



**Food and Agriculture Organization  
of the United Nations**

**Briefing information on the occasion of the 50<sup>th</sup> Anniversary of the**

**EUROPEAN COMMISSION FOR THE CONTROL  
OF FOOT-AND-MOUTH DISEASE  
(EUFMD)**

**ACTIVITIES AND ACHIEVEMENTS**

**1954 - 2004**

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**EUFMD 50<sup>th</sup> ANNIVERSARY**

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**Containing:**

- 1) Update on the Activities and Achievements since 1987**
- 2) The account of the origin - and actions in the first 35 years –  
published in 1989 as “ACTIVITIES AND ACHIEVEMENTS 1954-  
1987”**

**FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS**

**Rome, 2004**

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

## Activities and Achievements 1954—2004

### FOREWORD

Europe has achieved an unparalleled success in removing infection from an area of the world where the highly dense and productive livestock populations, and the intensive trade in animals within the area rendered it a fertile situation for the virus to circulate and persist for centuries.

The Commission in 1989 published an account of the first 35 years of activities; a timely record of the activities and achievements since the foundation, at which time outbreaks occurred every year in the majority of countries and devastating epidemics of the disease swept across Europe at intervals resulting in major agricultural and socio-economic disruption. At the time of publication in the late 80's, with Europe in a far more stable situation, approaching freedom from disease and with the cessation of national mass vaccination programs in sight, the achievement of the main aim of control of the disease in Europe evident- and the future of the Commission came under review. In consideration of the potentially unstable situation after cessation of vaccination in Europe, and politically in parts of the region, decisions were taken to continue the work in order to counter the threat to the unprotected livestock population of Europe. These aims were increased rather than decreased, to focus on reducing the risk from zones not free of disease on the borders of Europe and from farther afield. In 2004, approaching the 50<sup>th</sup> year of the Commission's activities, an update to the 1989 publication is provided, as a supplement to the original document which is of historical interest and not widely available. In 2004 thirty one of the thirty three member states are free of FMD, and therefore a Europe free of FMD has not yet been fully achieved, but must continue to be the aim.

As was anticipated by the decision to maintain the Commission in 1993, to maintain the status of freedom from FMD without the protection of mass vaccination required major efforts from the responsible authorities in each member state and by the countries acting through the international organisations. The EUFMD Commission's work increased in the 1990s and further again in the new millennium in response to risk of entry, and the enormity of the potential consequences. That the status of freedom without vaccination could be maintained despite geographical proximity to endemic regions bordering the Mediterranean, with entry limited to south-eastern Europe, with the exception of outbreaks in Italy in 1993 and UK in 2001, is a considerable achievement for international co-operation in which the EUFMD Commission continued to act as major implementing body for decisions jointly agreed with the member states, the European Commission and the OIE - a pattern of joint FAO, EC and OIE activity so effectively established in the previous 35 years. Given that western Europe is but an extension of the greater Eurasian land mass, has close territorial connections to the middle east and north Africa, the successful limitation of FMD to a handful of introductions in the last 15 years is testament to largely well implemented and effective border controls, and to strict, risk based controls of trade in livestock and livestock products.

The escalating threat of FMD from endemic regions was recognised by the EUFMD Commission in late 1990's and warning bells sounded ahead of the devastating outbreaks in the United Kingdom in 2001, which spread to three other countries and affected indirectly most EUFMD member states. The FAO Commission was largely alone in bringing attention to the rapidly escalating disease risk. This remains a strong argument for the retention of specialist Commissions, and of actively engaged expertise in Europe.

Foot-and-mouth disease is not a rare disease in global terms, and almost none of the poorest countries are free of the disease. In many areas the paucity of surveillance for infection, and reporting to the international community, does not allow accurate risk prediction or early warning of flare-ups in disease and risk. Prevention of entry of infection to Europe remains a priority, as does development and regular testing and updating of emergency response plans. However the lessons learnt over 50 years, and supported by the events of 2001, clearly indicate that actions are needed to reduce the risk of infection exiting the reservoirs in which it is being maintained and entering other populations at risk.

The conclusions of the 1989 publication clearly look forward to effective regional actions being developed in endemic regions that would support those countries to establish levels of animal health similar to that

achieved in Europe. Some 15 years later, agreements reached between FAO and OIE for a framework of global action clearly support the principles of regional co-operation in action that have been a hallmark of the EUFMD Commission activities in the past 50 years. Within a global framework of action the EUFMD Commission may extend its role to the benefit of member states, and to extend the benefits of FMD control to the good of the wider region and the communities therein.

The original foreword is suitably fitting today,

“The Commission can derive considerable satisfaction from the results achieved which should serve as an example to other regions of the world of the benefits to disease control stemming from international collaboration.”

These words may serve as a appropriate beginning for the work of the next 50 years in FMD control to complete the work at a regional level and contribute to control at a global level - safeguarding and building on the earlier achievements, and assisting in extending the positive effects of FMD control to the majority of the world's population of animals and man.

Rome, 2004

## The EUFMD Commission since 1987; an update

### Introduction

In “European Commission for the Control of Foot-and-Mouth Disease; Activities and Achievements 1954-1987” the authors give an admirably concise account of the foundation, functions, activities and achievements in the first three and a half decades. The text of this publication is reproduced below. The description concludes at the period when the debate regarding cessation of the use of general vaccination was unresolved but with indications being that vaccination sooner or later would cease in most European countries. The period since 1987 has been one of major change for Europe and the Commission; of change not only in disease control policy but in the major political changes in eastern Europe and the Balkan states, which have had profound implications for risk of entry and spread of FMD. In the wider arena, FMD control in many parts of the world suffered as Governments devoted reduced budgets to disease control at periods when movement of people and animals increased across more permeable borders and in conflict situations. The cessation of vaccination in Europe, as predicted in the 1980’s, influenced trading partners to adopt similar policies. The over-riding importance of maintaining effective security against entry of infection and for effective early identification of infection and the following emergency responses, is emphasized by the temporary but severe reverses that occurred in many parts of the world in the 1990s, a forewarning of the devastating epidemic of type O FMD which occurred after entry of infection to the United Kingdom in 2001.

In 1991, following the decision for cessation of vaccination in EU countries, the existence and function of the Commission was questioned. Following the decision of the 30<sup>th</sup> Session in 1993 to extend the aims and objectives of the Commission towards surveillance and control of FMD in areas that border Europe and from where risk of entry is most likely to occur, and to retain the services of a full time technical Secretary, the activities of the Commission have been seen to greatly increase, in line with the potential consequences of virus entry and the political changes in Europe. Resolving the technical issues and limitations to the use of emergency vaccination, and the subsequent requirements for demonstrating freedom from infection, have been a major feature of the Standing Technical Committee (Research Group) activities. The Commission and the Chairmen of the Group have been at the forefront of the effort to ensure that FMD issues were not neglected during the non-vaccination era, during which much of the expertise accumulated over the past 40 years was dissipated, moved onto other activities or became of pensionable age.

The events of the international FMD epidemic 2001, which directly affected 4 European Union countries and indirectly affected almost all European countries, and the ensuing public and international reaction to the control of this mostly highly contagious disease by mass slaughter policy, gave a major impetus to efforts to update the international technical standards relating to regaining disease freedom after vaccination, and to EU Directive 90/423 to bring in the prospect of vaccination being used in the control of outbreaks without the requirement for subsequent slaughter if shown to be free of antibodies attributable to infection.

The final paragraph of the conclusions of Section 6 of the 1987 Review remains equally valid today. Europe has achieved an unparalleled success in removing infection from an area of the world where the highly dense and productive livestock populations, and the intensive trade in animals within the area has rendered it a highly fertile ground for spread and endemic FMD for centuries. Given that western Europe is but an extension of the greater Eurasian land mass, has close territorial connections to the middle east and north Africa, the successful limitation of FMD to a handful of introductions in the last 15 years is testament to largely well implemented and effective border controls, and to strict, risk based controls of trade in livestock and livestock products.

However it is also recognised that much of the world, especially areas in the Asian landmass and in Africa have not made significant progress in FMD control and in many areas surveillance for infection, and reporting to the international community, does not allow accurate risk prediction or early warning of flare-ups in disease and risk.

The general conclusion of the 1987 report, which considers that other regions of the world might adapt and adopt a similar approach to control of FMD to that of Europe, retains its validity. The events of 2001 brought the attention of the developed countries to the issue that a reservoir of infection remains in the world, and that international responses are required that address the reduction of the risk by other measures than simply a tightening of import controls to prevent entry into Europe. As a consequence, the EUFMD Commission has supported the development of an initiative of FAO and the OIE to develop a global framework for co-ordinating efforts for the control of major infectious diseases. Although 31 of the 33 current members (in 2004) of the Commission are free of FMD and do not use vaccination, two countries, Turkey and Israel, are not free and share borders with countries where infection is present and where antigenic divergent FMD viruses have frequently been present. A Europe free of FMD has not yet been achieved, but must continue to be the aim.

