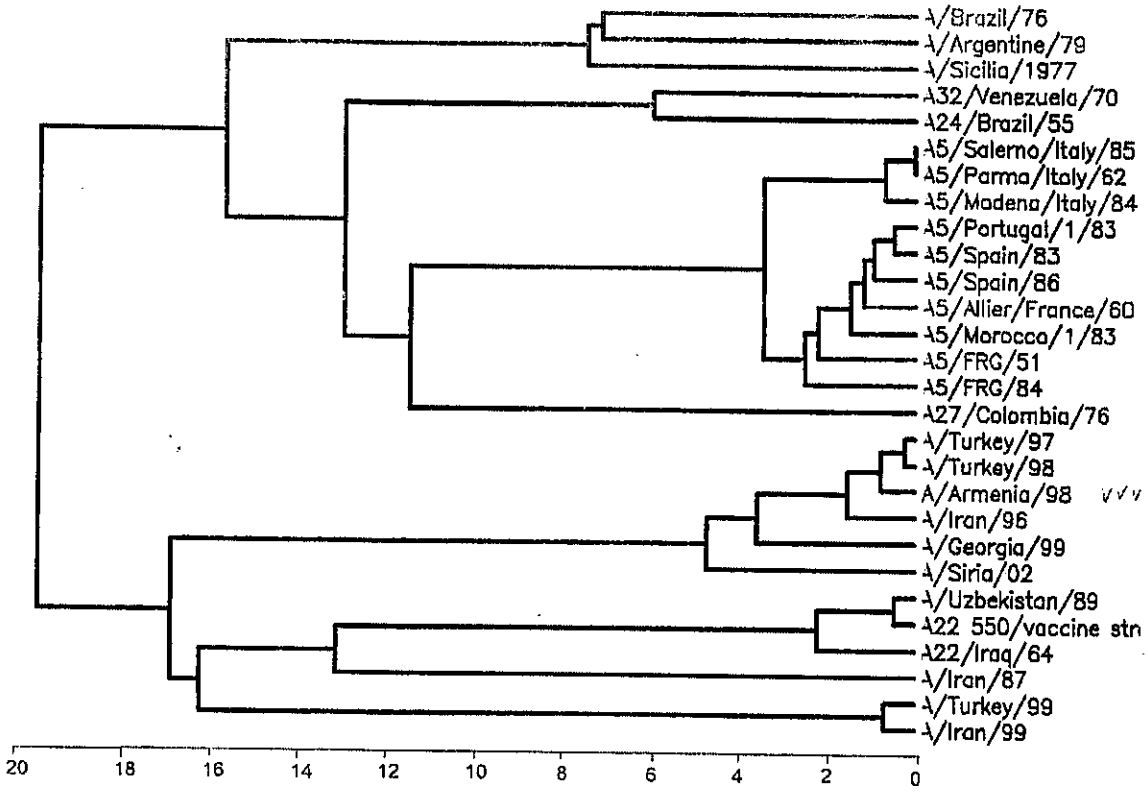
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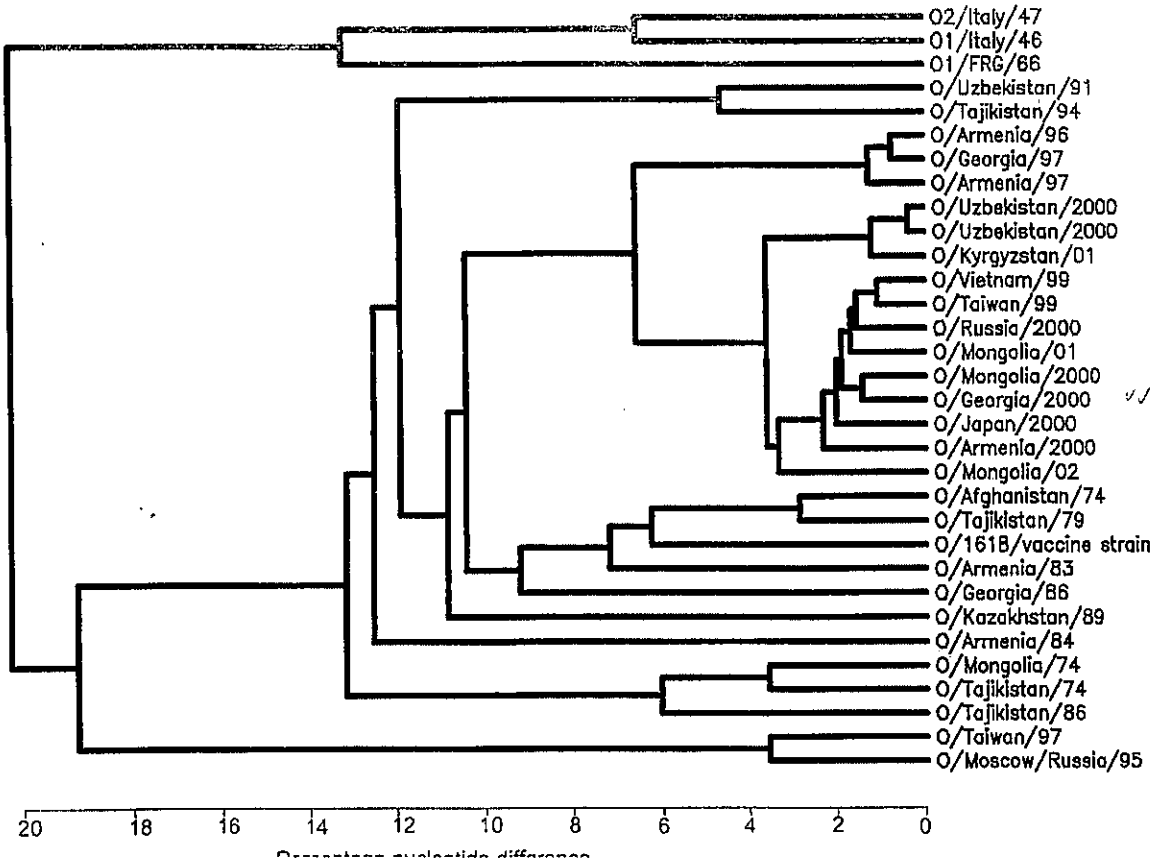
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РЕСПУБЛИКА АЗЕРБАЙДЖАН
REPUBLIC OF AZERBAIJAN

СЕРОЛОГИЧЕСКИЕ ИССЛЕДОВАНИЯ
SERO – SURVEILLANCE ZONES

Наименование районов	
1. Нахичеванская АР	30.Кельбеджарский
1.1. Бабекский	31.Кюрдамирский
1.2.Шарурский	32.Кедабекский
1.3. Садаракский	33.Геранбойский
1.4. Джульфинский	34.Геокчайский
1.5. Шахбузский	35.Лерикский
1.6. Ордубадский	36.Лачинский
1.7. г.Нахичевань	37.Ленкоранский
2. Шушинский	38.Масаллинский
3. Апшеронский	39.Нефтчалинский
4. Агдамский	40.Огузский
5. Агдашский	41.Саатлинский
6. Акстафинский	42.Сабирабадский
7. Ахсуинский	43.Сальянский
8. Агджабединский	44.Самухский
9. Астаринский	45.Сиязанский
10. Белоканский	46.Тертерский
11.Бейляганский	47.Таузский
12.Бардинский	48.Уджарский
13.Билясуварский	49.Физулинский
14.Казахский	50.Ходжавенский
15.Кахский	51.Ханларский
16.Гебелинский	52.Хачмасский
17.Кобустанский	53.Хызынский
18.Кубинский	54.Гаджикабульский
19.Кубатлинский	55.Джабраильский
20.Кусарский	56.Джалилабадский
21.Дашкесанский	57.Шемахинский
22.Дивичинский	58.Шекинский
23.Закатальский	59.Шемкирский
24.Зангеланский	60. г.Баку
25.Зардабский	61. г.Гянджа
26.Имишлинский	62. г.Мингечаур
27.Исмаиллинский	63. г.Али-Байрамлы
28.Ярдымлинский	64. г.Сумгаит

БУФЕРНАЯ ЗОНА
FMD BUFFER ZONE

ВАКЦЫНЫ / VACCINES

ПРОГРАММА ФАО / FAO PROJECT

1.3. Садаракский	33.Геранбойский
1.4. Джульфинский	34.Геокчайский
1.5. Шахбузский	35.Лерикский
1.6. Ордубадский	36.Лачинский
1.7. г.Нахичевань	37.Ленкоранский
2. Шушинский	38.Масаллинский
3. Апшеронский	39.Нефтчалинский
4. Агдамский	40.Огузский
5. Агдашский	41.Саатлинский
6. Акстафинский	42.Сабирабадский
7. Ахсуинский	43.Сальянский
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21.Дашкесанский	57.Шемахинский
22.Дивичинский	58.Шекинский
23.Закатальский	59.Шемкирский
24.Зангеланский	60. г.Баку
25.Зардабский	61. г.Гянджа
26.Имишлинский	62. г.Мингечаур
27.Исмаиллинский	63. г.Али-Байрамлы
28.Ярдымлинский	64. г.Сумгаит
29.Евлахский	65. Ходжалинский

APPENDIX 9

FOOT-AND-MOUTH SURVEILLANCE SUPPORT FOR CENTRAL ASIA

Keith Sumption

1. BACKGROUND AND JUSTIFICATION

The FMD situation in Iran is complex and dynamic. The country has one of the highest incidences of reported FMD in the world, often topping the table of reported cases per year over the past 10 years. The level of reporting reflects the structure and function of the Iranian Veterinary Organisation (IVO) and their commitment to recording and laboratory investigation of suspect cases, and for this reason, a good opportunity exists to go further in disease investigation and in the identification of control options. The dynamic situation is illustrated by the emergence of new variant type A viruses in 1996, 1999, 2000 and 2001, and Asia-1 in 1999. Type A Iran96 reached Turkey and the Caucasus, and type Asia-1 moved into Turkey, and to Greece in 2000.

More information from the field on the FMD situation to the east of Iran is very important to the identification of critical control points for future national and regional control.
An FAO Regional programme (funded by Italy) is planned to start mid-2003 for five countries to the east and north of Iran, and provide vital information on FMD occurrence, importance, probable modes of transmission and as a consequence of field investigations, result in greatly elevated numbers of samples for laboratory testing for FMD. However this Programme focuses on field investigations of disease, and has limited funds to support diagnostic laboratory capacity building for FMD, and does not involve Iran.

Consequently there is a **very good opportunity to complement the regional field programme** with a specific, FMD focussed support, for national FMD diagnostic laboratories, and to use the opportunity of the Regional programme for establishing a strong network for FMD surveillance and control in the Central Asia region.

In this context, the EUFMD with support from the EC, implemented an Expert Mission to Iran in October 2002, which involved experts from EUFMD, FAO, OIE, EC, WRL-Pirbright, France and Turkey, to identify options in future support for surveillance, and particularly the feasibility of developing a co-ordinating centre for surveillance for FMD.

2. THE STRATEGIC OPPORTUNITY AND OPTIONS FOR THE INVOLVEMENT OF THE EUFMD COMMISSION

The IVO has demonstrated over the years its commitment to the reporting of cases of FMD and of investment in disease investigation, notably by the high level of veterinary organisation and infrastructure, and the expansion and equipping of the Central Veterinary Laboratory in Karaj, Tehran. The team were impressed by the interest of the Iranian Veterinary Organisation (IVO) in regional FMD surveillance, and by the national and regional veterinary service infrastructure to support surveillance initiatives in Iran.

The FAO TCP from 2000-2002 provided evidence of willingness of Turkey and Iran to work together in regional FMD control initiatives.

The Mission concluded that there is an excellent opportunity to enhance surveillance and control of FMD in Iran and in the region through strategic support for surveillance co-operation in Iran and in neighbouring countries.

A potential programme was agreed in principle by the Mission members and the IVO.
This envisaged a two phase approach for establishing a Regional FMD Surveillance Centre, as outlined below.

This potential programme was presented to the 68th Session of the EUFMD Executive Committee who supported further development of proposals for the surveillance centre.

Since the Mission, experts from Turkey and Iran have worked very productively with FAO on the pilot study on mapping risk of FMDV spread in the "Eurasian ruminant street". The approaches used could be a very important component of future regional surveillance support.

The options for EUFMD include;

a. To do nothing; in this case the supply of FMDV samples from the region to the WRL would be irregular at best, and unlikely to provide an early warning of exotic FMDV emergence. Regional control of FMDV would be uncertain at best.
b. Strategic support for virus characterisation and national FMD reference laboratories; this could increase the supply of FMDV isolates for characterisation from Iran, but might not resolve our need for immediate and timely information on FMD epidemiology in high risk areas for spread to Turkey, Azerbaijan, or risk to Iran.
c. Support for both strategic field surveillance in high risk areas backed by diagnostic support; this was considered to be have a high potential for meeting national and international surveillance requirements that would inform FMD control.
d. As c, but with additional Regional Surveillance Co-ordination and diagnostic support; an important strategic opportunity exists to build on a platform of activities in Turkey and Iran, and the FAO regional programme in Central Asia, 2003-2007. The disease intelligence should greatly enhance planning of national control programmes and to make more effective use of vaccination in relation to risk.

In consideration of the above, and the lack of past donor support for FMD surveillance in Central Asia, the preferred option of the team involved in the Mission is Option d.
The first priority was seen as enhancing strategic surveillance in Iran/Turkey, but under a Regional Surveillance initiative which include a component of support for Regional co-ordination and facilitation for neighbouring Central Asian countries.

3. MODALITIES

The project would build on the good bilateral relations and activities of France and Iran, and arising from the FAO/EUFMD TCP for Turkey and Iran.

The strategic opportunity in Central Asia could provide an excellent situation in which the expertise in EUFMD member states in FMD could be maintained and enhanced through co-operative actions. (During just one day of the visit to the CVL, Tehran, three FMD positive samples were confirmed, from separate outbreaks).

Informal discussions with staff of DG-SANCO and DG-Development of the European Commission highlighted the major problem faced for gaining donor support for FMD – related proposals, that FMD control is perceived as a "rich country problem" and is rarely a priority for development agencies. Further, the absence of disease information from many countries makes it difficult to argue a link between improving FMD control and poverty reduction. On the other hand, funds available to DG-SANCO appear currently very limited for international actions in support of protection of the "homeland".

The regional surveillance initiative appears to be exactly in line with the first Resolution of the Temporary Committee on FMD of the European Parliament, which calls on the Commission (in Brussels) to "play an active part in developing a worldwide strategy to control FMD within the framework of the FAO, do more to assist the countries concerned in their efforts to control or eradicate FMD". This should include "improved co-operation with regard to information (early warning systems)"

However, that recommendation does not appear to have resulted in an increased budget allocation for FMD control in third countries.

Funding from DG-SANCO through the EUFMD/EC Trust Fund could be one mechanism, although the implementing agreement makes it clear that the purpose is mainly for funding emergency actions. The agreement does allow for support of surveillance actions and therefore this could be utilised.

The proposed regional project could, alternatively, be supported by an individual member state.

4. OUTLINE OF PROJECT

Strategy and activities

Phase 1 – a

Capacity building in I.R.Iran for a global surveillance network based on acute surveillance in high risk areas

- ✓ implementation of a national FMD surveillance centre based on provincial or other sub-national epidemiological units managing active and passive surveillance according to risk analysis and co-ordinating typing of isolated virus

Phase 1 – b

Helping neighbouring countries to strengthen the surveillance of FMD and to establish FMD surveillance national centres

- ✓ workshops and training on FMD surveillance system and technical visits to the pilot FMD surveillance scheme implemented in I.R.Iran

Phase 2

Extension of FMD surveillance system to neighbouring countries and establishment in Tehran of the regional centre for FMD surveillance in the region

Workshops for data collection harmonisation, sampling and virus diagnosis procedures and seminar on transboundary disease control systems

Outputs (results)

Specific outputs are expected at different levels:

- **Provincial (sub-national) level**

    - strengthened field surveillance activity in high risk areas, strengthened reporting systems and decision making systems
- **National level**
- information system on animal movement routes, trends and importance within the country in place
- capability for laboratory support for active surveillance in place including serological testing, sero monitoring
- **Regional level**
- network for FMD surveillance information exchange in place
- information system for mapping disease risk within and between the countries in place
- **European level**
- System to characterise emergent FMD risks to Turkey and Europe in place
- Routine and timely use of the reference laboratories for characterisation of viruses in place
- **International level**
- Baseline information and Regional Co-ordination structures established to support the FAO/OIE global plan for the control of FMD in Central Asia area

Indicative Budgets

Project budget for 4 years of approximately 1.6 million USD.
Breakdown: Phase 1a and 1b, 0.8 million USD over 4 years, and Phase 2, 0.8 million USD over 2 years.

Timetable:
The ideal would be implementation in 2003-2007 to run in parallel with the FAO Trust Fund for transboundary animal diseases in Central Asia.