The focus of Commission activities may continue to be in south-eastern Europe, with expanding importance placed on activities to reduce the entry of exotic infections into Turkey, but with a continued role to ensure European preparedness is maintained, and a facilitatory role to ensure that Europe is well informed of the risk situation in endemic countries, including, where required, support to ensure surveillance actions are conducted in order to inform the European member states.

Last but not least, the experience of the late 1990s must not be forgotten, when the Commission, acting on the intelligence gathered through the FAO World Reference Laboratory and other sources, was largely alone in bringing attention to the rapidly escalating disease risk. This remains a strong argument for the retention of specialist Commissions, and of actively engaged expertise in Europe.

#### **Actions in the late 1980s**

A main concern in this period was the recurrence of FMD in Italy, in 1987 (A5) and 1988 (type C); with the exception of a limited O1 outbreak in the Federal Republic of Germany in 1988, EU countries remained free of FMD. During this period actions to maintain the buffer zone in south-eastern Europe were maintained. In 1987-88 general policy remained the same, with seventeen member states countries using general or regional vaccination in their control programmes. The circumstances of the Italian outbreaks did little to dissuade the argument that EU countries should move towards cessation of general vaccination, but there remained great unease over change. The 28<sup>th</sup> General Session in 1989 discussed the cost-benefit studies undertaken using the FAO and EEC models on vaccination policy change and concluded that although the studies generally showed benefits in changing policy towards stamping out alone or in combination with ring vaccination, agreement on a common policy on vaccination even on a regional basis was not possible at the time. The Session concluded that there would inevitably be withdrawal of vaccination on a step by step basis, which may not apply to all countries at the same time. The conclusion that the EUFMD Commission should collaborate fully with the Commission of the EU countries reflected the reality that change to cessation of vaccination was the direction of the EU member on the basis of decisions taken in the EC in Brussels. The EUFMD Commission, representing 27 countries, had a clear challenge ahead to assist countries directly or indirectly affected in the adaptation to this policy change. The General Session concluded that the Commission should address issues of access to the emergency vaccine banks for non-EU members, tightening of bio-security on FMD laboratories, and the development of national contingency plans to control of FMD in the situation when vaccination had ceased.

Further, in the light of the probable cessation of vaccination in EU countries, the changing pattern of disease risk, the possible enlargement of responsibility in relation to eastern Europe and in the neighbourhood of Turkey, and the question, if FMD had been “defeated in western Europe” of extension of activities to other diseases, the Session recommended that a review be conducted for full debate in the 1991.

#### **The 1990's; the Commissions function reviewed; storm clouds gather as Europe adapts to FMD control without general prophylactic vaccination**

Following the decision taken in the European Union (EU) by the Council of Ministers to pass Directive 90/423, vaccination would cease in EU members by the end of 1991, paving the way for a free market in animals and animal products in the EU countries from the start of 1993, and enabling European countries which had used vaccination to benefit from a unified EU status of free from FMD without the use of vaccination. In comparison to the relatively gradual beginning build-up in general vaccination in Europe, resulting from the shortage of available vaccine, the end of such campaign was abrupt. Within one year, Austria, Belgium, France, Germany, Italy, the Netherlands, Portugal, Spain and Switzerland had discontinued vaccination; in the non-EU countries in central and eastern Europe, only Czechoslovakia continued general vaccination but was under pressure to speed up the cessation of its policy; Hungary had earlier ceased vaccination in 1989, and Poland before this. In Romania and Bulgaria vaccination continued in some border zones. In Yugoslavia, only animals for export were vaccinated, and the Commission recommended that this practise cease.

In south-eastern Europe, Greece maintained a buffer zone against possible entry of virus from Thrace region, although to allow the possibility of cessation of vaccination in Greece and Bulgaria, the buffer zone in Thrace region of Turkey, established in 1962, was moved eastwards to Asiatic (Anatolian) side of the Bosphorus in 1989.

The change in policy, effectively enabling greatly increased intra-community trade together with rapidly declining and ultimately a totally non-immune population, was of grave concern to many EUFMD member states and it is doubtful if the decision to cease vaccination would ever have been achieved in EUFMD General Sessions by consensus; driving forces of change in the EU carried the agenda forward. The grave consequences rapid movement of infection in non-immune populations were widely feared. It was clear that at European level, in the EU Commission and through the international organisations, contingency planning to ensure adequate provision for emergency responses would be vital, ahead of feared outbreaks. Within the EU, provision was made for emergency stocks of vaccine; creation of a vaccine bank was authorised, containing 5 million doses of four virus types, spread over several sites. Notwithstanding their access rights to the EU vaccine bank, many EU countries also chose to maintain national banks, as did some others in Eastern Europe. The International Vaccine Bank established at Pirbright also acted as a national bank for a number of countries. However, the EUFMD Commission in 1991 was highly concerned that not all countries had established national bank or provision for emergency supply, and that non-EC countries, who considered that the needs of central and eastern European countries needed to be taken into consideration, since cessation of vaccination in western Europe potentially exposed them to higher risk.

The 29<sup>th</sup> General Session was also concerned that with the change in policy, several areas of risk needed attention, particularly import policy, and the bio-security of plants handling virus. The Standing Technical Committee was asked to review the minimum standards for importation of live animals and animal products, and minimum standards for facilities handling FMD virus. Revised standards were developed and adopted at the 30<sup>th</sup> Session in 1993. The bio-security of virus handling within Europe was of particular concern, with 25 plants or laboratories handling live virus in the EUFMD member states.

### **The original objectives achieved? The future of the Commission reviewed.**

After almost 40 years, some countries felt that the original objectives of the Commission had been achieved – “Europe was free of FMD”, and testimony to this was the cessation of vaccination in 1991. What would now be the function of the Commission, seen by so many to be the role of harmonisation of vaccination policy? As recommended by the 1991 Session, the functions of the Commission were reviewed during 1991-93 and the Executive Committee brought forward a number of important recommendations that have given a new mandate for action brought the Commission into a new era of activity and influence.

The abolition of the post of Technical Secretary was put forward, but rejected by the 30<sup>th</sup> General Session of the Commission in 1993. Recruitment, albeit at a less senior level, of a technical Secretary was recommended, and the Commission should continue for at least the following two years, as Europe

adapted itself to the new reality of life without general vaccination and to the rapidly evolving political realities in the east and Europe and the Balkans.

The future aims of the Commission were agreed to be:

- “a) to monitor the FMD situation in the surrounding area and worldwide, and to disseminate the information obtained;
- b) to promote appropriate areas of research; and,
- c) to provide a forum to co-ordinate the prevention and control of FMD in member countries.”

The new objectives of the Commission would be

“a) to establish effective surveillance and monitoring of the FMD situation in collaboration with surrounding countries (a more active role than the information gathering and dissemination exercise currently performed by the OIE)

b) to encourage the development and implementation of policies and strategies to ensure a prompt and effective response to outbreaks of FMD in these countries. Any actions proposed outside the territories of the Member Countries would have to be separately funded.”

These objectives were additional to those already existing and therefore it is understandable the General session considered that expansion of the objectives could not be undertaken without a technical Secretary to carry forward the actions on a day to day basis. Following the retirement of Dr Stouraitis, a new Secretary was appointed, Dr Leforban from France, and in retrospect it is clear the new aims and objectives, to pro-actively tackle FMD in the areas surrounding Europe, in addition to those already in existence, required a very high level of commitment and activity, and not least to continue and build upon the relationships with the OIE and EC, in the context of an evolving European political situation. As well as actions on the borders of infected and unaffected regions of Europe, the EUFMD maintained an important role in strengthening contingency planning in European countries, including the active participation and commitment of the Research group to raising standards for diagnosis and in surveillance in the areas of highest risk. Throughout the period EUFMD supported the WRL through contract for typing virus isolates, and for development and harmonisation of diagnostic tests, and for training of laboratory staff. The importance of the major European laboratories in training was highly significant, and the WRL for FMD had a highly significant role in this respect.

#### **Keeping disease at bay; outbreaks and actions in the 1990s**

Despite the concerns over cessation of vaccination, Europe, with the exception of Turkey and Israel, remained almost entirely free of disease between July 1989 and 1993, with only a single outbreak in Bulgaria in July 1991. However, through effective control on risks associated with importation, and indigenous risk associated with bio-security, in the 1990s western and eastern Europe remained free of disease, with one exception, the outbreaks in Italy in 1993.