APPENDIX 10

Clarifying disease spread in the Eurasian ruminant street

Jan Slingenbergh, AGAH-FAO

Key Points

1. A 4 month pilot study, involving a range of experts from Turkey, Iran, FAO, and European institutions was conducted to explore the potential for better understanding the relationship between animal production and trade environment with FMDV occurrence.
2. The study brought a great amount of information together, predictive geo-spatial models were developed to better explore FMDV risk.
3. The study highlighted the potential of remote sensing and GIS based information systems to integrate the multiple factors driving animal movement in the region into a useful form.
4. Such systems might be extremely useful to analyse, and predict, the risk of FMD movement across the near east and to identify critical control points.
5. Understanding, and utilising the knowledge of risk factors for animal movement might also be extremely important for the control of other dynamic transboundary animal diseases in the Middle East and Central Asia.
6. In order to collate the missing information it is first required that strong regional networks become established for Early Warning and Early Reaction, based on enhanced information and communication functions and tools, including application of Remote Sensing, GIS and spatial models, as applicable and desired.
7. As a potential way ahead, the member countries of the RADISCON project expressed a strong interest in developing a network for analysis of animal movement risks in the near –east.
8. It is important to recall that animal health management forms a residual of animal production at large. Without improving the prospects for income generation of remote pastoral societies it will be difficult to successfully step up transboundary animal disease control across the Middle East and Central Asia.

1. Introduction

The recent incursions of FMD and other epizootics into western Europe have demonstrated the need for adequate livestock data in order to support epidemiological analysis and define control strategies. In most EU countries the analysis is nowadays enhanced by the availability of geo-referenced animal identification and registration data and topographical digital charts, down to the level of individual farms. Most road networks are precisely known and with it the main routes of animal transport and the location of processing units. Thus, across the EU early warning systems and prediction of the likely pattern of disease spread are gradually turning reality.

However, these data and tools are generally not yet available in the countries adjacent to the EU. It would appear that the availability of epidemiological data and investment in transboundary animal disease control broadly corroborate with the amount of income generated from local livestock production (see Figure 1). Indications are that in vast tracts of the Middle East and Central Asia extensive pastoral and nomadic livestock populations are

kept in situations where production levels remain low and diseases persist in endemic form. Yet, in these drylands and other harsh environments livestock often forms the single most important means of securing a livelihood. There is considerable marginalization of rural societies because of a complex of inter-related factors such as demographic pressure, environmental negligence, flare-ups of ethnic conflicts, civil strife, fragile rural economies, or instable governments in the aftermath of communist rule.

In sharp contrast with the above, extensive production environments are the more localised, highly productive, modern livestock industries scattered across the Middle East, mostly in the proximity of the urban centres. For example, in Saudi Arabia profound changes over the past half century in pastoral livestock production and traditional nomadism have resulted in a decline of range forage as basic ruminant feed resource to less than 20 percent. New systems of mechanized nomadism have evolved, with vehicles and water tanks. The availability of cheap barley feed, machinery and labour nowadays dictate production volume. Ruminant meat is increasingly produced in modern feedlots. Industrial poultry production has become common place. Dairy farms operate at a productivity level which is of the highest in the world.

Clearly, the epidemiological analysis along transects running from disease freedom to full endemicity forms a major challenge. A first requirement is the provision of a more composite, geographic picture of the whole circuitry of available land and water resources - forage and feed - animal distribution - fattening - transport - marketing - processing - distribution - consumption and waste disposal, all presented in a form adequate to clarifying the epidemiology of FMD and other transboundary animal diseases. Some recent activities in this regard, initiated and coordinated by the FAO Animal Health Service, are herewith briefly described and suggestions given how to enhance this work.

2. Livestock geography and land use

Many countries do not have adequate systems of collecting, analysing and reporting livestock population or general agricultural statistics. Available information about livestock resources is often incomplete and of doubtful reliability. It is for this reason that alternative means of assessing land cover and livestock resources need to be considered for remote and inaccessible regions. A basic technique relies on first accumulating a set of known livestock densities. For the example of small ruminants in Asia shown in Figure 2, these represent national and sub-national census and other data from a wide range of sources. This 'observed' information is largely at the level of administrative units, some of which are very large (see Figure 2, bottom).

This resolution is increased by using stepwise multiple regression to establish statistical relationships between these observed data and a range of predictor variables including satellite imagery related to rainfall, temperature, vegetation cover, and other environmental parameters such as pertaining to elevation, length of growing period and human population. The resulting equations are subsequently applied to the original imagery to provide predicted maps of small ruminants at a resolution of 5 kilometres. It is important to recall that the poor quality of the training data remains a major impediment to livestock mapping (Reference 1).

However, for sub-continental scale analysis the maps are certainly useful. For example, from Figure 2 it is clear that small ruminant populations of South Asia and Europe

are connected through Pakistan, Afghanistan, Iran and Turkey. The country Iran finds itself in an intermediate position. The connecting populations are henceforth referred to as the 'Eurasian ruminant street'. The map display provides important first clues on possible routes of transboundary disease spread.

For the geographical display of the livestock income density shown in Figure 1, production parameters and animal product prices were assigned to animals within each of the major production systems in each agro-ecological zone in each sub-continental region.

3. Livestock dynamics in the Arabian peninsula

The FAO consultant report "Livestock dynamics in the Arabian Peninsula"(Ref. 2); dated January 2003, provides a review of national and regional livestock resources and trade: Available information on animal protein demand, livestock distribution, trade and movements has been collated with the aim to assist epidemiological analysis of transboundary animal diseases in the Arabian Peninsula (Bahrain, Kuwait, Qatar, Saudi Arabia, United Arab Emirates, Yemen) and neighbouring Iraq, Jordan and Syria (Figure 3).

The demand for sheep in the Arabian Peninsula varies over the course of a year, peaking during religious festivals. During the month Ramadan, the ninth month of the Muslim calendar, adherents fast during the day and eat in the evening or early morning. When Ramadan ends, it is celebrated over a three-day holiday period known as Eid ul Fitr (Feast of Fast Breaking). A second festive occasion, Eid ul Adha (Feast of Sacrifice), is celebrated on the tenth day of the month of Zul-Hijja, a few months after Ramadan, when many Muslin families sacrifice a sheep.

Livestock trade in the region is driven by demand from the Gulf States (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates), which, during the years 2000-2001, collectively imported 71 percent of the recorded 11.3 million live sheep, goats and cattle imports. In 2002, Saudi Arabia was by far the largest of live animals with 4.2 million sheep and .1.1 million goats.

Significant changes in the mode of livestock production have taken place in recent decades, including increased availability and utilization of crop residue, widespread supplementary animal feeds, mechanized pastoralism and introduction of modern dairy and poultry production units. Seasonal and tribal movement patterns of traditional nomadism and transhumance have been transformed, especially in countries such as Jordan, Saudi Arabia, Syria and Iraq. With transport to supply animal feeds and tank trailers to provide water, pastoral livestock production is not so dependent on rainfall and range conditions as it used to be. Traditional seasonal patterns of movement to and from specific areas are no longer followed and have been replaced by more erratic and opportunistic movements to areas with seasonable crops residues and natural pasture, and where water and supplementary can be supplied.

4. Satellite imagery and seasonal animal movement

Satellite imagery provides geospatial information on environmental variables such as related to climate, ecozones, vegetational pattern and general land cover. Satellite data are integrated with Geographical Information Systems (GIS) data to produce novel, digital maps to demarcate grazing areas, farming systems and ruminant livestock distributions. Given that

satellite imagery is available in the form of time series there is the option to plot the dynamics of the farming landscape.

Figure 4 is reproduced from a recent study entitled "Seasonal mapping of climatic and vegetation indices in the Eurasian ruminant street"(Ref. 3). The image is based on data downloaded from the Advanced Very High Resolution Radiometer (AVHRR) on board the US National Oceanic and Atmospheric Administration (NOAA) satellite. Various mathematical combinations of the AVHRR channel 1 and 2 data have been found to be sensitive indicators of the presence and condition of *green* vegetation; the normalized difference vegetation index (NDVI = (Ch2-Ch1)/(Ch2+Ch1), the ratio vegetation index (RVI = Ch2/Ch1) and the simple vegetation index (SVI = Ch2 – Ch1). Areas with 'active' green will generally yield high values for either index because of their relatively high near-infrared reflectance and low visible reflectance. In contrast, clouds, water and snow have larger visible reflectance than the near-infrared reflectance. Rock and bare soil have similar reflectance in the two bands and result in vegetation indices near zero.

A product resulting from the integration of satellite imagery and GIS data is the display of seasonal availability of grazing (Figure 5). This information greatly facilitates the definition of livestock husbandry patterns and, therefore, the understanding of disease spread.

5. Geospatial models for disease spread

A training module on spatial epidemiology (Ref. 4) simulates the spread of ruminant disease under the circumstances prevailing in the Middle East and Central Asia. The model is user friendly, adaptable and generic. Livestock husbandry and other environmental layers generated in a GIS environment are directly introduced in the model to improve the prediction of disease spread. The model is generic in that the spread of pathogens is simulated on the basis of the characteristics of the livestock production environment. Of course, the model is specific when it comes to the disease itself, the R nought; transmission rate, host recovery, immunity level, etc.

A main purpose is to accommodate in the model both short range, stochastic spread, and the medium to long range jumps. In extensive ruminant livestock systems in Central Asia and the Middle East disease pathogens travel in a rather continuous fashion, from flock to flock and from village to village, whereas jumps occur in situations where animals are moved on foot or by truck over long distances. Passive movement of animals is because of the erratic availability of grazing, pasture seasonality, or because of 'food chain' related transports such as for fattening, marketing, slaughter or direct sales to urban centres. The combination of small- and long-range dispersal is known as "stratified dispersal", with dispersal also characterised by the establishment of new outbreaks ahead of the moving frontline.

For example, the module explores step-by-step how to simulate disease spread from a fictional disease outbreak taking place in southern Iraq. It is required that the user is familiar with ArcView GIS 3.x (project, view, themes, themes modification, tables modification, etc.) and with the Spatial Analyst (displaying raster layers, creating or importing raster data, reclassification, etc.). A first run (Figure 6) assumes that the environment is homogeneous with gradual invasion into all directions. As a next step, allowance is made for stratified dispersal, with new foci establishment outside the main front which then start to grow and, through coalescence, contribute to disease frontline movement.

The simulation becomes more realistic through incorporation of masks such as for the presence of unsuitable areas where no animals can be kept. Any other GIS layers with spatial information about the probability of local disease flare ups taking place can be accommodated. In most scenarios the most important layer forms animal density, acting as a major risk multiplier. Conversely, the animals behind the travelling frontline die or turn immune and make that the disease fades out. The satellite derived local grazing availability (Figure 5) can be translated into seasonality multipliers, so that local livestock densities are continually adjusted to the available grazing. This opens the door towards real time monitoring of animal production and health features.

6. Conclusions

Critical gaps in epidemiological information can be overcome and such is necessary to contain the dynamic transboundary animal diseases in the Middle East and Central Asia. In order to collate the missing information it is first required that strong regional networks are established for improved Early Warning and Early Reaction based on enhanced information and communication functions and tools, including application of Remote Sensing, GIS and spatial models, as applicable and desired.

It is important to recall that animal health management forms a residual of animal production at large. Without improving the prospects for income generation by remote pastoral societies it will be difficult to significantly step up transboundary animal disease control in the Middle East and Central Asia.

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and also

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http://ergodd.zoo.ox.ac.uk/download/index.htm

APPENDIX 11

CONTINGENCY PLANNING FOR FOOT-AND-MOUTH DISEASE: LABORATORY ASPECTS

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1. Introduction:

Many authorities have published contingency plans for the control of foot-and-mouth disease (FMD) in the field, but much less material is available relating to such planning for the laboratory. This paper is concerned with the resources, responsibilities and actions that may be required at the laboratory to ensure preparedness for the threat, or the actual occurrence, of an outbreak or epidemic of FMD.

The paper takes cognisance of the experience of the FAO/OIE World Reference Laboratory for FMD (and other list A diseases) at Pirbright during the severe epidemic of 2001 in the United Kingdom. The epidemic occurred in a country long free of the disease, it was unexpected in its nature, particularly in the widespread infection of sheep and the extent of spread prior to its detection. It was also unprecedented in the number of samples submitted to the laboratory. Over 15,000 diagnostic samples were examined during the course of the epidemic and over 3,000,000 sera were tested, either in epidemiological investigations or in regaining the OIE status of "a country free from FMD without vaccination".

A series of WRL checklists, included as Appendices I, II, III and IV, were designed for FMD, but may equally well find application, with appropriate modification, for other laboratories and other OIE list A diseases.

It is emphasised that contingency plans should be regularly practised and that the plans should be kept under continuous review in the light of both developing technology and the emerging epidemiological situation.

2. Possible Responsibilities of the FMD Laboratory in an Outbreak of FMD

When an outbreak of FMD occurs a National or regional laboratory may be called upon to service all or some of the following activities: -

- Membership of the national specialist epidemiological team for FMD.
- Field investigation, especially of early foci and particularly in relation to the ageing of the lesions as essential information for the backward and forward tracing exercise.
- Diagnostic virology for field samples using ELISA, virus isolation and PCR.

- Serological surveillance on field samples using various types of ELISA and virus neutralisation tests for epidemiological purposes during the course of the disease and to provide evidence of freedom from infection when the disease has been controlled.
- Transfer of technology and reagents to other laboratories to increase the surveillance resource.
- Molecular epidemiology using nucleotide sequencing.
- Experimental investigation of the characteristics of the field strain in cattle, sheep and pigs.
- Predictive modelling of the airborne spread of disease, particularly in relation to pigs as a source of infection.
- Vaccine strain selection, emergency vaccine formulation and testing.
- Recording and rapid reporting of results to the State Veterinary Service and to international organisations.
- Proper sample retention and safe disposal.
- Provision of information and advice on all aspects of the disease and its control to the State Veterinary Service and other government organisations, the media and the general public.
- Maintenance of the activities of departments at the laboratory not directly concerned with FMD.

3. The Contingency Plan

3.1. Alert Levels

The plan should be devised to reflect different epidemiological situations and the levels of resource necessary to service them. An example of the criteria as currently used by the WRL to define different levels of activity is shown in the following table. Planning is based on four alert levels: A, B, C and D.

ALERT LEVEL	CRITERIA
A	**No significant increase has been identified in the risk of introduction of foot-and-mouth disease into the United Kingdom.**
B	**An outbreak or epidemic of foot-and-mouth disease is confirmed in a member country of the European Union, other than in the United Kingdom**
C	**An outbreak of foot-and-mouth disease is confirmed in the United Kingdom.**
D	**Foot-and-mouth disease attains, or is considered likely to attain, epidemic proportions in the United Kingdom.**

Level A represents the routine activity of the laboratory in the absence of the imminent threat or actual occurrence of the disease. It is anticipated that the WRL would be able to cater for the various alert levels up to and including Alert Level C within the resources already available at the laboratory. Level D would require significant additional resource. This paper focuses particularly on the extreme case represented at Level D.

A key point is that most of the preparation and planning is done at alert level A.

3.2. Resources

In summary the resources required to service an outbreak at the different alert levels include the following: -

Human Resources: Additional personnel may be required in the categories of scientific, technical, supervisory, data entry and animal attendant. The managerial and personnel functions may also need extra resource. Similarly support staff may need to be reinforced for the areas of secretarial work, laundry, engineering, library, catering, stores, transport and information/public relations. Existing staff can be augmented by transferring staff from other departments in the same laboratory, and/or by bringing in staff from other laboratories in the same country or from other countries. Wherever possible the extra staff will be experienced in the duties required of them. In extreme circumstances it may be necessary to introduce shift work and staff rotas to provide sufficient numbers to cover attendance over 24 hours for 7 days a week. In this instance, adequate rest and holiday periods must be built into the programme.

3.3 Facilities

Additional laboratory space may be required for the receipt, recording, preparation, testing, storage and disposal of samples. This can be provided either by installing reserve accommodation for use in an emergency, by taking over other existing laboratories, or by transferring tests to other establishments, all with due attention to disease security. Additional temporary laboratory or office space may also be provided by the hire of portacabins and portable cold storage units.

3.4 Equipment and Materials

The planning will include the calculation of the number of staff and the amounts of test equipment and reagents (ELISA kits, antigens and antisera etc) considered necessary at each alert level. Particular attention should be paid to rate-limiting items of equipment, such as laminar flow units and centrifuges. Materials can be stockpiled at the laboratory, with due attention to expiry dates as applicable, or can be provided from external sources under pre-existing supply contracts. Provision should also be made for the supply of increased amounts of tissue cultures for virus isolation.

3.5. Training

Planning includes the regular training and re-training of existing staff in the FMD department and from WRL laboratories which are not normally directly concerned with the routine testing of FMD samples. It may also be extended to staff from other

organisations. Individual training records are also maintained. The training includes the rehearsal of the plans at least once a year or when there is an imminent threat of the incursion of disease.

3.6. Management

It may be necessary to provide additional management structure, such as Internal and External Management Committees dedicated to work on the emergency. The internal committee concentrates on the day-to-day organisation of the laboratory work while the external committee is concerned with management issues and liaison with the external organisations involved in the control of the disease, including the State Veterinary Service and any outside laboratories which may be carrying out surveillance testing. Senior laboratory personnel are common to both committees.

3.7. Data Handling and Communications

The recording of incoming sample details, the results of tests and re-tests and the prompt transmission of such information to the State Veterinary Service are essential for efficient control in the field. These are most effectively achieved via the use of electronic information technology. Thus computers, data bases, secure lines of communication and trained personnel should be available in advance and arrangements made for their rapid reinforcement in an emergency.

Regular status reports and briefings are arranged for laboratory staff during the implementation of the plans.

3.8. Documentation

The plans should be defined in a formal, written document, setting out for each alert level the actions required, the persons responsible for implementation and the resources entailed. Details of Job Descriptions, Standard Operating Procedures and Desk Instructions also form part of the plan.

3.9. Revision of the Plans

The plans should be regularly revised in the light of changes in legislation, in resource availability and in new technology and also as appropriate to the emerging epidemiological situation. A key point is the auditing of the plans. This must be done on a formal basis, ideally by professional and possibly external auditors in order to identify weaknesses and ensure that remedial actions are taken.

Acknowledgement: I thank Dr David Paton of the WRL, Pirbright, for his review of the manuscript.

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Appendix I: Check List for Alert Level A

STATUS : *No additional threat of the introduction of FMD into the UK is recognised*

ACTIONS: Annual review of Response Plans and amendment as necessary

REVIEW PREPAREDNESS IN RESPECT OF :-

Legal Aspects
Financial Aspects
Facilities
Equipment
Reagents
Scientific and Technical Staff
New Technology
The International FMD Vaccine Bank
Information Technology / Computing / Data Bases
Quality Assurance / Good Laboratory Practice / ISO 9000/2001 Compliance
Disease Security/General Security
Media Liaison/Communications

REVIEW PREPAREDNESS IN RESPECT OF SUPPORT STAFF AND SERVICES:-

Secretarial / Switchboard Duties
Library
Laundry
Catering
Transport
Engineering
Stores
Gatehouse
Animal Supplies
Farm Management
Cleaning Staff
Living Accommodation

FOLLOW UP: Liaise with external organisations as necessary

Appendix II : Check List for Alert Level B

STATUS : *An outbreak or epidemic of foot-and-mouth disease is confirmed in a member country of the European Union, other than in the United Kingdom.*

ACTIONS: as listed for Alert Level A (Appendix I) plus the following:-

The Internal Management Co-ordination Committee is activated

The Response Plan is reviewed

Preliminary enquiries are made as to the availability of reserve staff

The requirement for the postponement of leave or other absence for key staff is considered

FOLLOW UP: Liaise with external organisations as necessary

Appendix III : Check List for Alert Level C

STATUS: *An outbreak of foot-and-mouth disease is confirmed in the United Kingdom*

ACTIONS: as listed for Alert Levels A and B (Appendices I and II) plus the following:-

The Internal Management Co-ordination Committee meets regularly

The decision is taken whether or not to appoint an Emergency Co-ordination Manager

Decisions are taken on the possible formation of internal and external sub committees

The External Management Co-ordination Committee is activated

The Response Plan is kept under review

Reserve staff are placed on standby or activated as necessary

The decision is taken whether or not to postpone leave or other absence for all staff

Emergency Positions are activated (Sample Manager, Liaison Officer etc)

Rosters are activated to provide 24 hour, 7 days a week cover

Decisions are taken on the need to postpone/curtail statutory duties and research programmes.

Supply contracts are activated

Service Contracts are activated

Policy is reviewed for field sample retention and storage

FOLLOW UP: Liaise with external organisations as necessary

Appendix IV : Check List for Alert Level D

STATUS: *Foot-and-mouth disease attains, or is considered likely to attain, epidemic proportions in the United Kingdom.*

ACTIONS: as listed for Alert Levels A, B and C (Appendices I , II and III) plus the following:-

The Emergency Co-ordination Manager position is activated.

Additional arrangements are activated for the supply of tissue cultures.

Reinforcements are arranged from the IAH, wherever possible using pre-established lists of reserve personnel.

Reinforcements are arranged from DEFRA, wherever possible using pre-established lists of reserve personnel.

Reinforcements are arranged from VLA, wherever possible using pre-established lists of reserve personnel.

Reinforcements are arranged of retired staff, wherever possible using pre-established lists of reserve personnel.

Additional Human Resources are brought into play.

External serology testing laboratories are supplied with reagents.

Arrangements are made for external quality control on the laboratories undertaking serological testing.

FOLLOW UP:

Provisions are made for the safe storage and efficient retrieval and analysis of records from the epidemic. Similarly for samples received during the epidemic.

The effectiveness of the Response Plan is reviewed and modified as necessary.

APPENDIX 12

Assessment of FMD testing requirements and diagnostic laboratory capacities of EUFMD member countries

Dónal Sammin, EUFMD Secretariat

Introduction

Following an update from the world reference laboratory (WRL) at the 67th session of the executive committee of EUFMD (Budapest, April 2002), the discussion focussed on what arrangements should be made for a situation where FMD occurs in the country where the WRL is located. In such circumstances, as occurred in the UK in 2001, the WRL might not be able to fulfil its international obligations. One possible solution discussed would involve networking and support between FMD diagnostic laboratories in different countries. At the subsequent research group session (Izmir, 2002), it was recommended that the Secretariat establish a system for recording and reporting the level of submissions to FMD laboratories on a yearly basis. The Secretary indicated at the 68th session of the Executive Committee (Vilnius, November 2002) that a survey of FMD diagnostic capacity would be conducted by the secretariat and that laboratory capacity would have to be considered both in terms of submissions from suspect cases of FMD and sero-surveillance following an FMD outbreak. FMD diagnostic capacity in Europe was referred for discussion at the 35th General Session.

Materials and methods

A questionnaire (in English and in French) was circulated by e-mail and surface mail to the Chief Veterinary Officers (CVOs) of EUFMD member countries on 24 February 2003. The questionnaire consisted of two parts, the first attempting to gauge requirements for FMD laboratory diagnosis and the second addressing FMD laboratory capacity in member countries. Assurances were given that replies to the questionnaire would be treated confidentially.

Results

25 of 33 (76%) member countries had replied to the questionnaire by 26 March 2003. An alphabetic code was assigned to each member country in order of their reply and data was reported in this coded form.

1. Requirements for FMD laboratory diagnosis in member countries

Number of herd/flock investigations

Eight countries had investigated suspect herds/flocks in each of the three years, six in each of two years and five in only one year (two conducting investigations only in 2000 and three only in 2001). Six countries had not investigated any suspect herds/flocks during the three year period.

258 herds/flocks were investigated in 2000, 197 (76%) were cattle only, 33 (13%) were small ruminants, 10 (4%) were pigs and 18 (7%) were mixed enterprises.

2567 herds/flocks were investigated in 2001, 1065 (41.5%) were cattle only, 1212 (47.2%) were small ruminants, 92 (3.6%) were pigs, 146 (5.7%) were other species and 52 (2%) were mixed enterprises.
153 herds/flocks were investigated in 2002, 110 (72%) were cattle only, 19 (12%) were small ruminants, 12 (8%) were pigs and 12 (8%) were mixed enterprises.

The number of investigations conducted in each country during 2000, 2001 and 2002 is given by species (cattle, small ruminants and pigs) per 1,000,000 head of livestock (using FAOSTAT livestock data for the relevant species from 2001 http://apps.fao.org/page/collections?subset=agriculture) in **Table 1.**

Number of animals tested for FMD virus
Only seven countries tested suspect animals for FMD virus in each of the three years whereas seven countries did not have any animals tested for FMD virus during the three year period.
1551 animals were tested for FMD virus during 2000, 1310 (84%) were cattle, 89 (6%) were small ruminants and 152 (10%) were other species.
18354 animals were tested for FMD virus during 2001, 4923 (27%) were cattle, 11825 (64%) were small ruminants and 1606 (9%) were other species.
743 animals were tested for FMD virus during 2002, 413 (56%) were cattle, 281 (38%) were small ruminants and 49 (7%) were other species.

The number of animals tested for FMD virus in each country during 2000, 2001 and 2002 is given by species (cattle, small ruminants and other species) in **Table 2.**

Number of animals tested for FMD antibody
Sixteen countries tested suspect animals for FMD antibody in each of the three years whereas only two countries did not have any animals tested for FMD antibody during the three year period.
65839 animals were tested for FMD antibody during 2000, 35316 (54%) were cattle, 23165 (35%) were small ruminants, 7043 (10.7%) were pigs and 315 (0.5%) were other species.
3667510 animals were tested for FMD antibody during 2001, 163104 (4.4%) were cattle, 3342200 (91.1%) were small ruminants, 64890 (1.8%) were pigs and 97316 (2.6%) were other species.
212787 animals were tested for FMD antibody during 2002, 50352 (24%) were cattle, 137648 (65%) were small ruminants, 24596 (11.6%) were pigs and 191 (0.1%) were other species.

The number of animals tested for FMD antibody in each country during 2000, 2001 and 2002 is given by species (cattle, small ruminants and pigs) per 1,000 head of livestock (using FAOSTAT livestock data for the relevant species from 2001 http://apps.fao.org/default.htm) in **Table 3.**

2. FMD laboratory facilities & availability of different diagnostic tests in member countries

18/25 member countries have diagnostic facilities for FMD. In 16 countries a single laboratory is responsible for FMD diagnosis whereas two member countries have in addition to a centralised testing facility, one or more regional centres capable of sero-surveillance if required.

Of the seven countries without facilities, three rely on the world reference laboratory (Pirbright, UK), three on the Danish facility (Lindholm) and one on the Belgian facility. Two member countries with limited facilities (serological testing only) also avail of the world reference laboratory for some of their diagnostic requirements and one member avails of the Italian facility (Brescia).

FMD virus detection
Sixteen member countries have one or more method available for detection of FMD virus. One laboratory has only a single test available (detection of viral antigen by ELISA) but the remaining 15 laboratories can perform two or more tests. Fourteen labs can perform virus isolation in tissue culture, 16 can perform ELISA for viral antigen, three can perform complement fixation test (CFT) for viral antigen, 12 can perform reverse transcriptase polymerase chain reaction (RT-PCR) and three laboratories can perform animal inoculation studies for diagnostic purposes.

FMD antibody detection
Eighteen member countries have one or more method available for detection of FMD virus. Four laboratories have only a single test available (the liquid phase blocking ELISA or LPBE) but the remaining 14 laboratories can perform two or more tests. Fourteen labs can perform virus neutralisation tests and 14 can also perform the LPBE whereas eight laboratories are capable of performing alternative ELISAs (solid phase, competitive or blocking ELISAs) for antibody to structural proteins and eight laboratories have an ELISA for antibody to non-structural proteins (NSP), which can be used to differentiate vaccinates from FMDV-infected animals.

3. Diagnostic capacity of FMD laboratories in member countries

Laboratory capacity for FMD virus detection
Diagnostic capacities of FMD laboratories in member countries for tests to detect FMD virus (and testing capacity relative to the cattle population of each country) are given in **Table 4** and the total number of samples tested by each of the methods across the member countries in three successive years is given in **Table 5.**

Laboratory capacity for FMD antibody detection
Sero-diagnostic capacities of FMD laboratories in member countries are given in **Table 6.** The total sero-diagnostic capacity of EUFMD member countries (if all available methods are taken into account) is 1,036,740 sera tested per month. Considering only those methods formerly prescribed by the Office International des Epizooties for the purposes of international trade, virus neutralisation and LPBE, the capacity is 398,740 sera per month. The solid phase competitive ELISA (SPCE) developed at the WRL is also available in three laboratories (two of which have a combined testing capacity of 108,000 test per month).

Only two countries with sero-diagnostic facilities have the capacity to test a number of sera equivalent to 10% of their national cattle herd per month whereas five countries can test the equivalent of 2-4% of the national herd per month and the remaining labs less than 1% per month. One laboratory is capable of testing 320,000 sera per month (if all available methods are taken into account), four laboratories between 80,000 and 180,000 sera per month, six laboratories between 10,000 and 33,000 sera per month and seven laboratories only 8,000 sera or less per month (**Table 7**). The total number of samples tested by each method across the member countries in three successive years is given in **Table 8.**

Combined testing capacity of six laboratories for antibodies to non-structural proteins of FMD virus is 280,000 sera per month. A further two laboratories which have an NSP ELISA did not state their testing capacity.

4. Quality Assurance

16/18 laboratories have participated in ring trials. Twelve laboratories commented that the most valuable aspect of the exercise was standardisation of results across different FMD laboratories (five specifically referred to comparison of serological test results and/or establishment of cut-off points). Five laboratories referred to collaborative links and exchange of ideas with other laboratories.

13/18 laboratories are involved in other quality assurance initiatives. Six laboratories mentioned ISO standards, four specifically referring to ISO 17025. Five laboratories are involved in national accreditation schemes.

A related issue under the heading of quality assurance (as a determinant of sensitivity) is the type of cell-lines used for virus isolation and virus neutralisation tests (**Table 9**). Four laboratories have bovine thyroid cell-lines available for virus isolation and four laboratories have primary or secondary (porcine/ovine/bovine) kidney cell lines (including one laboratory in which established cell-lines are routinely used). Less sensitive established cell-lines (BHK21, IB-RS-2 and SK6) are all that is available for virus isolation in five laboratories.

5. Help and support required by FMD diagnostic laboratories
**It was not clear from most of the replies whether the respondent was referring to help/support already received or help/support required in the future.*

Four laboratories do not require help or support in any of the categories listed although one of these laboratories emphasised that this referred to "normal conditions" and that in a crisis situation help might be requested in the form of robotic equipment and/or trained personnel. Three laboratories require help/support only with the supply of test reagents and one laboratory only requires help/support with staff training. The remaining laboratories indicated that they required help/support in more than one area.

7/18 laboratories require support in implementation of bio-security standards.

9/18 laboratories require support with respect to staff training. One laboratory referred to a practical workshop on quality control and validation of testing methods.

4/18 laboratories require support with respect to laboratory equipment.

13/18 laboratories require support with respect to the supply of test reagents. The world reference laboratory supplies reagents for the antigen ELISA to 12 laboratories and for the LPBE to 13 laboratories.

Points for discussion

- ***Diagnostic activity:*** two countries did not conduct any investigations or have any animal samples tested for either FMD virus or FMD antibody during the three year period despite FMD outbreaks in the Balkans in 2000 and in Northern Europe in 2001. A further four countries did not conduct any herd/flock investigations during this time suggesting under-surveillance.

- ***Sero-diagnostic capacity of EUFMD member countries:*** Sero-diagnostic capacity of member countries has increased more than fivefold since 1995, the last occasion on which a survey of diagnostic facilities was conducted by EUFMD (Leforban, 1995). At that time the total capacity of FMD diagnostic laboratories was 190,000 sera per month (and the capacity for semi-automated serological testing was 110,000 sera/month as compared with the present day capacity for ELISA testing which exceeds 900,000 sera per month), four laboratories had a testing capacity of more than 20,000 sera per month and a further four laboratories had a capacity of 10,000 sera per month.

Whilst there has been a significant increase in sero-diagnostic capacity, only two countries have a monthly testing capacity relative to national herd size on the scale required for large-scale serological screening. Furthermore, if emergency vaccination were employed and serology was to be used to differentiate vaccinates from infected animals a greater testing capacity for antibodies to NSPs would be required.

Only eight countries use SPCE, "Ceditest" or equivalent solid-phase ELISAs despite the fact that these ELISAs are easier to perform and provide more rapid results than the LPBE.

Another consideration is the availability and supply of reference sera and diagnostic reagents during a crisis. Only two of the fourteen laboratories performing the LPBE can generate the required reagents in-house. Although in discussion of FMD diagnostic capacity in 1995 it was agreed that there was no need to bank reagents for large-scale screening, at the more recent 67th executive committee (2002), it was suggested that reference sera and a bank of reagents should be prepared for a crisis situation.

- ***OIE standards and prescribed tests for international trade.*** Inclusion of SPCE as one of the prescribed tests.

- ***Implications of EU draft directive***

The new draft directive requires national laboratories (NLs) to be equipped and staffed for large-scale sero-surveillance. It formalises the relationship between NLs and the community reference laboratory (CRL) with respect to strain-typing, exchange of information, staff-training, research and development, quality assessment and standardisation. The draft directive also lists NLs authorised to handle live FMD virus and prescribes standards for bio-security. Tests and standards for laboratory diagnosis of FMD and other vesicular diseases are also prescribed. It is worth noting that the new EU draft directive on the control of FMD requires: *"tissue culture systems in use for FMDV isolation* [to be] *sensitive to the full range of serotypes and strains for which the laboratory maintains a diagnostic capacity"*

The draft directive imposes a requirement for samples testing negative for FMD virus at NLs to be retested by the CRL, which has resource implications for the CRL.

- ***Networking and support between FMD diagnostic laboratories***, for better coordination between laboratories and possibly centralised testing during crises.

- ***Contingency planning*** must include protocols for collection and submission of specimens to a diagnostic laboratory. This concern is still as valid today as when raised in 1995 and is emphasised in the new EU draft directive.

- ***Ongoing collection of data from FMD diagnostic laboratories by the EUFMD secretariat.*** A system for recording and reporting the level of submissions to FMD laboratories on a yearly basis is required. Issues of confidentiality and security of information must be addressed.