The greatest problems remained in the area of most long term concern to the EUFMD, in the southern Balkan region. Bulgaria had outbreaks, rapidly controlled, in 1993 and 1996; Greece in 1994 and 1996, in the European part of Turkey in 1995 and 1996, and a serious epidemic occurred in Albania and FYR of Macedonia in 1996, the latter caused by type A. The EUFMD, in concert with OIE and supported by EC, undertook or supported missions at the time of and following these outbreaks. Following the recommendations of the EUFMD mission in 1996, necessitated by outbreaks in Greece and Bulgaria, the decision to recommence vaccination in Thrace region of Turkey, and through improvement to disease control procedures to improve disease control in the western buffer zone, on the Asiatic side of the Bosphorus. The Tripartite EUFMD/OIE/EC group continued to meet regularly with Greece, Bulgaria and Turkish authorities to monitor the situation and the success of the operations is seen by the lack of type O or A outbreak in Greece or Bulgaria between 1996 and the time of writing (May 2004). In 1998, following the finding that virus of A Iran96 type had entered and spread in Turkey, and was replacing the previous A22 type, EUFMD provided 900,000 doses of monovalent vaccine as an emergency repose for protection of this region. The detection of A Iran96 type in Turkey illustrated the continuing problem of invasion of virus strains from the east, particularly from Iran, and the consequent likelihood of invasion of neighbouring countries. As a consequence of the findings, FAO, with EUFMD leading, developed a technical cooperation project to support FMD control in Turkey and Iran, which focused on laboratory standards, and improved and safer vaccine production.

As a consequence of the regional situation, and political change, FMD control in the Trans-Caucasus region dramatically deteriorated in the early and mid 1990s, and as a result the Tripartite group of EUFMD, OIE and EC agreed to meet on a regular basis with the countries concerned and to identify measures to contain the threat to neighbouring countries. As a result of mission carried out in early 1999, the 33<sup>rd</sup> General Session recommended a regional approach be taken to strengthen FMD control over a medium-long term period, but that a buffer zone should be established, with EUFMD/EC support, to assist protection of the border regions against further virus invasion. This group has continued to meet since this period and assist the countries according to the situation.

The re-invasion of north African countries in 1999 provided a dramatic warning that FMD movement between countries need no longer be confined by areas even as broad as the sahara desert; a virus type previously seen in west Africa was involved, and rapid spread of infection through markets in Algeria, into Tunisia and Morocco was met by rapid and effective deployment of vaccination in Algeria and re-vaccination in Tunisia and Morocco, with assistance from the EC. Once again, the value of the technical assistance in the regions of Europe at greatest immediate risk was demonstrated, through rapid provision of vaccine from Europe; the very rapid reduction in cases following mass and swift deployment of vaccine into the at-risk populations, provided a lesson and also enabled the crisis to be contained within a few weeks. The importance of these countries as partners in disease control was evident.

### **The gathering storm**

The success of Europe in general, in limiting incursions in this period of remaining high risk, relates to the effectiveness of general import policy and its implementation, and the continued action and vigilance and support to countries at most risk to minimise entry of infection from endemic areas, especially in south-eastern Europe. However, in the success of the period, in which the worst fears of disastrous international spread of FMD between European countries had not materialised, and FMD appeared to many to be yesterdays problem, the EUFMD became increasingly important as forum to bring attention to the risk of entry of infection. Dramatic political changes had occurred in less than a decade, and across most continents, including Europe, and in many countries for economic, civil disturbance and political reasons, epizootic control was threatened and in places lost. Under pressure to reduce public expenditure and to deliver services through the private sector, authorities in many regions downsized the funding of control campaigns and veterinary surveillance, and in export oriented and more developed regions, attention was diverted to other problems, such as BSE and food safety. Further, the cessation of vaccination in Europe was an important impetus to trade partners in South America and southern Africa to cease vaccination, with severe consequences when infection regained entry into these populations. In Asia, new virus variants continued to emerge, some of which had the capacity to defy bio-security measures and spread through uncertain routes into countries which had hitherto enjoyed decades of FMD freedom. The devastating impact of FMD entry into non-vaccinated populations was again being seen, and the WRL, Pirbright, the OIE and the EUFMD- FAO tracked the changes with great concern and with frequent warnings to member states. Warning bells were sounding, but FMD remained to many a problem of other places, and other times.

### **Disease freedom under threat in the new millenium (2000 to present)**

At the Executive Committee Sessions of March and November 2000, the deteriorating FMD situation worldwide gave great cause for concern. A pandemic strain of Type O had caused outbreaks in countries which had been free of FMD for decades such as Japan and Korea whilst both Turkey and Iran were having to contend with FMD caused by type Asia 1 and a newly identified type A strain. In addition to this some virus serotypes extended to regions way beyond those in which they are more commonly encountered, type O FMD having been reported in South Africa for the first time and type SAT2 FMD in both Saudi Arabia and Kuwait. This deteriorating situation was largely ascribed to an increase in trade, both legal and illegal, of live animals, animal feedstuffs and livestock produce. The Committee recommended that member countries and international organisations “re-appraise their strategies and operations” for animal disease control “to account for these new realities”. Greece reported outbreaks of FMD caused by type Asia 1 in July 2000 in the Evros delta along the Greek-Turkish border. Although type Asia 1 FMD outbreaks had not been reported from Turkish Thrace, the viral strain isolated from the



outbreaks in neighbouring Greek provinces was almost identical to that isolated from outbreaks in Anatolia in 1999 and 2000 and it was suspected that the virus had entered Greece from Turkish Thrace by direct or indirect contact between animals on both sides of the Evros river. In addition, virus of type Asia-1 was isolated from clinical specimens collected at an FMD outbreak location during an expert mission to the Transcaucasus countries in June-July 2000 organised by EUFMD.

In hindsight, the deliberations of the Executive committee in 2000 and a warning given by the Secretary of EUFMD, Dr. Leforban, in a letter issued to member countries as late as 18 February 2001 seem somewhat prophetic for what happened next. The UK reported FMD in pigs at a slaughterhouse in Essex on 20 February 2001. The primary outbreak was eventually traced to a herd of swill-fed pigs at Heddon-on-the-Wall in the North of England, to which infection was estimated to have been introduced in early February. By the time this herd of pigs was traced, infection had spread to involve neighbouring sheep flocks and subsequently was disseminated to other regions in the UK (including Northern Ireland) by movement of sheep from one of these infected premises through markets, before a standstill on the movement of susceptible livestock was implemented on 23 February. Thereafter, FMD outbreaks were officially-reported in Northern Ireland on 1 March, in France on 13 March, in the Netherlands on 21 March and in the Republic of Ireland on 22 March. All of these outbreaks were related to the primary outbreak in the UK and the virus responsible in each case was typed as the “Pan Asian” strain of FMD virus, serotype O.

The 32<sup>nd</sup> General Session of EUFMD, held on 21-23 March 2001, occurred against this background. Not surprisingly, proceedings were dominated by issues arising from the outbreaks occurring in the UK and other member countries, two of which (the Netherlands and the Republic of Ireland) reported their first outbreaks during the course of the session!

Most of the outbreaks in the UK involved sheep but affected flocks were often difficult to detect as clinical signs in infected sheep were frequently very subtle or inapparent. Stamping out and pre-emptive culling were the control methods used in the UK. However, the scale of the problem and the widespread geographical distribution of outbreaks hampered control in the initial period. Logistical difficulties made for delays in some cases of more than 24 hours between the detection of infection and slaughter of infected herds and delays of several days between slaughter and carcass disposal. In addition, media coverage which focussed on the destruction and disposal of both infected and healthy animals, generated a public outcry and politicised the debate about how best to control the disease. In total, 2030 outbreaks were reported over the course of the 2001 epidemic in the UK; the last outbreak was reported on 30 September. A total of almost 4 million animals (including over 3 million sheep) were slaughtered in the UK over this period to control the spread of disease, excluding those slaughtered on welfare grounds as a result of movement restrictions.

In addition to the direct costs associated with disease control measures and export trading losses for the agricultural sector, there were other significant socio-economic costs to the UK rural community. Tourism and sporting events were amongst the major casualties as attempts to control the spread of FMD involved restrictions on access to the countryside and a nationwide ban on the movement of all farmed animals, including horses.

The most likely route whereby the “Pan Asian” O-type virus responsible for this epidemic could have entered the UK was through animal products imported from East or South-East Asia (such material containing live virus was presumably fed to pigs as improperly heat-treated swill at the primary outbreak location). This route of entry and impact contrasted with expert opinion gathered during 2000 on the risk of introduction of FMD into Europe which indicated that the greatest recognised threat was from Turkey and the Middle East. Clearly the entry of Asia-1 into Greece supported this view but events of 2001 emphasise the importance of taking into account the risk relating to the relatively uncontrolled and often under reported disease situation in more distant locations.