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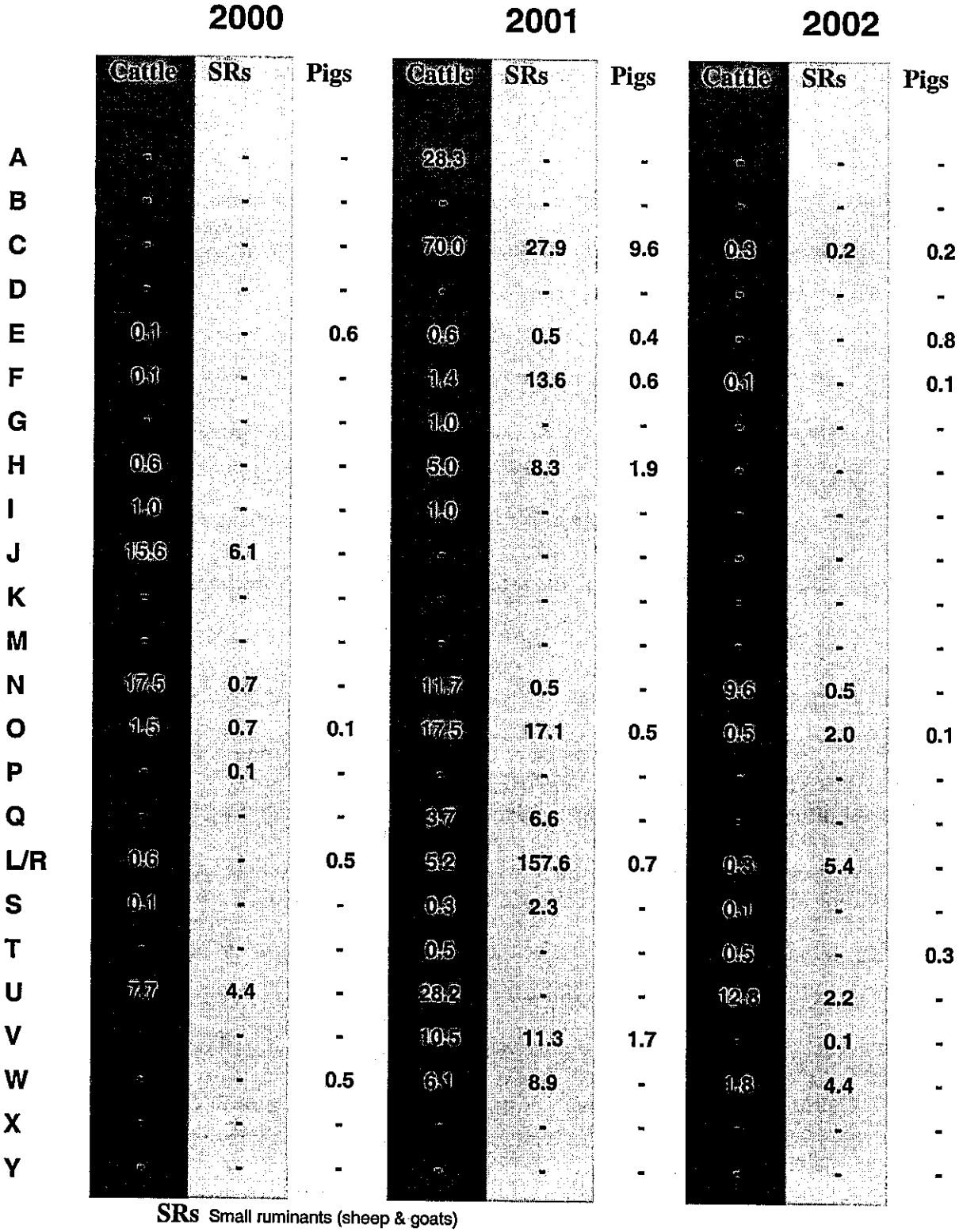
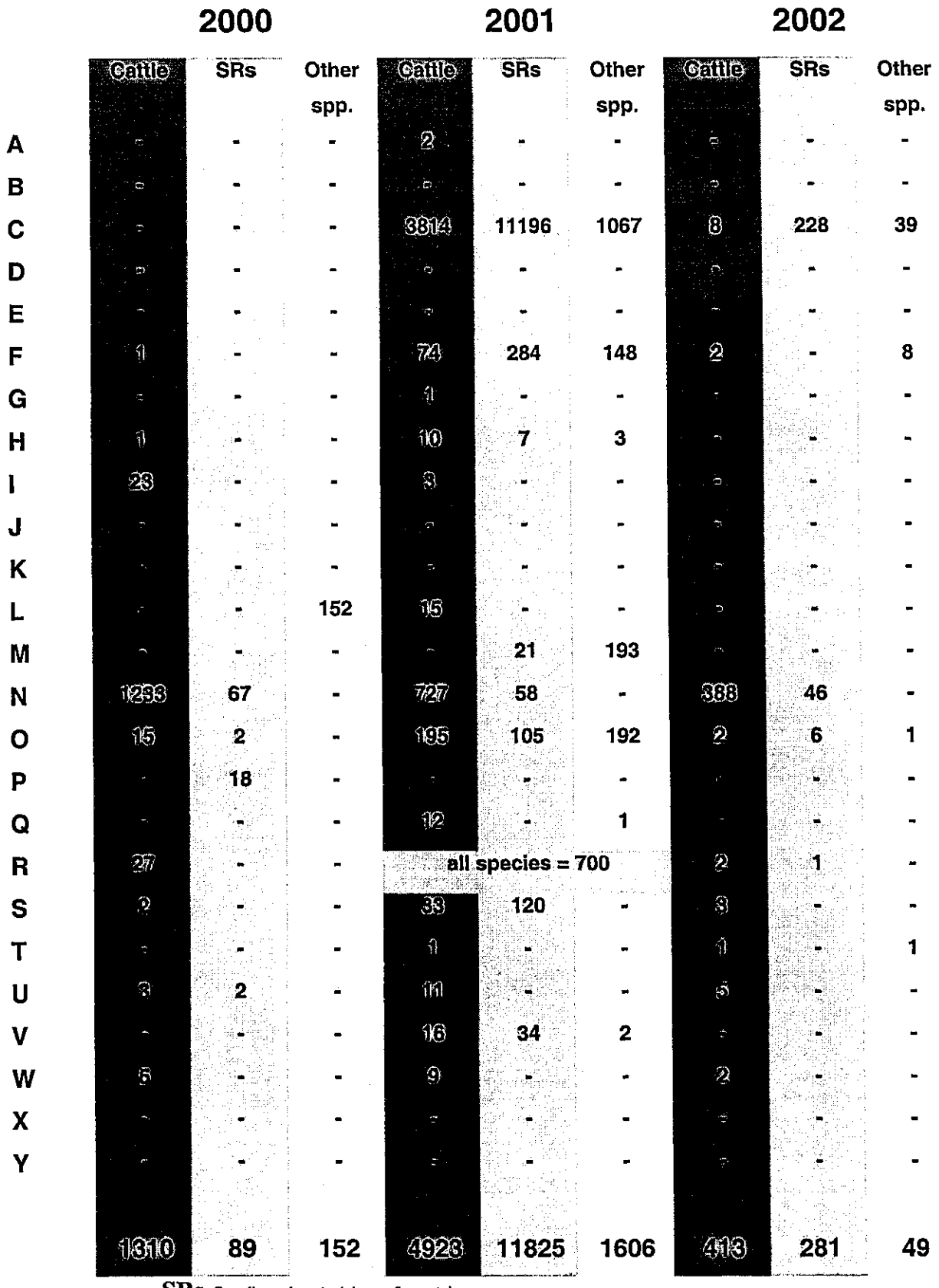


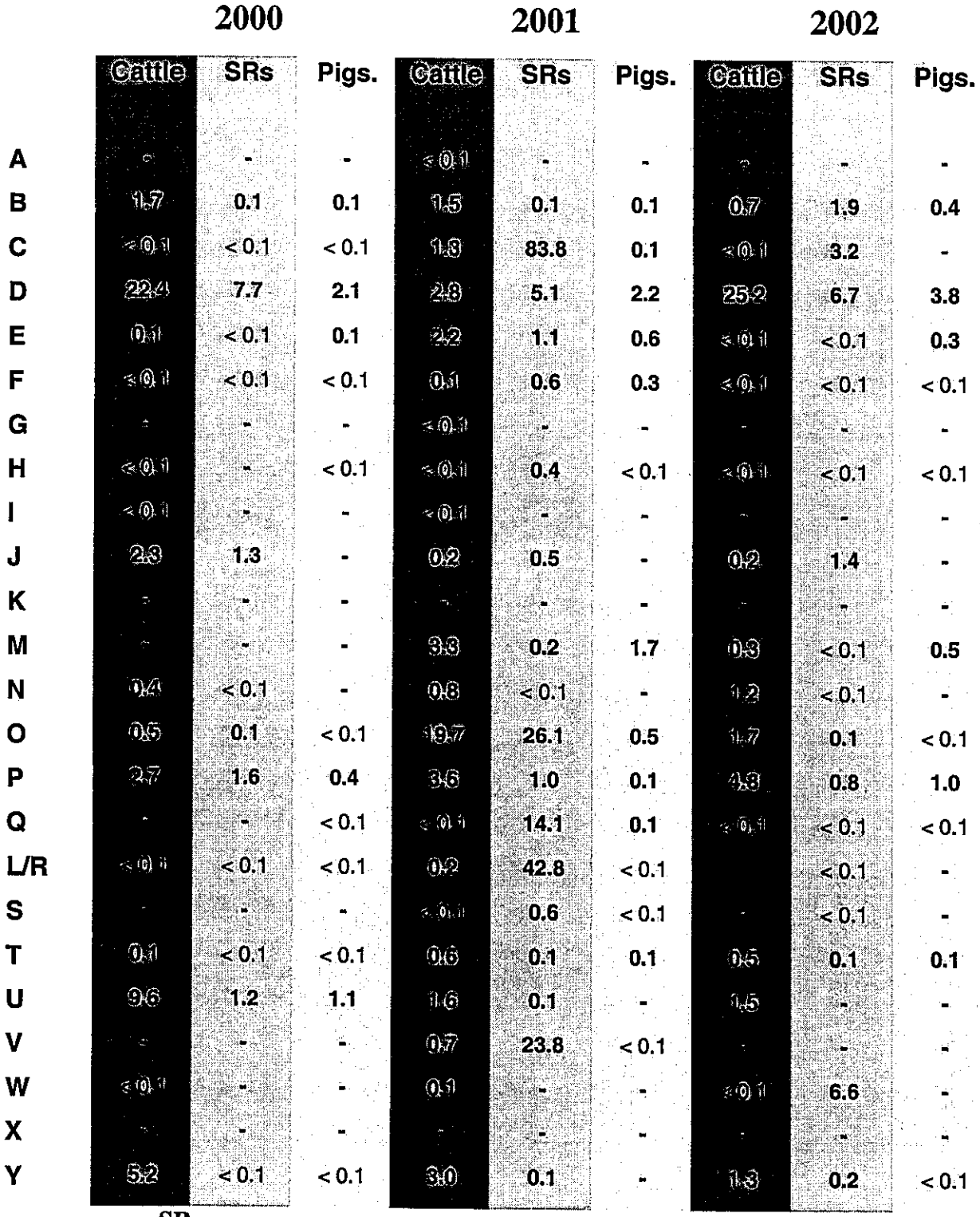
Table 1 Number of herd/flock investigations (per 1,000,000 head of livestock, based on FAOSTAT livestock data from 2001)



	2000			2001			2002		
	Cattle	SRs	Other spp.	Cattle	SRs	Other spp.	Cattle	SRs	Other spp.
A	-	-	-	2	-	-	-	-	-
B	-	-	-	-	-	-	-	-	-
C	-	-	-	3814	11196	1067	8	228	39
D	-	-	-	-	-	-	-	-	-
E	-	-	-	-	-	-	-	-	-
F	1	-	-	74	284	148	2	-	8
G	-	-	-	1	-	-	-	-	-
H	1	-	-	10	7	3	-	-	-
I	28	-	-	3	-	-	-	-	-
J	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-
L	-	-	152	15	-	-	-	-	-
M	-	-	-	-	21	193	-	-	-
N	1293	67	-	727	58	-	388	46	-
O	15	2	-	195	105	192	2	6	1
P	-	18	-	-	-	-	-	-	-
Q	-	-	-	12	-	1	-	-	-
R	27	-	-	all species = 700			2	1	-
S	2	-	-	33	120	-	3	-	-
T	-	-	-	1	-	-	1	-	1
U	3	2	-	11	-	-	5	-	-
V	-	-	-	16	34	2	-	-	-
W	5	-	-	9	-	-	2	-	-
X	-	-	-	-	-	-	-	-	-
Y	-	-	-	-	-	-	-	-	-
	1310	89	152	4923	11825	1606	413	281	49

SRs Small ruminants (sheep & goats)

Table 2 **Number of animals of different species tested for FMD virus**



	2000			2001			2002		
	Cattle	SRs	Pigs.	Cattle	SRs	Pigs.	Cattle	SRs	Pigs.
A	-	-	-	< 0.1	-	-	-	-	-
B	1.7	0.1	0.1	1.5	0.1	0.1	0.7	1.9	0.4
C	< 0.1	< 0.1	< 0.1	1.8	83.8	0.1	< 0.1	3.2	-
D	22.4	7.7	2.1	2.8	5.1	2.2	25.2	6.7	3.8
E	0.1	< 0.1	0.1	2.2	1.1	0.6	< 0.1	< 0.1	0.3
F	< 0.1	< 0.1	< 0.1	0.1	0.6	0.3	< 0.1	< 0.1	< 0.1
G	-	-	-	< 0.1	-	-	-	-	-
H	< 0.1	-	< 0.1	< 0.1	0.4	< 0.1	< 0.1	< 0.1	< 0.1
I	< 0.1	-	-	< 0.1	-	-	-	-	-
J	2.3	1.3	-	0.2	0.5	-	0.2	1.4	-
K	-	-	-	-	-	-	-	-	-
M	-	-	-	3.3	0.2	1.7	0.3	< 0.1	0.5
N	0.4	< 0.1	-	0.8	< 0.1	-	1.2	< 0.1	-
O	0.5	0.1	< 0.1	19.7	26.1	0.5	1.7	0.1	< 0.1
P	2.7	1.6	0.4	3.6	1.0	0.1	4.8	0.8	1.0
Q	-	-	< 0.1	< 0.1	14.1	0.1	< 0.1	< 0.1	< 0.1
L/R	< 0.1	< 0.1	< 0.1	0.2	42.8	< 0.1		< 0.1	-
S	-	-	-	< 0.1	0.6	< 0.1	-	< 0.1	-
T	0.1	< 0.1	< 0.1	0.6	0.1	0.1	0.5	0.1	0.1
U	9.6	1.2	1.1	1.6	0.1	-	1.5	-	-
V	-	-	-	0.7	23.8	< 0.1	-	-	-
W	< 0.1	-	-	0.1	-	-	< 0.1	6.6	-
X	-	-	-	-	-	-	-	-	-
Y	5.2	< 0.1	< 0.1	3.0	0.1	-	1.3	0.2	< 0.1

SRs Small ruminants (sheep & goats); < 0.1 = at least one animal tested for antibody

Table 3 Number of animals of different species tested for FMD antibody (per 1,000 head of livestock, based on FAOSTAT livestock data from 2001)

	VI[1]	ELISA	CFT	RT-PCR	Animal Inoculation	TOTAL CAPACITY	Capacity per 10^6 Cattle[2]
B	800	20000	1000	-	-	21800	13800
C	4000	4000	-	4000	-	12000	1100
E	200	400	400	400	✓	1400	200
F	3000	3000	-	30000	-	36000	2500
H	1200	1200	-	1200	-	3600	2200
J	10	200	-		-	210	300
K	-	500	-		-	500	9200
M	300	6000	-	7500	-	13800	2200
N	50	400	500	100	-	1050	100
O	50	50	-	50	✓	150	40
Q	1100	1100	-	1100	-	3300	1700
R	4000	8000	-	600	-	12600	3900
S	153	150	3	30	-	336	20
T	200	100	-		-	300	100
U	100	400	-	100	120	720	1800
W	-	3800	-	9000	-	12800	7800
	15163	49300	1903	54080	120	120566	

[1]Virus Isolation; [2]Capacity per 1,000,000 cattle based on FAOSTAT data for 2001; ✓ Test available but capacity not stated

Table 4 **Diagnostic capacity for detection of FMD virus (maximum number of samples per month)**

	2000	2001	2002
Virus Isolation	243	21564	669
ELISA	1329	7435	608
CFT	1300	519	244
RT-PCR	209	1057	325
Other Test	0	0	0
	3081	30575	1846

Table 5 **Number of samples tested for FMD virus per year**

	VN[1]	LPBE	Other SP ELISA[2]	NSP ELISA[3]	TOTAL CAPACITY	Capacity as % Cattle pop.[4]
B	60000	20000	40000	40000	160000	10.11
C	10000	10000	100000	200000	320000	3.02
D	-	2000	-	-	2000	0.46
E	500		10000	10000	20500	0.28
F	✓	15000	✓	-	15000	0.10
H	900	3200	-	7500	11600	0.72
J	✓	1000	-	500	1500	0.23
K	-	1440	-	-	1440	2.66
M	3000	10000	-	20000	33000	0.54
N	300	1500	-	2000	3800	0.04
O	50000	-	120000	-	170000	4.20
Q	1600	-	80000	-	81600	4.28
R	5000	-	8000	-	13000	0.40
S	2400	4800	✓	✓	7200	0.04
T	800	1900	-	-	2700	0.13
U	400	1000	-	-	1400	0.36
W	-	180000	-	-	180000	10.90
Y	-	12000	-	-	12000	2.43
	134900	263840	358000	280000	1036740	

[1]Virus neutralisation; [2]ELISA other than LPBE detecting antibody to FMDV structural proteins; [3]ELISA detecting antibody to FMDV non-structural proteins; [4]Monthly serodiagnostic capacity as a percentage of the cattle population (using 2001 FAOSTAT data); ✓Test available but capacity not stated

Table 6 **Diagnostic capacity for detection of FMD antibody (maximum number of samples per month)**

Maximum per month	Number of Labs.
<8,000	7
10-33,000	6
80-180,000	4
320,000	1

Max./mth. as % Cattle population	Number of Labs.
<1%	9
2-4%	5
>10%	2

Table 7 **Relative capacities of laboratories for serosurveillance**

	2000	2001	2002
Virus Neutralisation	13083	61869	12659
LPBE	35241	94094	45756
Other SP ELISA[1]	6890	3323328	133098
NSP ELISA[2]	1783	74178	17767
	56997	3553469	209280

[1]ELISA other than LPBE detecting antibody to FMDV structural proteins
[2]ELISA detecting antibody to FMDV non-structural proteins

Table 8 Number of samples tested for antibody per year

	Virus Isolation	Virus Neutralisation
B	BHK21/IB-RS-2	BHK21/IB-RS-2
C	primary calf thyroid cells/IB-RS-2	BHK21/IB-RS-2
E	BHK21/IB-RS-2 are routinely used; Other pig kidney cell lines and primary kidney cells from calf, ovine or swine may be used	IB-RS-2
F	BHK21-CT/IB-RS-2	BHK21-CT/IB-RS-2
H	BHK21, fetal swine/calf nose epithelial cells, SK6 cells	BHK21, SK6
J	BHK21/IB-RS-2	BHK21
M	Not specified	Not specified
N	BHK21/IB-RS-2; BT	BHK21/IB-RS-2; BT
O	Secondary lamb kidney cells	Secondary porcine kidney cells
Q	Bovine thyroid cells, calf kidney cells, pig kidney cells	Pig kidney cells
R	SK6, BHK	SK6, BHK
S	primary calf thyroid cells/IB-RS-2	IB-RS-2
T	IB-RS-2	IB-RS-2
U	primary pig kidney cells and lamb kidney cells	Primary pig kidney cells

Table 9 Cell-lines available for virus isolation and neutralisation tests.

APPENDIX 13

The availability of FMD vaccine for emergency use in EUFMD member countries

Dónal Sammin, EUFMD Secretariat

Introduction

The constitution of EUFMD stipulates that the commission should "*maintain information on the stocks of antigen and vaccine available in member countries and other countries and to keep the position continuously under review*". This report is written as an update to a comprehensive review of FMD vaccines presented at the 32nd General Session of EUFMD (Garland, 1997) and subsequent reports presented at the 33rd and 34th Sessions (Ryan, 1999; Ryan, 2001).

FMD "vaccine banks" may hold reserves of formulated, ready-to-use vaccine with short shelf-life or more usually, inactivated viral antigen with a long period of usability which can be formulated into vaccine when required. Vaccine banks may be categorised as intergovernmental where a number of countries have drawing rights or national where owned and administered on behalf of a single country. At present there are two intergovernmental vaccine banks operative within the EUFMD catchment area, namely the International Vaccine Bank (IVB) and the European Union Vaccine Bank (EUVB). In addition a number of national authorities either maintain a vaccine bank or have contracted a commercial vaccine manufacturer to hold FMD vaccine/antigen on their behalf.

Standards of quality, safety and efficacy for FMD vaccines are prescribed in the OIE manual and in the European Pharmacopoeia. It is recommended in the OIE manual (2000) that FMD vaccines for emergency use have a minimum potency of 6 PD_{50}. Furthermore, in the case of inactivated antigen reserves, the speed with which vaccine can be formulated, filled and delivered to the field for emergency use is a critical issue. Another issue with respect to vaccines prepared for emergency use within the EU is that of marketing authorisation.

Materials and methods

A questionnaire on the availability of FMD vaccines for emergency use (in English and in French) was circulated by e-mail and surface mail to the chief veterinary officers (CVOs) of EUFMD member countries on 24 February 2003. The questionnaire included a list of the viral strains recommended by the world reference laboratory for inclusion in FMD vaccine/antigen banks as endorsed by the EUFMD research group session in 2001 (**Annex1**). Assurances were given that the information disclosed in replies would be handled carefully and distributed only to those attending the forthcoming general session.
Authorities responsible for the EU and International vaccine banks were also contacted and asked about current stocks of inactivated antigen/formulated vaccine as were three European commercial manufacturers of FMD vaccines.

Results

Response rate

25/33 (76%) members had replied by 31 March 2003. In one of these replies the respondent [Belgium] did not wish to relay information on vaccine banks by e-mail or fax for reasons of confidentiality and security. Furthermore this member country proposed that this issue be

discussed at the forthcoming session. Replies were received from the authorities responsible for both the EU and International vaccine banks. Two of the three commercial manufacturers responded.

Arrangements & changes since 1999
Nineteen of the 25 respondents have an arrangement for the supply of FMD vaccine for emergency use (**Annex 2**). The situation of Bulgaria and Slovenia is unclear in that they replied that they had no arrangement for supply of vaccine and that there was no change in their arrangements since 1999, yet both countries had contracts in place for the supply of vaccine in 1999 and 2001.

Eight respondents reported a change in arrangements and/or availability of vaccine since 1999. In the case of two countries (Ireland & Sweden) which are members of the International vaccine bank, the continued availability of vaccines from this source was questioned. The six other countries which have reported a change in their arrangements since 1999 are: the UK which now has a contract with a commercial company for supply of vaccine; Denmark, which has ceased to operate a national antigen bank and four countries (the Czech Republic, France, Germany and the Netherlands), all of which have made alterations to the composition of their national reserves, featuring a move away from holding formulated vaccine and changes in the number of doses and/or the vaccinal strains held. Two of these latter four countries (the Czech Republic and Germany) now have contracts with different companies than in 1999. Romania has also ceased to operate a vaccine bank since 2000 (as reported in 2001) and is now in preliminary negotiations with a vaccine manufacturer.

Two countries (Israel & Switzerland), although stating that there was no change with regard to the availability of vaccine since 1999, reported the inclusion of different strains in formulated vaccine and antigen banks respectively from that reported in 1999/2001 and in the case of Israel, fewer doses of vaccine available.

Of the eight members (Albania, Greece, Hungary, Macedonia, Poland, Portugal, Spain and Serbia & Montenegro [formerly Yugoslavia]) which had not responded by end of March 2003, four had replied to the questionnaire circulated in 2001 and all eight to the questionnaire circulated in 1999. At the time of last reply, five of these eight countries had an arrangement for the supply of FMD vaccine, three (Greece, Portugal, Spain) through membership of the EU vaccine bank, one (Poland) by maintaining a national bank of inactivated antigen and one (Hungary) through a contract for supply of vaccine with a commercial company.

Therefore based on most recent replies to EUFMD questionnaires, at least seven member countries have no arrangement for the supply of FMD vaccine for emergency use (**Annex 2**).

Reserves of Vaccine/Antigen
European Union Vaccine Bank (EUVB)
All 15 member states of the EU have drawing rights on this vaccine bank as established by EC decision 91/666/EEC. The EUVB has a reserve of inactivated antigen equivalent to 39.2 million vaccine doses, consisting of 13 different strains (**Annex 3**) held at three separate centres as detailed in EC decision 2001/660/EC.

International Vaccine Bank (IVB)

EUFMD member countries with drawing rights on this bank are Finland, Ireland, Malta, Norway, Sweden and the UK. The IVB still has a reserve of inactivated antigen equivalent to 3 million vaccine doses, consisting of 500,000 doses of each of six viral strains (**Annex 3**). The reserve of O1 Manisa was used up during the 2001 FMD crisis. However if formulated into vaccine only the stocks of A15 Thailand and A24 Cruzeiro are likely to obtain market authorisation.

National reserves

National reserves of antigen/vaccine are either held in national vaccine banks or increasingly by commercial manufacturers under contract on behalf of a national authority. A total of 52.03M doses (inactivated antigen equivalent to 51.78 million vaccine doses and 0.25 million doses of formulated vaccine) is currently available in the national reserves of member countries responding to the present questionnaire. France will have a new reserve equivalent to 1.7 million vaccine doses from June 2003. This will bring national reserves of member countries to 53.73M doses or 56% of the total vaccine available to EUFMD member countries, 93.8% of these national reserves being held by three countries [UK (18.9M), Germany (17.5M) and the Netherlands (14M)] (**Annex 4**). Only two member countries still hold formulated vaccine. One [Israel] holds 250,000 doses of trivalent vaccine. The other [France] is in the process of changing over from holding a stock of 1.23 M doses of monovalent vaccine to holding inactivated antigen equivalent to 1.4M doses whilst retaining 0.3M doses of formulated vaccine for O1Manisa.

Commercial FMD Vaccine Manufacturers

One manufacturer replied that the situation with regard to manufacture of FMD vaccines was under internal review as a large contract had recently expired whilst restructuring of their production process and renovation of their plant was required. The other manufacturer which replied has a contractual arrangement with a single member country (as detailed elsewhere in this paper) but has no other antigen/vaccine stocks in Europe.

Vaccine potency

All antigens stored in the EUVB and the IVB have a minimum potency of 6 PD_{50} per vaccine dose. Vaccines formulated from inactivated antigens held in national reserves will equal or exceed 6 PD_{50} per dose for three countries and will exceed 3 PD_{50} for the other three countries. The multivalent vaccine held by Israel has a potency of 6 PD_{50}. Potency data was not supplied for Croatia's vaccine reserve.

Vaccine formulation

The EUVB has a contract with a commercial company to formulate and fill vaccine from antigen stocks if required. The IVB has its own manufacturing facility for formulation and filling of vaccine (which can be completed within 3 days of receiving an order). However this facility may not meet prescribed standards such that formulated vaccine might not attain full compliance.

The six countries with a national reserve of inactivated antigen have stated that vaccine formulated from this antigen (in each case by a commercial company) will meet the requirements of the European Pharmacopoeia and the OIE manual. The time stated for vaccine to be formulated and delivered to the field varies from 3 to 7 days.

Points for Discussion

- ***Security and confidentiality issues*** which arise in discussion of arrangements for emergency vaccination and potential misuse of this information.
- ***Reserves of antigen/vaccine held by EUFMD member countries***

Since 2001, both the reserve held by the EUVB and total national reserves have been increased, the former from 31.2M to 39.2M doses and the latter from 35.375M to 53.73M doses. Of concern is that at least seven member countries have no arrangements in place for supply of vaccine.

- ***Selection of vaccinal strains for banking***

Criteria for the selection of viral strains for inclusion in vaccine/antigen banks and the decision as to how much of each vaccinal strain to hold need to be considered and discussed in the light of contingency plans for dealing with an FMD outbreak and quantitative risk analysis. The research group should continue with its yearly update of recommended vaccinal strains and should attempt semi-quantitative risk analysis, advising on major changes in risk.

- ***Vaccine formulation and marketing authorisation***

Most national authorities maintaining a national reserve have a contract with a commercial company to hold inactivated antigen on their behalf and to formulate vaccine in the event of an emergency. Marketing authorisation for FMD vaccines in the EU also needs to be considered. In the absence of a marketing authorisation, the use of vaccine "off-label" could result in a negative public reaction to FMD vaccination. Gaining marketing authorisation may require more time than would be available in the face of an FMD outbreak and therefore needs to be considered before an emergency arises.

- ***International Vaccine Bank***

The future of the International Vaccine Bank is under consideration given that many of the antigens currently held, would not attain marketing authorisation if formulated into vaccine. Furthermore investment may be needed in the manufacturing facility if formulated vaccine is to attain full compliance. The future of the IVB will be discussed at a meeting of the IVB commissioners at their annual meeting in May 2003.

- ***Transport, handling and administration of FMD vaccines for emergency use***

Guidelines are required and should be prepared by EUFMD as recommended at the 34th General session.

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Ryan J. (2001) The Availability of Foot-and-Mouth Disease Vaccine for Emergency Vaccination in Europe; Preliminary Results. Report of the 34th Session of the European Commission for the Control of Foot and Mouth Disease, Rome, Italy 21-23rd March 2001. Appendix 12, pages 117-127.
Available at http://www.fao.org/ag/againfo/commissions/en/eufmd/eufmd.html

Annex 1 Recommendations from the world reference laboratory on FMD virus strains to be included in FMDV antigen banks. (Endorsed by the EUFMD research group in 2001)

High Priority	O Manisa *(covers panasian topotype)* O BFS or Lausanne A22 Iraq A24 Cruzeiro Asia 1 Shamir A Iran 96 *A Iran 87** SAT 2 Saudi Arabia *(or equivalent)* (not in order of importance)
Medium Priority	SAT 2 Zimbabwe A15 Bangkok related strain A87 Argentina related strain A Saudi Arabia 23/86 *(or equivalent)* SAT 1 South Africa A Malaysia 97 *(or Thai equivalent such as A/NPT/TAI/86)* A Eritrea 98 C Noville O Taiwan 97 *(pig-adapted strain or Philippine equivalent)* A Iran 99 (not in order of importance)
Low Priority	SAT 2 Kenya SAT 1 Kenya SAT 3 Zimbabwe A Kenya (not in order of importance)

A Iran 87: provisional recommendation of the WRL, February 2003.*

Annex 1 Recommandations du Laboratoire Mondial de Référence sur la fièvre aphteuse
Souches de virus à inclure dans les banques d'antigène
(adapté par le groupe de Recherche de l'EUFMD lors de sa réunion en septembre 2001)

Haute Priorité	O Manisa *(couvre le topotype pan-asiatique)* O BFS ou Lausanne A22 Irak A24 Cruzeiro Asia 1 Shamir A Iran 96 A Iran 87* SAT 2 Arabie Saoudite *(ou équivalent)* (pas par ordre importance)
Priorité moyenne	SAT 2 Zimbabwe A15 Bangkok souche proche de A87 Argentina souche proche de A 23/86 Arabie Saoudite *(ou équivalent)* SAT 1 Afrique du Sud A Malaysia 97 *(ou souche équivalent de Thailande comme A/NPT/TAI/86)* A Erythrée 98 C Noville O Taiwan 97 *(souche adaptée au porc ou strain or équivalent des Philippines)* A Iran 99 (pas par ordre importance)
Faible Priorité	SAT 2 Kenya SAT 1 Kenya SAT 3 Zimbabwe A Kenya (pas par ordre importance)

A Iran 87: recommandation provisoire du Laboratoire Mondial de Référence, fevrier 2003.*

Annex 2 FMD antigen/vaccine for emergency use in EUFMD member countries

Country	Reply 2003	Arrangement for supply of vaccine	Change since 1999	IVB[1]	EUVB[2]	National reserve[3]
Albania		NO?	?			?
Austria	✓	✓			✓	
Belgium*	✓	✓	?		✓	?
Bulgaria	✓	?				?
Croatia	✓	✓				✓
Cyprus	✓	NO				
Czech Rep.	✓	✓	✓			✓
Denmark	✓	✓	✓		✓	
Finland	✓	✓		✓	✓	
France	✓	✓	✓		✓	✓
Germany	✓	✓	✓		✓	✓
Greece		✓	?		✓	?
Hungary		✓	?			?
Iceland	✓	NO				
Ireland	✓	✓	✓	✓	✓	
Israel	✓	✓				✓
Italy	✓	✓			✓	
Lithuania	✓	NO				
Luxembourg	✓	✓			✓	
FYR of Macedonia		NO?	?			?
Malta	✓	✓		✓		
Netherlands	✓	✓	✓		✓	
Norway	✓	✓		✓		
Portugal		✓	?		✓	?
Poland		✓	?			?
Romania	✓	NO				
Slovenia	✓	?				?
Spain		✓	?		✓	?
Sweden	✓	✓	✓	✓	✓	
Switzerland	✓	✓				✓
Turkey	✓	✓				✓
UK	✓	✓	✓	✓	✓	✓
Yugoslavia		NO?	?			?

[1] *International Vaccine Bank.*
[2] *European Union Vaccine Bank.*
[3] *Antigen/vaccine held in national vaccine bank or by commercial manufacturer on behalf of national authority*

ANNEXES 2 – 3 and 4
(pages 144 – 147)

Additional data was circulated at the meeting.

The table circulated at the General Session (Annex 3) is held by the Secretariat as agreed with Member States.

Copies are available to delegates of Member States upon request.

APPENDIX 14

Note on Animal Health Surveillance
Impressions from an OIE Technical Consultation in Ft. Collins, Colorado
17-21 March 2003

P. Willeberg, Chief Veterinary officer, Denmark, and Vice-Chairman of the Executive Committee, EUFMD Commission

An Ad-hoc Group has been assembled to draft a chapter for the International Animal Health Code on "Animal Health Surveillance", i.e. the general guidelines to Surveillance, which may serve as a basic description of the principles, which are implemented in other chapters on disease-specific surveillance guidelines (e.g. Rinderpest, BSE), as well as to feed into the Risk Analysis chapters[1].

Members of the group were: Angus Cameron, Christóbal Zepeda, Steve Weber, Armando Giovannini, Vincenzo Caporale, Gideon Brückner, Alejandro Lopez, Preben Willeberg, as well as David Wilson from OIE Headquarters.

A rough draft text was agreed upon, which is now being finalized for submission to the OIE Code Commission for further consideration and consultations. The Draft Table of Contents can be found in Appendix 1.

Summary of introduction and objectives

This chapter discusses the general principles of animal health surveillance and is oriented to the different types of information that a surveillance system should generate. Emphasis is placed on outputs rather than prescribe specific methods to achieve results. The outputs of the system should be able to provide information to protect animal and human populations from the spread of pathogens (including zoonotic agents).

The system should satisfy information requirements for risk analysis both for international trade as well as for internal decision-making. Surveillance data underpins the quality of disease reporting and is the basis for accurate risk analysis (Chapter 1.3.1). Surveillance systems are an essential component to support disease/infection freedom claims.