Two outbreaks of FMD in France, reported on 13 and 23 March, were controlled by stamping out. Considerable efforts were made by the veterinary authorities in each EU member state to trace animals

which had been imported from the UK. In France, almost 60,000 imported or in-contact animals were slaughtered.

The Netherlands had 26 outbreaks of FMD, the last reported on 22 April. Control measures included both stamping out and suppressive, ring vaccination with a double oil emulsion, monovalent vaccine (potency > 3PD<sub>50</sub>), the latter because of short-term problems with slaughtering capacity which threatened to prevent containment of the disease. All vaccinated animals were subsequently slaughtered, provoking a major political and agricultural controversy; under the OIE animal health code in place at that time, the slaughter of all vaccinates permitted recovery of FMD-free status much earlier (3 months after slaughter was completed) than if vaccinates were allowed to live (where a minimum of 12 months after vaccination would be required). Serosurveillance in the Netherlands completed by 1 June 2001, involved collection and testing of more than 180,000 sera over a three-month period.

A single outbreak occurred in the Republic of Ireland near the border with Northern Ireland. This outbreak was brought under control by stamping out and pre-emptive culling. Although Ireland had no designated laboratory facilities for FMD diagnosis before the 2001 outbreaks occurred, by the beginning of May the state veterinary service had developed the serodiagnostic capacity to conduct a national serosurvey. Using LPBE test reagents sourced from IAH, Pirbright; almost 160,000 ovine sera were tested for antibodies to FMD virus over a 10 week period.

During the course of the 2001 outbreaks the use of regionalisation criteria by the EC permitted some international trade in livestock products from unaffected regions of France, the Netherlands and the Republic of Ireland. Having controlled the spread of disease, each of the affected countries conducted serosurveillance to prove FMD freedom to the satisfaction of the OIE and the EU. France, Ireland and the Netherlands were declared “FMD-free without vaccination” by the OIE on 19 September 2001 and the UK regained the same status on 22 January 2002.

#### *Major Reviews of the 2001 crisis launched in the UK and EU*

In the aftermath of the crisis, numerous public enquiries were conducted in the UK and enquiries were also conducted at the European level. Amongst the issues considered were the controls at border points for risk materials, the factors which contributed to the scale and extent of the 2001 epidemic; the performance of the veterinary authorities, and particularly factors that led to the selection and use of different levels of area-based culling policies; the regulatory, economic and technical factors affecting the use of vaccination as an emergency tool, with or without subsequent slaughter of vaccinates; and factors affecting the recovery of the disease free status. One early result of the enquiries was the ban on swill feeding in EU members, and a strong push for overcoming regulatory and technical barriers for the use of vaccination in emergency situations that would not require slaughter of vaccinated animals. Further, almost all enquiries strongly endorsed the need for international co-operation in strengthening surveillance for FMD.

#### ***Developments and progress since 2001: lessons learnt!***

Amongst the issues which had to be considered after the 2001 epidemic was the diagnostic capacity of FMD national reference laboratories (NRLs) and the FAO/OIE world reference laboratory for FMD. In addition to the virological and serological testing which was conducted during the outbreak, the requirement for national serosurveillance to prove FMD-freedom post-outbreak led to serological testing on a previously unimaginable scale. The latter was greatly assisted by the application of computerised, automated systems and newer, faster test methodologies (the solid phase competitive ELISA developed at Pirbright and the ELISA developed at CIDC, Lelystad). The UK took a further novel step by designating regional laboratories as centres where serological screening tests could be performed thus greatly increasing their serodiagnostic capacity and relieving the pressure on the high security containment laboratories at Pirbright. In other EUFMD member countries, the number of specimens submitted to FMD NRLs during 2001 was much greater when compared to the previous and subsequent years, as ascertained in a survey of member countries reported to the 35<sup>th</sup> General Session in 2003. The time taken for delivery of specimens to a reference laboratory and for laboratory confirmation of suspect FMD was another issue which arose in 2001 especially in the UK where affected flocks were often culled before

laboratory results were available (and in some instances laboratory confirmation of suspect FMD was not even sought for this same reason).

The terrorist attacks on the US in September 2001, contributed to a heightened state of alert and focussed the international community on the possibility of “agro-terrorism” and the intentional introduction of a highly contagious disease such as FMD into a naïve animal population. EUFMD organised a meeting in Rome in February 2002 to consider how international organisations could address this threat.

The issue of how to deal with future FMD outbreaks occurring within the EU was discussed at great length at community level. In particular for FMD-free, non-vaccinating EU countries in the face of an outbreak: the option of emergency vaccination using a vaccinate-to-live approach was compared with stamping out. The debate focussed on what factors and considerations would favour choosing one approach to FMD control over another and what would be required post-outbreak and/or post-vaccination to demonstrate FMD-freedom. This process eventually led to the iterative drafting of the new EU directive (Council directive 2003/85/EC on community measures for the control of foot-and-mouth disease) which came into force on 29 September 2003, repealing and amending previous EU directives and decisions which had been enacted for the control of FMD. The scientific and technical considerations in the directive were largely based on work conducted by laboratories in EUFMD member states, discussed at length in Sessions of the Research Group of EUFMD and formulated (by the EC Scientific Committee on Animal Health and Welfare) into a policy paper in 1999 entitled “A strategy for the use of emergency vaccination against FMD”. The EUFMD Research Group has been at the forefront of the debate that underpinned this important development and the events of 2001 illustrated how policy needs to rapidly follow technical progress.

EUFMD activities up to and after the 35<sup>th</sup> General Session (2003) have followed the aims and objectives adopted in 1993, retaining a focus on risk from neighbouring regions but an eye on the global situation.

#### *Ensuring preparedness of member countries in the event of future FMD outbreaks*

State veterinary services were encouraged to finalise contingency plans and advised to include contingency planning for laboratory diagnosis where special consideration would be given to the serodiagnostic capacity of the NRL. The biosecurity standards required for FMD-serodiagnostic laboratories, the supply of serodiagnostic reagents in a crisis situation and the logistics of specimen transport and their handling in the laboratory have been discussed by the EUFMD Research Group and were the subject of an EUFMD workshop for NRLs held in Cordoba in April 2004.

Of critical importance in the face of future FMD outbreaks will be the readiness of member countries to implement emergency vaccination. The availability of sufficient inactivated antigen of appropriate strain is essential if vaccine is to be rapidly formulated for deployment. Therefore, a risk-based approach should be taken when prioritising the FMD viral strains to be included in frozen antigen banks. A survey of available antigens in international and national vaccine banks is conducted by the Secretariat in advance of every General Session and it was recommended at the 35<sup>th</sup> Session that the Secretariat continue to monitor this situation. Issues of quality, safety and efficacy of FMD vaccines, as laid down in the European Pharmacopoeia (Ph Eur), have to be considered. In particular that vaccines are safe (virus properly inactivated) and sufficiently potent to generate a strong immune response and that an independent assessment is made of these parameters. For EU member states the issue of marketing authorisation arises. In some situations, the requirements for Good Manufacturing Practice (GMP) cannot be met because antigens have been stored on a separate site to that at where vaccine would be formulated in the event of an emergency. In addition, some older antigen preparations such as those which constituted the International Vaccine Bank (IVB) were no longer up to standard with respect to adventitious agents, resulting in the disbandment of the IVB. However the EU Vaccine Bank and national antigen banks of some member countries have been recently expanded through contracts with commercial vaccine manufacturers. The EUFMD Research Group and Executive Committee continually discuss the issues relating to technical aspects of vaccination and the administration of vaccine banks whilst the Chairman of the Research Group has contributed to the revised Ph Eur.

Another critical issue for member countries which is being addressed by the Research Group is the level of surveillance that will be required after an outbreak, especially where emergency vaccination has been deployed and vaccinates have been allowed to live. Guidelines for post-outbreak surveillance have not yet been firmly established especially in situations where emergency vaccination is deployed. The OIE has produced draft guidelines and the EU directive (2003/85/EC) has specified minimum requirements and has prescribed the course of action which should be taken in the event of an infected animal being identified during surveillance. A working group which will focus on this specific issue was established at the Closed Session of the EUFMD Research Group held at Berne, September 2003.

Development and validation of diagnostic tests is yet another area on which the EUFMD Research Group has focussed its efforts. A demand for rapid, penside diagnostics was one of the outcomes of the 2001 epidemic; papers were presented to the Research Group Open Session in Izmir, September 2002 on both antigen detection and RT-PCR methods of detecting virus. Questions still remain regarding the validation, application and interpretation of penside tests and these have been the subject of continuing debate by the Research Group. The SPCE developed at Pirbright has now been accepted by the OIE as an approved test method for the purposes of international trade. The SPCE allowed for more rapid and reliable screening of sera for FMD antibodies than the LPBE during the post-outbreak serosurvey conducted in the UK in 2001. Research and development also continues to enhance the performance of diagnostic tests for the detection of NSP antibody. In addition to their primary use as DIVA tests, NSP antibody detection tests may also have potential as serotype-independent serodiagnostic tests (e.g. potentially being used by European laboratories for the serodiagnosis of SAT-type infection) but will need to be validated for this purpose. EUFMD provided assistance for the field collection of sera and other clinical specimens from convalescent and vaccinated cattle in both Israel and Zimbabwe in 2004, for the purposes of further validation of DIVA tests. With EUFMD support, a workshop on comparative evaluation of existing NSP antibody detection tests, which was held in IZSLER, Brescia in May 2004, to resolve questions on the selection of DIVA tests for use in Europe.

#### *The FMD situation in neighbouring FMD-endemic countries*

The consequences of the 2001 epidemic should not obscure the major and continuing role of the EUFMD Commission in the prevention of FMD entry through Thrace into Greece and Bulgaria, and since 1999, through the Trans-Caucasus countries into Turkey and Russia. The Tripartite FAO/OIE/EC group have continued to meet on annual basis and as a result vaccine has been supplied by EC on several occasions to ensure high protection in Thrace region of Turkey. The EUFMD has continued to assist the progressive control of FMD in Turkey through assisting with improvements in laboratory diagnosis and vaccine production, assisted by the EC under a implementing agreement signed in 2001. In 2003, the implementing agreement was extended to include the Trans-Caucasus countries, in response to the emergency actions decided by the FAO/OIE/EC to support a vaccinated "buffer zone" on the border of Georgia, Armenia and Azerbaijan on 3 occasions between 1999-2003. The Commission has also supported the authorities in each of these regions to ensure the potency of regionally produced vaccines (by independent assessment) and to conduct post-vaccinal serosurveillance to ensure immune protection of vaccinates. A recent additional development in support for post-vaccinal surveillance in Turkey, and the Transcaucasus countries for the presence of serum antibody to the non-structural proteins of FMD virus, an indicator of the circulation of virus. In line with the long term policy of the Commission to develop local capacity for surveillance, EUFMD has supported training for FMD laboratory staff in each of the countries in 2004 and the supply of essential diagnostic kits and equipment. An FAO technical co-operation project (TCP) which is being supervised by the EUFMD Secretariat aims to improve the surveillance for FMD and other transboundary animal diseases (Bluetongue, PPR and Sheep Pox) in the Thrace region of Turkey and neighbouring regions of Greece and Bulgaria.

FAO-EUFMD also contributed to an expert mission to Iran in October 2002 which identified strengths and weaknesses in the surveillance system for transboundary animal diseases, and developed a project which should be implemented in 2004 to strengthen the surveillance for invasion of virus variants which threaten the entire region. The rationale for this project is similar to that of the EUFMD/FAO work with Iran in the 1960's; exotic virus variants have continued to arise and threaten the region in every decade.

*The Global FMD situation*

The 35<sup>th</sup> General Session recommended that member countries conduct import risk analyses (i.e. to assess the risk of entry of FMD virus in legally or illegally imported animal products) but that the methods used for such analyses need to be carefully considered. Significant gaps in our knowledge about the serotypes and strains of virus circulating in many parts of the world create difficulties in risk assessment. EUFMD has recently provided financial assistance for assisted delivery of clinical specimens from FMD outbreak locations in Sudan to the WRL (Pirbright, UK) for virus isolation and typing and the Commission continues to support the activities of the WRL in global FMD surveillance.

Further, the EUFMD Commission has actively supported FAO and OIE to develop plans for strengthening FMD control at a global level through a co-ordination framework that promotes regional action; in 2004 one of the first fruits of the working arrangement agreed between FAO and the OIE is the development of a longer term project for FMD control in the Caucasus region, which may set the pattern for other areas of concern. .

### Chairpersons of the European Commission for the Control of FMD

1.	Dr J.C. Nagle	Ireland	1954-1957
2.	Dr J.M. Van den Born	Netherlands	1958-1959
3.	Sir John Ritchie	United Kingdom	1960-1964
4.	Dr R. Gaier	Austria	1965-1966
5.	Dr C. Werdelin	Denmark	1967-1970
6.	Dr A.G. Beynon	United Kingdom	1971-1972
7.	Dr A. Nabholz	Switzerland	1973-1975
8.	Dr A. Brown	United Kingdom	1977-1980
9.	Dr H. Van den Berg	Netherlands	1981-1982
10.	Prof. Dr. A. Rojahn	Fed. Rep. Germany	1983-1987
11.	Dr W.H.G. Rees	United Kingdom	1987-1988
12.	Prof. P. Gafner	Switzerland	1989-1990
13.	Dr Erik Stougaard	Denmark	1991-1992
14.	Dr K.C. Meldrum	United Kingdom	1993-1996
15.	Dr R. Marabelli	Italy	1997-2000
16.	Dr Ignacio Sánchez	Spain	2001
17.	Dr Leos Celeda	Czech Republic	2002-2003
18.	Dr Mrs Karin Schwabenbauer	Germany	2003-present

### Secretaries of the European Commission for the Control of FMD

Sir Thomas Dalling ( <i>ad interim</i> )	United Kingdom	1954-1958
Dr. E. Fogedby	Denmark	1958-1962
Dr. G.M. Boldrini	Italy	1962-1978
Dr. P. Stouraitis	Greece	1978-1993
Dr. Yves Leforban	France	1994-2001
Dr Keith Sumption	United Kingdom	2001-present

### Administrative Assistants of the EUFMD Secretariat

Ms. Dorino Guarino	Italy	1962-1976
Ms. Joan Raftery	Ireland	1976-2001
Ms. Egiziana Fragiotta	Italy	2001-present

### Associate Professional Officers (APO)

Dr John Ryan	Ireland	1998 - 2001
Dr Dónal Sammin	Ireland	2002 – 2004

### Composition of the Committee for the First and Second Session

<i>First Session:</i>	<i>27-30 July 1954</i>	
<i>Second Session:</i>	<i>16-17 March 1955</i>	
<i>Chairman</i>	Dr. J.C. Nagle	Ireland
<i>First Vice Chairman</i>	Dr. J.M. Van den Born	Netherlands
<i>Second Vice Chairman</i>	Dr. S. Mihajiovic	Yugoslavia
<i>Technical Secretary</i>	Sir Thomas Dalling	United Kingdom

Table I

**COUNTRIES ADHERING TO THE EUROPEAN COMMISSION  
FOR THE CONTROL OF FOOT-AND-MOUTH DISEASE**

**ESTABLISHMENT OF THE EUROPEAN COMMISSION FOR THE  
CONTROL OF FOOT-AND-MOUTH DISEASE (EUFMD)  
12 JUNE 1954**

<u>Country</u>	<u>Date of Acceptance</u>	<u>Remarks</u>
Norway	11 December 1953	Letter of 11.12.1953 from DG to Prime Minister of Norway, informing him that Mr Rasmus Norh, Head of Norwegian Delegation to Conference, had deposited the instrument by which Norwegian Govt. accepts the constitution – as from 11.12.53.
Yugoslavia	15 December 1953	Letter of 15.12.1953 from DG to Minister of Foreign Affairs of Yugoslavia informing him that Mr Stans Krasover has deposited the instrument by which Yugoslavic Govt. accepts the constitution.
Ireland	16 December 1953	Letter of 16.12.1953 from DG to Minister of External Affairs, Ireland – instrument by which Govt. of Ireland accepts constitution.
United Kingdom	21 December 1953	Instrument of acceptance transmitted by Embassy, Rome, and acknowledged by letter of DG of 18 January 1954.
Denmark	29 January 1954	Instrument of acceptance lodged and acknowledged.
Netherlands	12 June 1954	Acceptance of constitution limit to European parts of Netherlands.
Iceland	17 January 1955	Instrument of acceptance of Govt. of Iceland dated 31.12.1954 – effective as from 17.1.1955 date received.
Italy	27 September 1955	Italy's intention to join the Commission published in Official Gazette 29.8.1955 – instrument and acceptance deposited 27.9.1955.
Turkey	27 September 1955	Instrument of acceptance deposited 27.9.1955.
Portugal	6 October 1955	Instrument of acceptance deposited 6.10.1955.
Austria	1 December 1955	Instrument of acceptance deposited 1.12.1955.
Greece	23 March 1959	Instrument of acceptance deposited 20.3.1959.