The guidelines in this chapter may be applied to both surveillance for disease and surveillance for infection, except where noted.

An essential prerequisite to provide the information for the evaluation of the animal health status is that the particular Member Country complies with the provisions of Chapter 1.3.3 of the Code for the evaluation of the Veterinary Services.

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[1] It is anticipated, that if and when the draft chapter is finally accepted by the Code Commission, the existing disease-specific guidelines e.g. on FMD, will have to be adjusted accordingly.

The chapter stresses the usefulness of multiple, non-survey sources.

The objectives of this chapter are to:
- Provide guidance to the type of outputs that a surveillance system should generate
- Provide guidelines to assess the quality of disease surveillance systems
- Provide inputs for the risk analysis process

The objectives of surveillance are to:
- Rapidly detect new and exotic infectious diseases in animals.
- Provide evidence of freedom from infection relevant to domestic and international movement of animals and products.
- Describe the distribution and occurrence of diseases and pathogens relevant to disease control and domestic and international movement of animals and products.
- Assess progress in control or eradication of selected diseases and pathogens.

Novel aspects of using non-random-surveillance data

Different methodologies may be used for the analysis of such data sources, however the methodology should comply with the provisions of this chapter. The approach used should, where possible, also take into account any lack of statistical independence between observations.

Analytical methodologies based on the use of step-wise probability estimates to describe the surveillance system may determine the probability of each step either by:
- the analysis of available data, using a scientifically valid methodology; or where no data is available,
- the use of estimates based on expert opinion, gathered and combined using a formal, documented and scientifically valid methodology.

Where there is significant uncertainty and/or variability in estimates used in the analysis, stochastic modeling or other equivalent techniques should be used to assess the impact of this uncertainty and/or variability on the final estimate of confidence.

Combination of multiple sources of data

Where multiple different surveillance data sources are utilised, each of these data sources should be analysed according to the provisions of this chapter. The resulting estimates from each data source and their uncertainty may be combined to provide an overall level of confidence for the combined data sources, including the use of qualitative data to support the confidence provided by quantitative data sources.

The methodology used to combine the evidence from multiple data sources should be scientifically valid, and fully documented including references to published material.

Surveillance information gathered from the same country or compartment at different times may provide cumulative evidence of animal health status. Such evidence gathered over time may be combined into an overall level of confidence. For instance, repeated annual surveys may be

analysed to provide a cumulative level of confidence. However, a single (larger) survey may be able to achieve the same level of confidence in just one year.

Analysis of surveillance information gathered intermittently or continuously over time should, where possible, incorporate the time of collection of the information to take the decreased value of older information into account.

Relevance to EUFMD

The principles governing animal disease surveillance are of course highly relevant and important to the evaluation, follow-up and documentation of the various activities of EUFMD. The need to have a close and comprehensive information system to document the occurrence, spatial and temporal distributions of clinical as well as laboratory investigations of FMD in the relevant regions is obvious from every report being presented to EUFMD. Of similar importance, however, are the economical, logistical and technical problems in carrying out formal random surveys in part of the regions. It therefore seems of particular relevance to the EUFMD to support and participate in the development of novel methodologies to use non-random surveillance data to achieve quantifiable confidence in the results of the surveillance activities.

It may therefore be considered by the EUFMD how best to secure the transfer of the new technologies to the relevant participants in such surveillance activities within the EUFMD. The EUFMD Research Group or alternatively and ad-hoc group on Surveillance could be asked to consider these issues.

APPENDIX 1.

Table of Contents for DRAFT Chapter 1.3.6
Animal Health Surveillance

APPENDIX 15

Report of the Activities of the Research Group for the period 2001, 2002 and the first quarter of 2003[1]

Kris De Clercq[2]

Item 1 - The FMD situation in the World and experiences regarding the outbreaks in Europe

Countries that had been free of FMD for long periods of time had to cope with introductions of virus and the subsequent difficulties of disease eradication. The restrictions associated with the measures taken to control the disease had severe societal and economic impacts. In Europe this was also the case for free countries distant from the outbreaks. The FMD situation in South-America, the Middle East and Turkey were also discussed.

- International trade in live animals (livestock, exotic pets, game species, zoo animals) and of animal products in most regions of the world is increasing. This remains the primary risk for the spread of FMD particularly because there is a general neglect of biosecurity issues when driving trade liberalisation measures forward.
- Exchange of epidemiological and laboratory information between European countries and with international organisations should be encouraged. EUFMD should play a key-role in this.
- Media have had a major role in the recent epidemic and a better harmonisation of the messages to be addressed to the public opinion at the European level should be encouraged. EUFMD should play a co-ordinating role in this respect.
- Implementation of the existing European legislations on identification of animals should be reinforced.
- Before a sampling scheme is implemented one should identify the purpose of the test. A distinction has to be made between surveys looking for the presence of virus at a certain prevalence or surveys for declaring freedom of infection.
- A procedure to ensure availability of a large quantity of reagents in case of major outbreaks in Europe should be developed, possibly in co-operation with private companies. The creation of a reagent bank is a possibility.

Meeting on Agroterrorism (7 February 2002, Rome)

- The meeting agreed that the probability of intentional introduction was low but the consequences would be very serious for the economy. There was general agreement that there is a need to include agroterrorism as a separate issue in the FMD contingency plans.
- Information gathering and exchange on circulating virus strains is more important than ever.
- Criteria to determine whether a virus introduction is intentional or accidental should be defined. The creation of a special working group is kept open.

[1] Manuscript based on the Report of the meetings made by all members and the secretariat

[2] Chairman of the Research Group of the Standing Technical Committee of the European Commission for the Control of FMD.

Item 2: FMD control: epidemiology, surveillance, control measures

- The experience in Israel showed that the policy of FMD control in an endemic area should consist of strict surveillance and vaccination, including vaccine control and sero-surveillance. In case of an outbreak, quarantine and emergency vaccination is carried out.
- A vaccination campaign was done in Turkish Thrace and the Anatolian part of Istanbul and Cannakale Province in Autumn 2001 using a trivalent vaccine (O1 Manisa, A22 and Asia1) donated by EU. The laboratory of Ankara presented the results from a serosurveillance using the LPB-ELISA and the CHEKIT-FMD-3ABC ELISA kit donated by FAO-EUFMD and EU. The results from the LPB-ELISA showed that although a high level of immunity was observed at 28 days post vaccination, a rapid decrease was observed in the immunity levels after 60 days onwards especially against types O and Asia 1. This indicated that for the future a more potent FMD vaccine should be applied with a longer protection period. A booster vaccination is required at least 3 times the first year and twice a year thereafter. FMD viruses circulating in Turkey seem to be covered by current vaccine strains.
  The results from the 3ABC-ELISA revealed 16 positive animals (not clustered) in a total of 1310 samples taken. Based on this result there is a low probability of circulation of the virus in the region. The positive sera might be an indication of previously infected animals that might have been introduced into Thrace from Anatolia. The use of NSP ELISA in serosurveillance should be encouraged.
  The organisation and execution of future serosurveillance was discussed with M. Thrusfield, expert in epidemiology.

Item 3: FMDV transmission and epidemiological models

The purpose of most of the studies presented at the RG meetings was to provide quantitative disease parameters of virus excretion and transmission that could improve models predicting the spread of FMD virus.

- Efficiency and speed of transmission of FMDV is variable and highly dependant on direct or indirect contact intensity and on housing conditions. Transmission of FMDV between calves may be limited when separated physically.
- More research aimed at understanding the mechanisms of transmission should be encouraged.

Item 4: Virus characterisation and vaccine strain selection

In the last few years, a succession of different type A viruses has been recorded in Iran and Iraq. A group of Iranian viruses from 2001 fall in a unique phylogenetic cluster. Two Iraqi isolates from 2002 form a new lineage within the Iran96 topotype. For these groups, as well as A22-like Iranian viruses from 2000, there appear to be few suitable vaccine strains.

- New field isolates should continuously be characterised antigenically (VNT and ELISA) for the determination of r values against existing vaccine strains.
- The importance of standardised determination of r-values and the limited supply of post-vaccine sera was stressed. The latter affects methodology and range of vaccine strains for which r values can be determined. In this respect close cooperation between FMD laboratories and vaccine manufacturers is important. The group recommends that any tender for vaccines should include the supply of standard reagents to enable accurate prediction of the suitability for the vaccine.

- Common panels of MAbs must be established that can be used for the antigenic characterisation of field isolates in addition to the determination of r values. The relationship between r values, antigenic profile and nuqleotide sequencing data should be studied.

Item 5: Diagnostics - virus detection

- FMD laboratories in Europe should ensure that they use the most sensitive cells for virus isolation of all FMD strains. There is a need for ring testing to be organised for virus antigen detection between FMD Reference Laboratories in Europe.
- Once fully validated, real-time, automated RT-PCR could support the ELISA tests for the detection of FMDV in epithelial suspensions and largely remove the necessity for virus isolation in cell culture for the confirmation of secondary cases. A second passage in cell culture can be avoided if RT-PCR were positive in the first passage. The system is up to 10 times more sensitive than virus isolation and allows 64 samples to be tested per working day. Contamination can still be a problem. The system should be optimised for the testing of probangs and milk. Standard references for RT-PCR are necessary.
- Due to the lack of clinical signs, the laboratory diagnosis of SVD is based on examining faeces samples instead of epithelial tissues. The VI test is affected by the possible loss of virus infectivity and the presence of entero-viruses other than SVDV that may grow more quickly than SVDV. The Immune PCR assay circumvents these difficulties.

Item 6: Diagnostics - antibody detection

- Future FAO serology standardisation should look closely at the internal quality control practised within participating laboratories. The development of secondary standards by each laboratory is essential. Laboratories are encouraged to implement the charting methods for day-by-day performance check.
- Preliminary data indicate that most current tests may not be suitable for sera of wildlife species, new domestic species such as llamas, and certain breeds of buffaloes. Competition/inhibition assays may overcome this problem.
- Further studies correlating the antibody response to structural and non-structural proteins in sera and other types of samples with virus isolation and PCR data in carriers and sub-clinical infected animals should be performed; these parameters should also be examined in pigs.

Detecting antibodies against structural proteins
- The LPBE should be replaced by the SPCE.
- The commercially available test kit "Ceditest®FMD" for the detection of antibodies against O1 FMDV is promising and should also be developed for other serotypes and strains.

Detecting antibodies against non-structural proteins
- Validation studies of commercial NSP kits (CHEKIT-FMD-3ABC ELISA - Bommeli; FMDV NS EIA SWINE and CATTLE - UBI) lack data on sensitivity in all target species. A lot more samples are needed from animals vaccinated and subsequently challenged.
- Based on European data, the competitive NSP-ELISA developed in Denmark has a very high sensitivity.
- The development of enzymatic sensors for FMD diagnosis is at an early state of development but deserves further investigation in particular with regard to NSP.

Report on the development of FMD Reference sera

At the sixty-sixth session it was recommended that 'Reference reagents for antibody detection and virus detection should be made for all FMDV strains representing a high risk to Europe. This should be done through a project involving a network of laboratories.' Following this the Chairman of the RG was invited by the OIE Standards Commission to present this project. During this meeting and in a letter addressed to EUFMD this Commission gave its full support to this project and stressed the high priority of it. Contact was also made with IAEA to avoid overlap. In full collaboration with EC DG SANCO and the WRL a tender was worked out. The project aims the production of 9 new reference sera from vaccinated and infected animals.

New candidate reference sera have been assessed under phase XVII but some strengthening of weak positive and cut-off sera are required.

Report of the Bulgaria workshop on FMD and Bluetongue 18-22 March 2002

Participants from Bulgaria, Croatia, Greece, FYR Macedonia, Poland, Romania, Turkey, Fed. Rep. Yugoslavia.
Experts from FAO, EUFMD, EC, Belgium, France, Greece, Italy, UK, Bommeli Diagnostics-Intervet.

As a follow-up of the previous workshops in Athens (Greece) in 1999 and Brescia (Italy) in 2000, 30 sera (including 10 positives) were sent in a blind way each by the Brescia and the Pirbright laboratory to the labs in Sofia, Athens and Ankara. In general it can be concluded that all labs scored the sera correctly. Labs should try to get more experience. Especially testing a lot of negative sera representing the different species populations is necessary to be able to give a correct interpretation on the outcome of unknown sera.

Three ELISA's were explained, practised and discussed: The CHEKIT-FMD-3ABC ELISA (Bommeli), Ceditest FMDV type O ELISA-kit, the Solid Phase Competition ELISA. Sera were brought to test by the lab from Ankara, from Athens, from Bulgaria. The commercial test kits showed to be very robust, easy to perform and fast. Carrier animals or animals long time after infection were not tested.

Item 7: FMD vaccines and vaccination

- In view of the limited capacities in the FMD institutes or laboratories it is recommended that the results of vaccine potency tests which include heterologous challenge be reported, where possible, to EUFMD and further be distributed to other FMD vaccine laboratories.
- Newly emerged virus strains of type A were characterised in Argentina. This lead to the incorporation of two new field strains of type A in the O_1Campos–A24 Cruzeiro vaccine. Vaccines applied in the field which contain antigens of recent field strains have a higher potential to be effective than heterologous antigens of type A after single vaccination.
- Antigenic characterisation of recent type O viruses circulating in Turkey was done at the SAP institute (Turkey) and showed that although some viruses gave low r values there is field evidence that these viruses can be covered by O Manisa vaccine. This information makes the need for inclusion of new type O in the bank less necessary. The group agreed that challenge test should be organized to assess the protection of O1 Manisa vaccine against recent isolates from Turkey. In general the utilization of vaccine with high payload

antigen content is encouraged to give an adequate protection against new variants which may appear.

- The list of viral strains to be included in the banks as proposed by the World Reference Laboratory was endorsed by the Research Group.

Report on the FMD Vaccine Monograph of the European Pharmacopoeia (Ph.Eur.)

At the initiative of the FAO-EUFMD RG the Ph. Eur. accepted to make a revision of the FMD vaccine Monograph. Therefore the Chairman of the RG participated in several meetings of Group 15V of the Ph. Eur. The revision is finished and the proposal is sent by the Ph.Eur. to the responsible authorities of their member countries.
The RG insisted on having a broader discussion on this item. The Committee for Veterinary Medicinal Products (CVMP) established an ad hoc group comprised of members of the Immunological Working Party of the CVMP, of the Research Group of the EUFMD, OIE, Pharm.Eur., EU and at a later stage the FMD vaccine manufacturers tasked with preparing guidelines on the requirements for FMD vaccines. The Ad hoc group developed 3 documents: one with comments on the revision of the FMD vaccine Monograph, a second with comments on the development of a FMD vaccine Monograph for use in pigs and in a third document guidelines are established considering those aspects of production and use which are unique to FMD vaccines and which fall outside the scope of Ph.Eur.
This last document considers following critical points:

- The urgent need to add or replace new FMD strains.
- Manufacturers can only claim that after using their vaccine differentiation of infected from vaccinated animals is still possible if they demonstrated that repeated immunisation does not result in seroconversion to non structural proteins. An immunisation scheme is proposed.
- For potency testing: the more distantly related the challenge strain is from the vaccine strain the lower will be the potency when tested by challenge. Also for the VNT as alternative potency test a strain closely related to the vaccine strain should be used. The VNT used to determine the pass level must be validated and standardised in relation to internationally recognised reference sera.
- If sufficient data from the manufacturer exist on safety testing then safety test for each strain or combination of strains is not necessary. In this case the competent authority can decide to use the vaccine 'off label' in minor species during an emergency vaccination campaign.
- For strains equally virulent for all species, manufacturers may demonstrate batch potency in cattle alone.

The documents of the Ph.Eur. and of the CVMP were presented and discussed at an International Symposium on FMD organised in March 2003 by EDQM in Strasbourg.

Item 8: Review of "The minimum requirements for importation into Europe of live animals, fresh meat and offal of the bovine species"

It was noted that in 2001 there was disparity between the export restrictions faced by the FMD affected countries in the EU compared to those in South America. The basis for the time-temperature requirements for heat treatment of meat, and milk products, was discussed and it was agreed that current recommendations should be critically reviewed, since the validity of some of the published findings was questioned. Dr Dekker will review the risk associated with current heat inactivation methods for meat and milk.

Item 9: Risk analysis tools

EUFMD RG supported the future development of risk analysis tools to assist EUFMD members, through the development of an expert system for analysis or epidemiological studies on FMD that makes use of recent developments in FAO of databases on predicted livestock distribution across the globe, on trade patterns and livestock price data.

The risk of importing exotic animals into Switzerland, holding them in a USDA-APHIS approved transit quarantine for 30 days before continuing their transportation into the USA was discussed. A formal risk analysis defined as a process consisting of risk assessment, risk management and risk communication was implemented at the Swiss Federal Veterinary Office. The calculated risk of introducing a false negative animal (e.g. FMDV infected animal) was estimated to be 5×10^{-6} which is higher than the accepted probability of 10^{-6}.
It was concluded that exotic animals that are foreseen for transit quarantine should be handled the same way as for definitive import. International standards of laboratory testing should be considered when interpreting test results from the country of origin.

Item 10: Various

Next meeting RG: closed meeting September 2003 in Gerzensee, Switzerland.

APPENDIX 16

FINANCIAL STATEMENTS AND REPORT

Budgets and accounts 2001 and 2002

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 accounts for each Trust Fund, but instead manages and invests Trust Fund 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 2002 amounted to US$ 214,339.