Luxembourg	1 June 1959	Instrument of acceptance deposited 17.4.1959.
Belgium	24 September 1959	Instrument of acceptance deposited 22.8.1959.
Switzerland	23 February 1961	Instrument of acceptance deposited 7.2.1961.
Sweden	13 December 1963	Instrument of acceptance deposited 18.11.1963.
Finland	5 March 1970	Instrument of acceptance deposited 16.2.1968.
Malta	13 March 1970	Instrument of acceptance deposited 24.1.1970.
Hungary	7 April 1970	Instrument of acceptance deposited 27.3.1970.
Cyprus	11 January 1971	Instrument of acceptance dated 27.12.1970 with covering Note Verbale from Ministry of Foreign Affairs dated 28.12.1970.
Bulgaria	2 November 1971	Instrument of acceptance dated 15.9.1971 with covering letter of the Ministry of Foreign Affairs dated 15.9.1971.
Germany, Fed. Rep.	26 March 1973	Instrument of acceptance dated 7.2.1973 with covering letter of the Ambassador of the Fed. Rep. of Germany, dated 26.3.1973.
Spain	20 December 1978	Instrument of acceptance dated 5.12.1978.
Polish People's Rep.	4 January 1984	Instrument of acceptance dated 24.12.1983.
France	28 February 1984	Instrument of acceptance dated 3.2.1984.
Czechoslovakia	1 January 1986	Instrument of acceptance dated 20.11.1985.
Albania	25 November 1986	Instrument of acceptance dated 16.10.1986.
Israel	4 September 1990	Instrument of acceptance dated 4 September 1990.
Romania	4 February 1993	Instrument of acceptance dated 4 February 1993.
Lithuania	27 May 1993	Instrument of acceptance dated 27 May 1993. Instrument of acceptance dated 17 January 1995.
Croatia	17 January 1995	Instrument of acceptance dated 25 July 1995.
Slovenia	25 July 1995	Instrument of acceptance dated 24 February 1997.
Macedonia	24 February 1997	



**TABLE II** Number of FMD outbreaks in Europe since the A<sub>5</sub> panzootic (Turkey included since 1962)

Year	1951— 1952	1953	1954	1955	1956	1957	1958	1959	1960
Outbreaks	860 873 <sup>1</sup>	44 711	15 171	15 783	116 181	16 147	49 205	29 779	22 500

Year	1961	1962 <sup>2</sup>	1963	1964	1965	1966	1967	1968	1969	1970
Outbreaks	29 579	28 862	21341	26 781	33 295	13 163	12 491	3 658	3 134	1 989

Year	1971	1972	1973	1974	1975	1976	1977	1978 <sup>4</sup>	1979	1980
Outbreaks	2 349	2 657	4 235	1 099	656	1 166	885	923	796	1 459
	1 641 <sup>3</sup>	737	2 412	440	185	106	49	63	36	585

Year	1981	1982	1983	1984	1985	1986	1987	1988*	1989	1990
Outbreaks	1 199	663	606	569	532	286	381	434	223	546
	350	50	147	74	130	135	168	(13)	(76)	(4)

Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Outbreaks	821 (3)	279 (1)	279 (59)	250 (97)	113 (5)	330 (197)	54 (0)	75 (0)	79 (22)	124 (14)

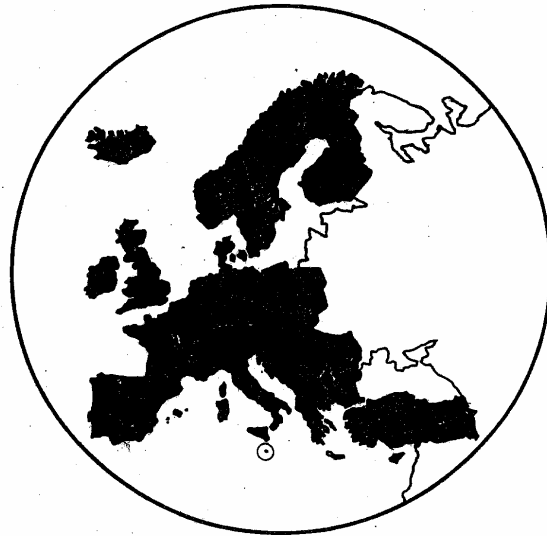
Year	2001	2002	2003	2004**
Outbreaks	2151 (2053)	48 (0)	51 (0)	32 (5)

<sup>1</sup>A<sub>5</sub> panzootic; <sup>2</sup> USSR included as of 1962; <sup>3</sup> Europe excluding USSR and Turkey (Anatolia); <sup>4</sup> Turkey from 1978 European side (Thrace) FMD free- disease occurring in Anatolia; \* 1988-2004 - total outbreaks in EUFMD member countries (total excluding Turkey in parentheses); \*\* To end of April 2004; 5 outbreaks in Israel and 27 in Turkey



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

**ACTIVITIES AND ACHIEVEMENTS – 1954 - 1987**



**COMMISSION EUROPÉENNE DE LUTTE CONTRE LA FIÈVRE APHTEUSE**

**ACTIVITÉS ET RÉSULTATS – 1954 - 1987**



**FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS  
ORGANISATION DES NATIONS UNIES POUR L'ALIMENTATION ET L'AGRICULTURE**

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**FAO EUROPEAN COMMISSION FOR THE CONTROL OF  
FOOT-AND-MOUTH DISEASE  
Activities and Achievements 1954-1987**

FOREWORD

The Commission was established in 1954 following a series of meetings between interested countries and in the face of devastating outbreaks of foot-and-mouth disease which had occurred in Europe in the early fifties. The outbreaks had resulted in considerable economic losses for the countries concerned and marked disruption in trade. The need for international collaboration to deal with this highly diffusible disease was indisputable.

The achievements of the Commission in promoting this collaboration and the new information gained through the deliberations of its research group are clearly illustrated in this historical account of its activities.

While the results in terms of a reduction in the numbers of outbreaks were significant, the continual changes in the pattern of disease and development of new husbandry systems required regular updating of advice to member countries to ensure that progress was maintained.

The threat of the introduction, of the disease into Europe remains and the necessity to protect the high investment in terms of manpower and finance expended by member countries is clear. The work of the Commission in recent years has been devoted to achieving this but much remains to be done.

The Commission can derive considerable satisfaction from the results achieved which should serve as an example to other regions of the world of the benefits to disease control stemming from international collaboration.

Rome, 1989

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

### 1. BACKGROUND

Foot-and-mouth disease (FMD) has been known in Europe for centuries. The pattern of the disease was characterised, historically, by disastrous epizootics which, at intervals of 5 to 10 years, swept across the continent, generally from the east, and involved large numbers of the susceptible animal population. Between epizootic waves, the disease continued to occur, sporadically or endemically, in those regions with higher animal concentration or involved in intensive traffic in animals. High incidence of chronic infectious diseases and poor hygienic conditions in some areas favoured the frequent occurrence of malignant and complicated forms of FMD and mortality was often the consequence.

The most ravaging panzootic recorded in recent history developed in the years 1937-39 and caused some two million outbreaks on the continent where the most severely affected countries were Germany (700,000 outbreaks), France (378,000 outbreaks), Netherlands (265,000 outbreaks), Czechoslovakia (240,000 outbreaks) Poland (234,000 outbreaks), and Belgium (102,000 outbreaks). It was during this epizootic that, in Germany, a vaccine inactivated by Waldmann and Kobe was tested in the field with promising results.

After the second world war, the disease continued its endemic presence in various countries, with all the three European types, O, A, C, causing flare-ups and containment being sought by ring-vaccination.

A true panzootic occurred a few years later, in 1951, when a new strain (A5) of A virus type found ideal conditions for spread in western Europe. In two years over 900,000 outbreaks were declared and most affected were Italy (430,000 outbreaks), France (330,000 outbreaks), Netherlands (280,000 outbreaks), the Fed. Rep. of Germany (204,000 outbreaks), Belgium (59,000 outbreaks), Greece (57,000 outbreaks) and Denmark (28,000 outbreaks).

The cost of the 1951-52 epizootic amounted, according to FAO enquiries, to 600 million U.S. dollars but losses would have been higher had vaccination not succeeded in blocking or slowing down the course of the disease in several countries.

The tremendous increase in the interstate trade of animals and meat to satisfy the explosive demand for proteins made by the new consumer society, had multiplied the chances of FMD contamination on the continent. The 1951-52 epizootic was a consequence of that situation.

The disrupting effect of FMD on both the internal economy and external trade, was fully recognised not only by the countries which, following the British example, had adopted the slaughter policy long before the advent of vaccination, but also, by the majority of other continental countries, especially those exporting livestock and meat.

Governments had become aware that individual action was insufficient to bring FMD under control, at the European level and, in the absence of internationally coordinated efforts, new initiatives were needed.