INCOME AND EXPENDITURE

Contributions to the Commission's Trust Fund amounting to US$ 283,186 were received from Member countries of the Commission in 2002. Contributions for 2002 amounted to US4 272,789, contributions paid in advance for 2003 amounted to US$ 5,192 and contributions received in arrears for earlier years amounted to US$ 5,205. The Commission's Trust Fund was credited with interest earned during 2002 amounting to US$ 3,413. Administrative costs for 2002 amounted to US$ 321,297.

SERVICES PROVIDED BY THE ORGANIZATION

During 2002 the Organization made available without charge the use of accommodation and facilities, to a total estimated value of US$ 55,000.

David L. Baugh
Chief, AFFCP
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 2001

	US$	US$
Balance as at 1 January 2001		195,665
Interest received	8,851	
Contribution from member countries (As per statement 2)	306,542	315,393
Expenditure		
Commission Secretary	138,068	
Consultant	4,601	
Admin. Support Personnel	42,024	
Contracts	16,200	
Duty Travel	32,030	
General Operating Expenses	28,229	
Expendable Equipment	869	
Non-Expendable Equipment	-	
Total Expenditure		-262,021
Balance as at 31 December 2001		249,037

STATEMENT 2

TRUST FUND No. 9042.00 - MTF/INT/011/MUL -
Inter-Regional - Euopean Commission for the Control of Foot-and-Mouth Disease

Status of Contributions as at 31 December 2001
(expressed in US$)

Member Governments	Outstanding 31/12/2000	Contribution due for 2001	Received up to 31/12/2001	Outstanding 31/12/2001
ALBANIA	25.00	2,600.00	2,600.00	25.00
AUSTRIA	0.00	7,800.00	7,800.00	0.00
BELGIUM	0.00	13,000.00	13,000.00	0.00
BULGARIA	0.00	7,800.00	7,800.00	0.00
CYPRUS	2,600.00	2,600.00	5,200.00	0.00
CROATIA	5,200.00	2,600.00	5,191.00	2,609.00
CZECH REPUBLIC	0.00	7,800.00	7,800.00	0.00
DENMARK	0.00	13,000.00	13,000.00	0.00
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	2,600.00	2,600.00	2,600.00	2,600.00
IRELAND	20.00	7,800.00	7,800.00	20.00
ISRAEL	0.00	2,600.00	2,600.00	0.00
ITALY	5,033.42	26,000.00	20,555.29	10,478.13
LITHUANIA	0.00	2,600.00	2,600.00	0.00
LUXEMBOURG	0.00	2,600.00	2,600.00	0.00
MACEDONIA, The Former Yugoslav Rep. of	2,615.00	2,600.00	0.00	5,215.00
MALTA	0.00	2,600.00	2,595.22	4.78
NETHERLANDS	0.00	13,000.00	13,000.00	0.00
NORWAY	-7,800.00	7,800.00	0.00	0.00
POLAND	0.00	13,000.00	13,000.00	0.00
PORTUGAL	0.00	7,800.00	7,800.00	0.00
ROMANIA	0.00	13,000.00	13,000.00	0.00
SLOVENIA	0.00	2,600.00	2,600.00	0.00
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	13,000.00	0.00
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. of	75,661.30	7,800.00	0.00	83,461.30
TOTALS	85,954.72	325,000.00	306,541.51	104,413.21

STATEMENT 3

MTF/INT/004/MUL - TF number 909700

FOOT AND MOUTH DESEASE - EMERGENCY AID PROGRAMME

Financial Report as at 31 December 2001

	US$	US$
Balance as at 1 January 2001		43,168
Interest received		1,190
Expenditure		
Consultancy	3,900	
Duty travel	371	
Expendable Procurement	0	
Support Costs	256	
Total expenditure		4,527
Balance as at 31 December 2001		39,831

STATEMENT 4

MTF/INT/003/EEC - TF number 911100

FOOT AND MOUTH DISEASE

Financial Report as at 31 December 2001

	US$	US$
Balance as at 1 January 2001		218,878
Interest received	13,673	
Contribution received	773,596	
		787,269
Expenditure		
Consultancy	-	
Duty Travel	26,901	
Contracts	15,000	
General Operating Expenses	3,204	
Expendable Equipment	676,925	
Non-Expendable Equipment	-	
Support Costs 6% (on all items except expendable equipment)	2,706	
Less: Total Expenditure		724,736
Balance as at 31 December 2001		281,411

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 2002

	US$	US$
Balance as at 1 January 2002		249,037
Interest received	3,413	
Contribution from member countries (As per statement 2)	283,186	286,599
Expenditure		
Commission Secretary	141,129	
Consultant	2,000	
Admin. Support Personnel	57,392	
Contracts	59,200	
Duty Travel	57,424	
General Operating Expenses	179	
Expendable Equipment	3,973	
Non-Expendable Equipment	0	
Total Expenditure		-321,297
Balance as at 31 December 2002		**214,339**

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 2002
(expressed in US$)

Member Governments	Outstanding 31/12/2001	Contribution due for 2002	Received up to 31/12/2002	Outstanding 31/12/2002
ALBANIA	25.00	2,600.00	2,582.42	42.58
AUSTRIA	0.00	7,800.00	7,791.80	8.20
BELGIUM	0.00	13,000.00	12,992.48	7.52
BULGARIA	0.00	7,800.00	7,800.00	0.00
CYPRUS	0.00	2,600.00	2,600.00	0.00
CROATIA	2,609.00	2,600.00	2,600.00	2,609.00
CZECH REPUBLIC	0.00	7,800.00	7,800.00	0.00
DENMARK	0.00	13,000.00	13,000.00	0.00
FINLAND	0.00	7,800.00	7,792.47	7.53
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	2,600.00	2,600.00	10,392.48	-5,192.48
IRELAND	20.00	7,800.00	7,800.00	20.00
ISRAEL	0.00	2,600.00	2,600.00	0.00
ITALY	10,478.13	26,000.00	23,254.94	13,223.19
LITHUANIA	0.00	2,600.00	2,600.00	0.00
LUXEMBOURG	0.00	2,600.00	2,600.00	0.00
MACEDONIA, The Former Yugoslav Rep. of	5,215.00	2,600.00	5,190.00	2,625.00
MALTA	4.78	2,600.00	2,604.78	0.00
NETHERLANDS	0.00	13,000.00	13,000.00	0.00
NORWAY	0.00	7,800.00	0.00	7,800.00
POLAND	0.00	13,000.00	13,000.00	0.00
PORTUGAL	0.00	7,800.00	0.00	7,800.00
ROMANIA	0.00	13,000.00	13,000.00	0.00
SLOVENIA	0.00	2,600.00	2,600.00	0.00
SPAIN	0.00	13,000.00	13,000.00	0.00
SWEDEN	0.00	13,000.00	12,985.00	15.00
SWITZERLAND	0.00	13,000.00	13,000.00	0.00
TURKEY	0.00	13,000.00	13,000.00	0.00
UNITED KINGDOM	0.00	26,000.00	0.00	26,000.00
YUGOSLAVIA, Soc. Fed. Rep. of	81,511.30	0.00	0.00	81,511.30
YUGOSLAVIA, Fed. Rep. of	1,950.00	7,800.00	0.00	9,750.00
TOTALS	104,413.21	325,000.00	283,186.37	146,226.84

STATEMENT 3

MTF/INT/004/MUL - TF number 909700

FOOT AND MOUTH DESEASE - EMERGENCY AID PROGRAMME

Financial Report as at 31 December 2002

	US$	US$
Balance as at 1 January 2002		39,831
Interest received		525
Expenditure		
Consultancy	0	
Duty travel	0	
Expendable Procurement	0	
Support Costs	0	
Total expenditure		0
Balance as at 31 December 2002		40,356

STATEMENT 4

MTF/INT/003/EEC - TF number 911100

FOOT AND MOUTH DISEASE

Financial Report as at 31 December 2002

	US$	US$
Balance as at 1 January 2002		281,411
Interest received	4,600	
Contribution received	0	
		4,600
Expenditure		
Consultancy	1,500	
Duty Travel	48,333	
Contracts	22,795	
General Operating Expenses	25	
Expendable Equipment	1,742	
Non-Expendable Equipment	-	
Support Costs 6% (on all items except expendable equipment)	4,359	
Less: Total Expenditure		78,754
Balance as at 31 December 2002		207,257

PROPOSAL FOR REVISED BUDGET FOR TRUST FUND No. 904200 - MTF/INT/011/MUL FOR BIENNIUM 2004-2005

1. In 2002, the expected members' contributions (US$ 325,000) was only slightly above (US$ 3,703) the expenditure to 31 December 2002 of US$ 321,297.
2. The unallocated amount (US$ 3,703) is smaller than that approved for the 2002 budget by the 65th Executive Committee of US$ 37,435. The rise in costs occurred despite a small reduction in staff emoluments (to US$ 198,521 from a budgeted level of salary of US$ 200,317), through increases relating to mission travel and a rise in contracted activities and support work.
3. Since the General Session falls in 2003, with the cost implications for translation services, the budget allocation for this year, as approved by the 34th Session, anticipates additional costs of US$ 34,587 compared to 2002, and therefore based on expenditure in 2002 a budget deficit unless costs are considerably reduced.
4. Following the 2001 epidemics the demand for services to be provided by the EUFMD has grown, and the recommendations of the Executive Committee usually have some cost implications for implementation by the Secretariat.
5. An increase in the budget is therefore proposed for two reasons, one being the rise over 8 years (i.e. to 2005) in costs of Commission, and the second being to fund a higher level of contracts and services, under the authority of the Executive Committee.
6. It must be noted that the budget of the Commission was last revised by the 32nd General Session in 1997, from US$ 287,312.80 to US$ 325,000, an overall increase of 13.1%. This increase was achieved by replacing the lowest level of contribution, US$ 1300, with a unified fourth level of US$ 2600.
7. It must also be noted that the three higher levels of member contribution have **not been changed for 10 years**, since coming into effect in 1993.
8. With these factors in mind, the Secretariat proposed to the 68th Session to increase the budget of the Commission to US$ 381,700, an increase of 17.4%. This is equivalent to 2.9% per year over the 6 year term of the 1998-2003 budget, or for the majority of Member States, 1.7% per year over the 10 year period since the last change in contributions.
9. It must also be borne in mind that the Commission's budget, in US dollars, is affected by the dramatic fluctuation in the Dollar/Euro exchange rate. For example, an 18% depreciation of dollar rate from March 2001 (the time of the 34th Session) to April 2003, affecting the Commission's budget predictions. Many analysts predict a further fall in the dollar rate in 2003.
10. Denomination of members' contributions in euros is one possibility to reduce uncertainties of the exchange rate.
11. The need for a budget increase was approved in principle by the Executive Committee at the 68th Session.

2. Proposed budget for 2004-2005

This is shown in Table 1.
The comparative budgets for 2002-2003 are shown in Table 2.

Proposal for increase in Contracts budget line

1. The 2002 and 2003 budgets, as approved by the 34th Session, approved the allocation of US$ 35,000 in contracts, this being the level of support under the contract with the World Reference Laboratory (WRL) for surveillance and support services.
Review of this contract should occur in 2003. An increase in the contracts budget line allows the Executive Committee some flexibility in decisions on the specification of the contract and level of support in 2004 and 2005.

It is presumed in the calculation above that the EUFMD support for the WRL would be at the same level or increased in 2004-2005.

2. An increase in the Contracts budget line of US$30,000 allows the Executive Committee to commission work under contract, in response to questions or situations arising, and which are outside the terms of the implementing agreement for use of the EUFMD/EC Trust Fund:

These might include:

a. Contracts to supply FMDV samples to the WRL and FMD epidemiological information from under represented parts of the world;
b. Commissioning of specific reviews, preparation of evidence based guidelines, position papers that will guide EUFMD activities and forward planning;
c. Commission services that improve information provision to members; such as website and information service (as recommended by the Executive Committee, 67th Session), and development of web-site service;
d. Production of a "Jubilee" Compendium of EUFMD Research Group technical papers.

Proposal relating to workshops:

The 2002-2003 budget allows for only US$ 10,000 for workshops. The proposed increase to US$ 25,000 for workshops should enable one or more workshops in each year. This could also enable EUFMD to support greater involvement in workshops from outside the current member states, from high risk areas under the agreement of the Executive.

2. Country contributions 1998-2003, and proposed contributions 2004-2005

These are shown in Tables 3 and 4.

2.1 The categorisation of countries used for contributions has been that agreed by the 32nd Session, based on ruminant and pig livestock population, and the Member State

contribution to FAO. The 32nd Session in 1997 recommended that the Annual proposed that the Categorisation of countries be reviewed every 6 years.

2.2 No change to the categorisation of countries has been proposed by Members. The increase to contributions below has therefore been made pro rata, with rounding up to the nearest US$ 100 for Category I, II and III countries, and rounding down for Category IV countries, since the smallest countries (livestock population and contribution to FAO) were required to increase their contributions in 1997.

2.3 Categories I to III countries have not increased their contribution since 1993.

TABLE 1.
EUROPEAN COMMISSION FOR THE CONTROL OF FOOT-AND-MOUTH DISEASE (EUFMD)

TRUST FUND 904200 MTF/INT/011/MUL

Budget Account Code	Components	2004 (Subject to approval by 35th Session)	2005 (Subject to approval by 35th Session)
5001	Secretary	135,864[1]	139,099[1]
5012	Administrative Assistant	74,469[1]	76,242[1]
5020	Temp. Assistance and overtime	11,000[2]	15,000[2]
	Support staff (interpreters)	-	20,000[3]
Subtotal		**221,333**	**250,341**
5013	Consultants (Authors'Contracts)	20,000	20,000
5014	Contracts:		
	- Annual contribution to WRL	35,000	35,000
	-Collaborative Lab. Studies		
	-Workshops	13,000	13,000
	- Other contracts (as recommended by Exec Cmmttee)	10,000	15,000
		10,000	10,000
5021	Travel (Secretariat & NSTs)	46,000	50,000
5024	Expendable equipment	-	-
5025	Non-expendable equipment	-	-
5026	Hospitality	-	1,000
5028	General Operating Expenses	-	-
5050	Chargebacks	800	800
Subtotal		**134,800**	**144,800**
5040	GOE Reserve/Unallocated funds	25,567	-13,441[4]
TOTAL		**381,700**	**381,700**

[1] Includes projected cost increase of 2.5% on salaries;
[2] To cover the increasing need for temporary clerical assistance during periods of high activity, i.e. preparatory work for the Sessions, missions, additional workshops, reporting, website publishing;
[3] Interpreters for the 36th General Session.
[4] Balance over biennium 2004-2005 of $12,126.

TABLE 2.
Comparison of proposed budget 2004-2005 to budgets of 2002-2003

	2002[1]	*2003*[2]	*2004*	*2005*	*Notes/reasons for increase*
Secretary	129394	132629	135864	139099	
Adm. Assist.	70923	72696	74469	76242	
Temp Assist.	7800	7800	11000	15000	Increasing need for assistance during periods of high activity – Sessions, Missions, additional workshops, reporting, website
Interpreter		15000		20000	Translation/interpretation -General Session
Contracts	35000	35000	65000	65000	Facility for EUFMD Exec Committee to award additional or higher level of contracts[1]
Collab. Study	11200	11200	13000	13000	WRL/National laboratories - Diagnostic standardisation
Workshop		10000	10000	15000	Allowance for additional costs workshop(s) in year 2004[2], 2005
Travel	32448	36027	46000	50000	Increase in travel compared to 2001 – extra workshops, APO, normative activities
Exp equip					
Non-exp equip					
Hospitality		1000		1000	
Chargebacks	800	800	800	800	
Subtotal	287565	322152	356133	395141	
Unallocated	37435	2848	25567	-13441[3]	
TOTAL	325000	325000	381700	381700	

[1]2002 budget approved by the 65th Executive Committee
[2]2003 budget approved by the 34th Session, 21-23 March 2001
[3] Balance over biennium 2004-2005 of $12,126 (=1.6% contingency).

TABLE 3.

Member Country	$ Annual Contributions 2002 & 2003	Proposed Annual Contributions 2004-2005
ALBANIA	2,600.00	3,000.00
AUSTRIA	7,800.00	9,200.00
BELGIUM	13,000.00	15,300.00
BULGARIA	7,800.00	9,200.00
CYPRUS	2,600.00	3,000.00
CROATIA	2,600.00	3,000.00
CZECH REPUBLIC	7,800.00	9,200.00
DENMARK	13,000.00	15,300.00
FINLAND	7,800.00	9,200.00
FRANCE	26,000.00	30,500.00
GERMANY	26,000.00	30,500.00
GREECE	7,800.00	9,200.00
HUNGARY	7,800.00	9,200.00
ICELAND	2,600.00	3,000.00
IRELAND	7,800.00	9,200.00
ISRAEL	2,600.00	3,000.00
ITALY	26,000.00	30,500.00
LITHUANIA	2,600.00	3,000.00
LUXEMBOURG	2,600.00	3,000.00
MACEDONIA, The Former Yugoslav Rep. Of	2,600.00	3,000.00
MALTA	2,600.00	3,000.00
NETHERLANDS	13,000.00	15,300.00
NORWAY	7,800.00	9,200.00
POLAND	13,000.00	15,300.00
PORTUGAL	7,800.00	9,200.00
ROMANIA	13,000.00	15,300.00
SLOVENIA	2,600.00	3,000.00
SPAIN	13,000.00	15,300.00
SWEDEN	13,000.00	15,300.00
SWITZERLAND	13,000.00	15,300.00
TURKEY	13,000.00	15,300.00
UNITED KINGDOM	26,000.00	30,500.00
SERBIA & MONTENEGRO (YUGOSLAVIA)	7,800.00	9,200.00
TOTAL	**325,000.00**	**381,700.00**

TABLE 4. Proposed revision in relation to historic levels of contribution

	-1992	*1993-1997*	*1998-2003*	*2004-2005*
Category V	1182	1300	-	-
Category IV	3545	3900	2600	3000
Category III	7091	7800	7800	9200
Category II	11818	13000	13000	15300
Category I	23637	26000	26000	30500
Total budget	247,010	274,635 (to 287,312[1])	325,000	381,700

[1] Budget increased with rise in members from 29 to 33 in period.

Recommendation	*Summary*	*Action by whom*	*Activities*	*Deliverables*	*MOV*	*Reporting Date (Session)*
1	Establish FMD surveillance group	EUFMD/OIE	Meeting, report	Report to Research group. Proposals to improve surveillance	EC, RG reports	2004 (70th)
2	Assisted FMDV delivery to WRL	EUFMD/WRL	Contracts with suppliers	Virus isolates from under-represented regions	WRL reports	2004 (70th)
3	Risk based surveillance guidelines	EUFMD/RG	Produce Review paper for RG	Guidelines paper	RG Report	2003 (RG)
4a	Encouragement of virus submission	OIE, FAO, EUFMD	Relates to 1&2. Encourage FMD sample submission. Investigate incentives	Increased sample submission to WRL	WRL reports	2004 (70th)
4b	Monitor work load of WRL	EUFMD/FAO (contracting bodies)		Reports to EUFMD Sessions		Each session
5	Endemic area epidemiology	OIE, FAO, EUFMD	Project/programme identification and support - endemic areas	Funded surveillance projects	OIE, FAO, EUFMD reports	2005 (GS)
6	WRL/RRL information exchange	OIE, FAO, EUFMD	Seek funding for regular WRL/RRL meetings. Meeting to discuss global (sequence) information access/sharing to start	Reports of WRL/RRL meetings. Position papers on global information sharing options/constraints	Reports	2004 (RG)
7	FMD research inventory	EUFMD	Survey member states research on FMD	Report	RG, EC	2003 (RG)
8	FMD import risk assessments	Member States, EUFMD, EC	Review applicability and need for illegal/legal imports risk assessment	Internal reports		2003 (RG)
9	Risk based surveillance and response	Member States, EUFMD	Review screening for illegal imports and potential use of risk profiles. Also relates to 3	Internal reviews	EUFMD RG reports	2004 (RG)

Recommendation	*Summary*	*Action by whom*	*Activities*	*Deliverables*	*MOV*	*Reporting Date (Session)*
10	Global early warning system	FAO/OIE/WHO	Develop proposal. Gain funding and implement	Proposals, guidelines, SOPs		
		EUFMD	Assist in development and critical evaluation	Evaluation documentation	RG Report	2003, 2004
11	Assisted FMDV delivery to Europe	EUFMD	Effort to obtain FMDV samples and information (common with 2 and 4)	Virus isolates/information from under-represented regions	WRL and EUFMD reports	2004
12	Risk analysis involvement	EUFMD	TBD	Reports to RG/Session	RG Report	2003, 2004
13	Website information system changes	EUFMD	Regular updates and programme of development of new tools/features	Website changes	Website, reports to Sessions	2003, 2004
14	FMD sample air carriage guidelines	EUFMD	Review, produce guidelines	Report, guidelines	RG Report	2003
15	Compendium of EUFMD reports	EUFMD	Convert reports to electronic form, produce CD	CD-ROM	Session reports	2004
16	Collaboration with Turkey	EUFMD	TBD. Activities leading to progressive containment	TBD. Mission reports	Session reports	Each session
17	Involvement of Turkey in regional FMD control	Delegate of Turkey; EUFMD	TBD. Involvement of Turkey in Regional FMD actions, missions	TBD	Session reports	Each session
18	Assistance for vaccine QA	EUFMD; Delegate of Turkey	TBD. Mission and follow-on actions	Reports. QA vaccine	External QA reports. Session reports	Each session
19	Independent vaccine potency testing	EUFMD; Delegate of Turkey	Covered in 18	See 18	See 18	Each session
20	Monitor FMD risk situation in Iraq	EUFMD; FAO	EUFMD monitoring of FAO FMD control information	Recommendations to members/EC/FAO	Session reports	2003

Recommendation	*Summary*	*Action by whom*	*Activities*	*Deliverables*	*MOV*	*Reporting Date (Session)*
21	Review emergency vaccine supply	EUFMD; FAO; OIE	TBD. Commission Review. Possible joint meeting/workshop	Review paper. Meeting report	Session reports	RG-2003, 2004
22	Review FMD control in Caucasus	EUFMD	TBD. Commission Review after short term actions completed 2003. Arrange Tripartite meeting	Review paper. Meeting report	Session reports	Each Session
23	Effective vaccination of southern border area - Caucasus	EUFMD Commission with national delegates	EUFMD monitoring/liaison with national authorities and EC	Vaccination coverage in zone	Reports from ARRIAH. Tripartite meeting reports	2003 (69th)
24	Feasibility study on alternatives to mass vaccination	Countries concerned; EUFMD, OIE, EC (Tripartite group)	TBD. Propose Feasibility study to Tripartite	Feasibility report	Report. Tripartite meeting report	2003 (69th)
25	Strengthen regional co-operation	EUFMD, Turkey, ARRIAH	TBD. EUFMD to initiate/support capacity building initiatives	TBD	Indicators of effective training/co-operation	2003 (69th), 2004 (70th)
26a	Cease use of lapinised vaccines	TransCaucasian countries; EUFMD	EUFMD; circulate report/letter to responsible authorities. Possible Risk assessment and workshop	Response of authorities. Evidence of programme for replacement	Tripartite meeting reports	2003 (69th), 2004 (70th)
26b	Use of FMD vaccines to int. standards	TransCaucasian countries; EUFMD	As 25 a	As 25 a	As 25 a	As 25 a
27	International Collaboration with Iran	EUFMD, OIE, EC, Turkey	Develop and implement surveillance co-operative activities	Proposals, funded surveillance activities/projects	Submissions, reports	Each session
28	Focal point/Co-	EC	TBD by EC			Each

Recommendation	*Summary*	*Action by whom*	*Activities*	*Deliverables*	*MOV*	*Reporting Date (Session)*
	ordination of EC support for FMD actions					session
29	Mapping risk of FMD spread in the near -east	FAO/EUFMD	Establish funding and implement activities for mapping risk and ruminant movement	Validated Risk assessment tools	Reports	RG-2003, 2004
30	FMD laboratory epidemic contingency plans	Member states	Develop, rehearse, modify plans	Contingency plans	EUFMD (or EC) survey	2005 (36th)
31	Workshop on contingency planning for laboratories	EUFMD	TBD. Cost and rank workshop proposals, implement	Workshop(s)	EUFMD reports	2003 (69th), 2004 (70th)
32	Bio-security requirements for serology	EC, member states	Review specifications in legislation/draft Directive	Specifications for serology laboratories	Proposed legislation	2003 (69th), 2005 (36th)
33	Review diagnostic activity for FMD	EUFMD	Annual review of FMD diagnostic activity	Review paper	RG Session report	Each RG Session
34	CRL actions be coordinated with EUFMD	EC, CRL (when designated)	Co-ordination of review of FMD diagnostic activity with EUFMD RG	Joint Diagnostic activity reviews	RG Session report	Each RG Session
35	Survey of sero-surveillance preparedness	EUFMD	Survey member states for preparedness for mass serology	Review paper	RG Session report	2003 (RG)
36	FMDV diagnostic reagent bank contents	EUFMD (IAEA, OIE, EC, WRL)	Identify and peer review diagnostic bank contents	Specification paper	RG Session report	2003 (RG)
37	Revisions to Eur.Pharm. and Guidelines	EUFMD (RG)	Assist EDQM and EMEA in development, critical evaluation of revisions	Revised guidelines, Eur. Pharm monographs	RG Session report	Each Session
38	Priority setting of FMDV vaccine antigens	EUFMD (RG), WRL/CRL	Review prioritization procedure. Compare risk to Europe to bank contents	Recommendations to members/EC	RG Session report	Each Session

Recommendation	*Summary*	*Action by whom*	*Activities*	*Deliverables*	*MOV*	*Reporting Date (Session)*
39a	Review FMDV vaccine marketing authorizations	Member states, EC, IVB Commissioners	Investigate feasibility of obtaining marketing authorizations (MA) for FMDV antigens	Internal reviews. Process of Authorizations implemented	Vaccine bank review paper	2005 (36th)
39b	Assist members in review (38a)	EUFMD	Review process for obtaining MA. Guide members	Guidelines	Reports	Each session
40	Arrangements for emergency vaccine supply	States reporting no such arrangement	Review requirements and options, make arrangements for vaccine emergency	Vaccine supply arrangements in place	Vaccine bank review paper	2005 (36th)
41	Assist Development and application of surveillance standards	EUFMD (RG)	Assist development of guidelines and application of new methods in surveillance	New Guidelines, Recommendation papers	RG Session report, Exec. Cmttee	RG (2003, 2004)
42	Establish ad hoc group on surveillance	EUFMD	TBD. Respond to priority questions/issues for Commission Exec/Gen. Session	Guidelines papers	RG Session reports	RG (2003, 2004)
43	Development of test/sampling schemes for virus	EUFMD RG	With R40, identify feasibility and options for virus surveillance	As R40	RG Session reports	RG (2003, 2004)
44	Guidelines relating to intentional FMDV introduction (agro-terrorism)	EUFMD RG	Develop guidelines for questions identified by EC	Position paper/guidelines	RG Session reports	As required
45	Guidance to transmission research	EUFMD RG	Contribute to proposals for research on transmission	RG Recommendations	RG Session reports	RG (2004)
46	Develop proposals for improved vaccine typing methods	EUFMD RG	Assist European/Global labs to develop, submit, implement activities on antigenic typing	Proposals, submitted/implemented	RG Open Session reports	RG (2004)
47a	Laboratories use most	Member states	Transfer to more	Sensitive method in	Diagnostic	RG (2004)

Recommendation	*Summary*	*Action by whom*	*Activities*	*Deliverables*	*MOV*	*Reporting Date (Session)*
	sensitive cell systems		sensitive cells unless sensitivity achieved by other methods	place and available	survey	
47b	QA system for all FMDV diagnostics in place	Member states, EUFMD/CRL	Member states review QA system in place for FMDV diagnostics. EUFMD/CRL develop guidelines /identify external standards	Guidelines /identify external standards available	RG Session reports	RG (2004)
48	Support to development of pan-species assays	EUFMD RG	Prioritize planned/proposed activities to encourage multi-species applicability of FMDV assays	Validation reports covering major livestock species	RG Session reports	RG (2004)
49	Continued effort to close NSP validation gaps	EUFMD RG	Status of work to close priorities in NSP Validation Gaps to be identified. Possible workshop to address deficiencies in information/analysis	Guidelines on use of NSP tests. Paper on information gaps.	RG Session reports	RG 2003, RG 2004
50	RG involvement in diagnostic reference standards	EUFMD RG, EC	Identify EUFMD requirements from standards bank. Ensure RG involvement in standard setting	Common to RXXXX	RG Session reports	RG 2003, RG 2004
51	Preparation of secondary standards - Phase XVII	EUFMD RG, WRL	Implementation of Guidance to laboratories on preparing secondary standards	Standards developed, evaluated, available for routine use	Reports to Phase XVII coordinator	RG 2003, RG 2004
52	Workshop on QA/QC of diagnostics	EUFMD RG	Organize workshop on QA/QC of diagnostics for surveillance	Technical capacity raised	Workshop proceedings. Diagnostic	RG 2003, RG 2004

Recommendation	*Summary*	*Action by whom*	*Activities*	*Deliverables*	*MOV*	*Reporting Date (Session)*
					survey	
53	Critical review of inactivation requirements/standards	EUFMD RG	Produce Review paper for RG	RG peer review of technical paper	RG reports	RG 2003
54	Technical review of proposed changes to OIE Code relating to FMD	Member states, EC, EUFMD RG	Member states/EC to make request to EUFMD, via EC. EUFMD to arrange review	Position paper	Session reports; RG and Exec.	At each following Session
55	Priority setting of Research group activities	RG and Executive	Secretariat/RG to prioritize. Chairperson/Executive to modify/approve	Prioritized activity plan 2003-2005	Session reports; Exec/RG.	2003 (69th) and at each Session
56	Consideration of EUFMD media officer position	Executive	Review need for creation of role/post	Decision	Session report	2003 (69th)
57	Spreadsheet of recommendations	EUFMD Secretariat	Produce spreadsheet and implementation plan/timetable	Checklist/Plan/timetable	EC and Session reports	Immediate

		Responsibility						Reporting timetable:					
Recommendation	***Summary***	***Secr/Exec***	***Sec/RG***	***Member States***	***OIE***	***EC***	***FAO***	***2003-RG***	***2003-EC***	***2004-EC1***	***2004-RG***	***2004-EC2***	***2005-GS***
1	Establish FMD surveillance group												
2	Assisted FMDV delivery to WRL												
3	Risk based surveillance guidelines												
4a	Encouragement of virus submission												
4b	Monitor work load of WRL												
5	Endemic area epidemiology												
6	WRL/RRL information exchange												
7	FMD research inventory												
8	FMD import risk assessments												
9	Risk based surveillance and response												
10	Global early warning system												
11	Assisted FMDV delivery to Europe												

		Responsibility						Reporting timetable:					
Recommendation	***Summary***	***Secr/Exec***	***Sec/RG***	***Member States***	***OIE***	***EC***	***FAO***	***2003-RG***	***2003-EC***	***2004-EC1***	***2004-RG***	***2004-EC2***	***2005-GS***
12	Risk analysis involvement												
13	Website information system changes												
14	FMD sample air carriage guidelines												
15	Compendium of EUFMD reports												
16	Collaboration with Turkey												
17	Involvement of Turkey in regional FMD control												
18	Assistance for vaccine QA												
19	Independent vaccine potency testing												
20	Monitor FMD risk situation in Iraq												
21	Review emergency vaccine supply - "global bank"												
22	Review FMD control in Caucasus												
23	Effective vaccination of southern border area - Caucasus												
24	Feasibility study on alternatives to mass vaccination												

		Responsibility						Reporting timetable:					
Recommendation	***Summary***	***Secr/Exec***	***Sec/RG***	***Member States***	***OIE***	***EC***	***FAO***	***2003-RG***	***2003-EC***	***2004-EC1***	***2004-RG***	***2004-EC2***	***2005-GS***
25	Strengthen regional co-operation												
26a	Cease use of lapinised vaccines												
26b	Use of FMD vaccines to int. standards												
27	International Collaboration with Iran												
28	Focal point/ Coordination of EC support for FMD actions												
29	Mapping risk of FMD spread in the near-east												
30	FMD laboratory epidemic contingency plans												
31	Workshop on contingency planning for laboratories												
32	Bio-security requirements for serology												
33	Review diagnostic activity for FMD												
34	CRL actions be coordinated with EUFMD												

		Responsibility						Reporting timetable:					
Recommendation	**Summary**	**Secr/Exec**	**Sec/RG**	**Member States**	**OIE**	**EC**	**FAO**	**2003-RG**	**2003-EC**	**2004-EC1**	**2004-RG**	**2004-EC2**	**2005-GS**
35	Survey of sero-surveillance preparedness		■					■			■		
36	FMDV diagnostic reagent bank contents		■					■			■		
37	Revisions to Eur.Pharm. and Guidelines		■					■			■		
38	Priority setting of FMDV vaccine antigens		■					■			■		
39a	Review FMDV vaccine marketing authorizations			■		■							■
39b	Assist members in review (38a)		■					■			■		
40	Arrangements for emergency vaccine supply			■									■
41	Assist Development and application of surveillance standards		■					■			■		
42	Establish ad hoc group on surveillance		■					■			■		■
43	Development of test/sampling schemes for virus		■					■			■		
			■					■			■		

		Responsibility						Reporting timetable:					
Recommendation	**Summary**	**Secr/Exec**	**Sec/RG**	**Member States**	**OIE**	**EC**	**FAO**	**2003-RG**	**2003-EC**	**2004-EC1**	**2004-RG**	**2004-EC2**	**2005-GS**
44	Guidelines relating to intentional FMDV introduction (agro-terrorism)												
45	Guidance to transmission research												
46	Develop proposals for improved vaccine typing methods												
47a	Laboratories use most sensitive cell systems												
47b	QA system for all FMDV diagnostics in place												
48	Support to development of pan-species assays												
49	Continued effort to close NSP validation gaps												
50	RG involvement in diagnostic reference standards												
51	Preparation of secondary standards - Phase XVII												
52	Workshop on QA/QC of diagnostics												

		Responsibility						Reporting timetable:					
Recommendation	***Summary***	***Secr/Exec***	***Sec/RG***	***Member States***	***OIE***	***EC***	***FAO***	***2003-RG***	***2003-EC***	***2004-EC1***	***2004-RG***	***2004-EC2***	***2005-GS***
53	Critical review of inactivation requirements/standards												
54	Technical review of proposed changes to OIE Code relating to FMD												
55	Priority setting of Research group activities												
55	Consideration of EUFMD media officer position												
57	Spreadsheet of recommendations												

APPENDIX 18

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