## **2. Establishment of the European Commission for the Control of FMD**

The idea of a European cooperative work in FMD control was launched at an FAO meeting in London in 1949 and was further discussed at subsequent meetings held jointly by FAO and OIE in Paris in 1950, by OIE in Berne in 1951, and by the OEEC Working Party on Animal Health in Paris in May 1952.

The next step consisted in working out how best international efforts could be applied in Europe: at a meeting held for this purpose by FAO in Copenhagen in September 1952, with the participation of OIE, OEEC, MSA (Marshall Plan) and some European countries, the proposal was put forward for a European Commission which should work autonomously with the financial support of member Governments. In the meantime, the FMD type A<sub>5</sub> epizootic had caused heavy losses in many countries and this was a further incentive for international cooperation.

After two other meetings in Rome, in December 1952, with 17 countries, OIE and OEEC attending, and in July 1953, the draft of a Constitution for a European FMD Commission, drawn up at FAO headquarters, was discussed, amended, and finally accepted for submission to the FAO Conference.

In December 1953, by Resolution No. 33, the Seventh Session of the FAO Conference formally established the European Commission for the Control of FMD) subject to the acceptance of the Constitution by at least six countries. In June 1954, with the sixth country depositing its instrument of adherence, the Constitution came into force. The first members of the Commission were: Norway, Yugoslavia, Ireland, Denmark, United Kingdom and the founder and first Secretary *ad interim* of the European Commission was Sir Thomas Dalling, Chief, Animal Health Service in FAO, and former Director of the British Veterinary Services.

### Constitution of the European Commission for the Control of Foot-and-Mouth Disease

The Seventh Session of the Conference (1953) approved the Constitution of the European Commission for the Control of Foot-and-Mouth Disease, for submission to FAO Member Nations for adoption.

In accordance with Article XIX.1 of the Constitution, the latter entered into force on 12 June 1954, the date of receipt of the sixth instrument of acceptance. The Constitution of the Commission was registered with the Secretariat of the United Nations on 21 June 1954 under No. 2588.

The Commission, at its Ninth Session (March 1962), adopted amendments to its Constitution, Rules of Procedure and Financial Regulations to bring these instruments into line with the principles laid down by the Conference at its Ninth Session. These amendments were approved by the FAO Council at its Thirty-ninth Session (October 1962).

At its Twentieth Session (April 1973), the Commission adopted further amendments to its Constitution, Rules of Procedure and Financial Regulations, which were endorsed by the Sixty-first Session of the Council (November 1973).



Subsequently, at its Twenty-second Session (March/April 1977), the Commission adopted further amendments to its Constitution and Financial Regulations, which were approved by the Seventy-second Session of the Council (November 1977). The amendments were designed to give effect to Conference Resolutions 10/73 and 26/75.

Parties to the Constitution

The following countries became parties to the Commission by the deposit of an instrument of acceptance:

<u>Countries</u>	<u>Date of Receipt of Instrument of Acceptance</u>
Norway	11 December 1953
Yugoslavia	14 December 1953
Ireland	16 December 1953
Denmark	4 February 1954
United Kingdom	1 March 1954
Netherlands	12 June 1954
Iceland	17 January 1955
Turkey	27 September 1955
Italy	29 September 1955
Portugal	6 October 1955
Austria	1 December 1955
Greece	23 March 1959
Luxembourg	1 June 1959
Belgium	24 September 1959
Switzerland	23 February 1961
Sweden	13 December 1963
Finland	5 March 1968
Malta	13 March 1970
Hungary	7 April 1970
Cyprus	11 January 1971
Bulgaria	2 November 1971
Federal Republic of Germany	26 March 1973
Spain	20 December 1978
Poland	4 January 1984
France	28 February 1984
Czechoslovakia	1 January 1986
Albania	25 November 1986

## 2.1 Structure, objectives and functions of the European Commission

The Commission was established by international agreement as an autonomous body, within the framework of FAO, (Art. XIV of the FAO Constitution); membership is acquired by accepting the Constitution of the Commission and is open to all European countries.

By Constitution, the Commission holds biennial sessions (annual sessions were held until 1973) to review the FMD position, control and prophylaxis policy and to decide on future activities. At the biennial sessions an Executive Committee, composed of 8 members including the Chairman, is elected: this Committee is the governing body of the Commission between Sessions. The staff of the Secretariat of the Commission is appointed by the Director General with the approval of the Executive Committee and enjoy the same terms and conditions as the staff of the Organization. Office accommodation for the secretariat is made available in the Animal Health Service.

By accepting the Constitution, the member countries undertake to combat FMD with a view to its ultimate eradication. To reach this objective, members commit to apply, in addition to suitable quarantine and sanitary measures, one or more of the following methods;

1. a slaughter policy
2. slaughter together with vaccination
3. maintenance of a totally immune cattle population by vaccination
4. vaccination in zones surrounding outbreaks.

The large flexibility offered in the choice of the method of disease control was initially justified by the absolute need for general participation in a combined European effort independently of individual possibilities and methods of control. To achieve this, members are committed to give technical assistance to other countries engaged in concerted disease control operations.

The general functions of the Commission, through its Secretariat, are to collect and disseminate epizootiological information on FMD in collaboration with OIE to assist countries in diagnostic work and organization of disease control and prevention programmes; to maintain a register of available stocks of virus and to observe the evolution of FMD especially in the regions from which the disease could be introduced into Europe by importation or by any other means.

Special functions, as specified in the Constitution, consist in making provision for the production and/or storage of virus and/or vaccines for distribution to members in case of need and, in particular, the establishment of "cordons sanitaires" to prevent the spread of the disease. In addition, to achieve the objectives of the Commission, special projects can be formulated and implemented on the recommendation of the Executive Committee.

The primary functions of the Executive Committee are to implement the policies and measures approved by the Commission at Sessions and to report on activities and approve the administrative budget between sessions.

The Commission may establish temporary, special or standing committees to study and report on matters pertaining to the purpose of the Commission.

The administrative costs of the Commission, excluding the service facilities offered by FAO, are borne by member countries which contribute to the administrative budget according to a scale of contributions fixed by the Commission.

### Membership

From six member countries in 1954, membership rose to 11 in the 1950s, to 17 in the 1960s, to 22 in the 1970s and to 27 in the 1980s, i.e. to the whole of Europe except for the German Democratic Republic, Romania and USSR. (see list, page 3).

## **3. ACTIVITIES OF THE COMMISSION DURING THE '50s**

### 3.1 Cooperative work beginning

During the first period of its existence the Commission had to acquaint itself with the real position and organization of FMD control in Europe; much of this information became available at the first and second Sessions (1954-1955) through the replies and comments given by countries to a detailed questionnaire issued in 1953. To improve his knowledge of the sanitary situation on the continent, the Secretary paid visits to government authorities and laboratory staff in various countries especially in those where disease incidence was high. It can be stated that the fruitful contacts established by the first members of the Secretariat, Sir Thomas Dalling, as Consultant, and Dr. E. Fogedby, appointed Secretary in 1955, with leaders of FMD control in the more important countries, greatly helped in creating an atmosphere of constructive collaboration among European countries independently of their being members or not of the Commission.

Sessions of both the Commission and the Executive Committee became the forum where countries could openly discuss every year their positions and see which of the recommended methods had more chances of success in solving their particular problems.

To facilitate decisions by the Commission on technical issues and to advise upon problems in countries which might wish to be assisted in the formulation of control measures against the disease, a Standing Technical Committee was appointed by the Commission at its third session (1956) and was initially composed of veterinary administrators and leaders in FMD research.

During this period the Commission, was chaired by Mr. J.C. Nagle, Ireland (1954-57) and Dr. J.M. van den Born, Netherlands (1958-59).

### 3.2 The overall plan for FMD control proposed by the Commission

The plan for FMD control in Europe, initially proposed by the Standing Technical Committee was discussed and approved by the Commission in 1957. In the formulation of the overall plan account was taken of the experience made by several European and North-American countries in applying stamping out without vaccination, and of the encouraging results obtained since 1953 in the Netherlands and to some extent also in Belgium in the application of systematic

mass vaccination of cattle. While it was visualized that ultimately it might be possible to introduce a full slaughter policy throughout Europe, it was obvious that other methods, especially vaccination, would have been necessary in most countries, even for a considerable number of years, until the incidence of the disease was so reduced that a slaughter policy became economically possible.

Emphasis was therefore laid on systematic vaccination under conditions most suitable to the requirements of individual countries. Realizing that "national" schemes would not be possible in most countries because of shortage of vaccines, the promoters of the plan suggested that available vaccines be used where exposure to infection was highest.

The great value of conventional control measures, such as early notification of outbreaks, rigorous restrictions on movement of livestock in and around prescribed infected areas and careful disinfection practices were also emphasized.

### 3.3 Collaboration with FAO and other Agencies or Institutes in technical assistance work

Through its close contacts with Governments, veterinary authorities and experts, FAO had a very important role to play in supporting the development of animal health services. Thus the Organization became an invaluable source of information for the Commission on the evolution and control of FMD especially in world regions of major epizootiological interest for Europe.

The Commission was associated with these efforts. This was the beginning at a later stage of important activities of the Commission in the regionalization of vaccine production in southeastern Europe.

Collaboration with OIE has been close since the establishment of the Commission and it has been maintained in the spirit of the FAO/OIE agreement approved by the FAO Conference in 1953. This collaboration later developed into a joint cooperation with EEC and a Tripartite Committee was established which in the following years was to become the main consultative body for the FAO campaigns against exotic FMD in southeastern Europe.

The Commission maintained close collaboration with OEEC while its Working Party on Animal Health was in existence, and with the Pan American Center for FMD control at Rio de Janeiro: this WHO agency became an essential "liaison" for information, epizootiological and immunological work with the Commission and associated Institutes in Europe.

### 3.4 Nomination of a World Reference Laboratory (WRL) for FMD

FAO soon realized the importance of having a Reference Laboratory for FMD virus strains. In 1957, the U.K. took over the responsibility of accepting FMD material and the Institute of Pirbright, U.K., now the Pirbright Laboratory, which comes under the direction of the Institute for Animal Health, was authorized to set up a World Reference Laboratory (WRL) for FMD.

The Commission reacted to this situation and obtained agreement that special research of interest and benefit to the Commission and member countries would be included in the programme of Britain's AFRC Animal Virus Research Institute at Pirbright, U.K.

### 3.5 First achievements in FMD prophylaxis

The FMD situation in Europe, from the inception of the Commission's work, was characterized by gradual improvements which became more evident as the Commission's overall plan was implemented. Systematic mass-vaccination was slowly but steadily extended from the Netherlands to other West European countries. In many European countries, ring and/or area vaccination began to be routinely applied to arrest or confine disease outbreaks. As a result, no new panzootics developed but the disease continued to occur enzootically in some regions, especially in France, Italy, Poland, and the Federal Republic of Germany.

Table I gives statistical data for a number of selected countries, relative to the 1951-52 epizootic and the average of yearly outbreaks observed in the period 1953-1960 (8 years).

### 4. ACTIVITIES AND MAIN ACHIEVEMENTS IN THE '60s

The 1960s constituted a decade of great achievement both in eliminating endemic areas on the continent and in protecting Europe from attacks of exotic FMD in the southeastern sector. Increased membership of the Commission, good attendance at its Sessions, and free liaison with other agencies, EEC in particular, produced fruitful cooperation in solving technical and financial problems.

TABLE I

Country	Outbreaks in the period 1951-1952 (A <sub>5</sub> panzootic)	Average annual outbreaks between 1953-1960 inc.
France	330 556	17 842
Belgium	58 845	659
Netherlands	28 404	62
Fed. Rep. of Germany	209 050	1 664
Switzerland	426	52
Italy	43 690	8 610
Austria	12 610	47
Denmark	27 769	45
Poland	88 245	3 125
Yugoslavia	3 657	250
Greece	57 520	32
U.K	611	101
<b>TOTALS</b>	<b>860 873</b>	<b>32 489</b>

The impact of vaccination in reducing disease incidence especially in the '50s, was a determining factor in countries where prophylaxis was accompanied by strict sanitary control, good isolation of virus production centers and by "stamping out" on infected holdings.

#### 4.1 The overall plan widely implemented

The vicious circle of alternating periods of disease dormancy and recrudescence was broken by a combination of systematic vaccination and slaughter of infected animals. The benefits of this practice, already noted in the late '50s, became obvious and statistically significant when technological progress permitted the extension of annual vaccination to the entire cattle population. Systematic vaccination of breeding pigs was inaugurated in Spain when the new, oil-adjuvant vaccine became available.

While furthering more and more the practice of prophylaxis, the Commission promoted improvements in vaccine production techniques and vaccine quality through scientific meetings, and technical collaboration between FMD laboratories in joint programmes in this field.

This too was the period of implementation of the industrial application of tissue culture in the national laboratories of Italy and Belgium. At the same time, the laboratories agreed, on the recommendation of the Commission to train scientific staff from laboratories in eastern Europe, Turkey and the Near East.

As a result, FMD ceased to be, at least in cattle, a permanent scourge, though vulnerable areas still existed in continental Europe. Significant examples of the consequences of such persisting foci of infection, especially in the pig population, were the widespread involvement of pigs in the Po river plain in Italy and also in Belgium and in the Netherlands between 1961 and 1963, a flare-up in the Iberian peninsula in 1964, two local epizootics involving the Danube countries in 1965 and in 1968, and repeated disease manifestations in the frontier areas of France with Spain.

In Great Britain, the epidemic of 1967/68, caused by imported beef meat of south American origin, incurred high costs in the implementation of the "stamping out" policy (240,000 animals destroyed) but involved important new observations and studies on airborne virus transmission and preclinical virus shedding in pigs and cattle.

#### 4.2 The new challenge of exotic FIID in southeastern Europe; establishment of buffer zones

##### 4.2.1 Background

As a result of the progress achieved in FMD control in countries from the Pyrenees to the Urals, the point of major vulnerability in Europe shifted to the southeastern sector where conditions increased the danger of epizootic invasions of eastern origin.

Turkey was the most vulnerable country with its extensive frontier areas exposed to the risk of epizootics arriving from the Middle East or eastern Africa either by natural spread or through the uncontrolled importation of livestock and livestock products.

Once in the Near East, FMD is virtually in Turkey, and therefore, effectively, in Europe, due to the intensely populated Bosphorous area being supplied by the livestock production areas of eastern Anatolia.

##### 4.2.2. The SAT-1 Campaigns

The African SAT-1 virus, which was introduced into Bahrain in January 1962 with animals imported from eastern Africa, invaded the Near East in the following spring and soon reached the southeastern border areas of Turkey.

At an emergency meeting held by the Executive Committee in London and at a joint FAO/OIE meeting held in Teheran (spring 1962), it was realized that an inadequate veterinary infrastructure existed in that part of the world which would make it inevitable that the already widespread epizootic would continue to spread. This alarming situation made the Commission call an emergency session in July of the same year in Rome: by that time the SAT-1 virus had already been identified by an FAO mission in southern Turkey.

Following a recommendation unanimously adopted at that session, the Director General of FAO launched a fund-raising campaign by contacting all European Governments and the European Economic Community (EEC) in order to obtain financial support for the procurement of the necessary vaccines. In the meantime the SAT-1 virus had invaded the cattle raising provinces of eastern Anatolia, crossed the country by animal transport, reached the Istanbul markets and penetrated Thrace including border villages in Greece. Pending the preparation of an homologous vaccine, in autumn 1962 the SAT-1 vaccine available at Pirbright was immediately delivered to Greece for the first campaign at its borders with Turkey.

The FAO initiative in approaching Governments at the highest level was successful: 16 countries, including EEC members, provided or promised contributions, thus allowing for the continuation of the first campaign with homologous vaccine prepared at AVRI, Pirbright, and the planning of buffer zones of vaccinated animals to be established and maintained initially over the entire Thrace area, i.e. including the Greek and Bulgarian border areas at a depth of 30 to 50 kilometers. The maintenance of "cordons sanitaires" along border areas was scheduled to continue also in the future as long as exotic infections existed in Anatolia.

To support the efforts of Turkey and Greece (both member countries of the Commission). in their field operations and laboratory work, assistance was extended to cover transportation (vehicles, including refrigerated trucks) and laboratory equipment. Turkey decided to build an FMD institute and Greece opened a new wing of its own laboratories at Aghia Paraskevi. The Secretariat of the Commission was engaged for a number of years in organizing fellowships and procuring vaccine, transportation and laboratory materials.

The strategy and financing of the field Operations, including technical assistance, was placed under the supervision of a consultative Tripartite FAO/EEC/OIE Committee which met regularly before the beginning of annual campaigns.

#### 4.2.3 The A<sub>22</sub> invasion and campaigns

In autumn 1964, another exotic FMD virus, A<sub>22</sub> made its appearance in the Near East and in the following spring invaded the region, including Turkey. 4,000 villages were declared infected in Anatolia and in June 1965, the infection had already reached Greek villages in Thrace. A new emergency was declared and the Commission had to renew its efforts, with the support of the Director General of FAO,

in order to ensure the funding necessary to continue against the new virus the measures taken against SAT-1, which in the meantime had been eliminated from Thrace.

Initially, the old pattern of Spring and, when necessary, Autumn campaigns continued using a bivalent vaccine ( $A_{22}$ /SAT-1), but after 1966, Spring vaccination only was the routine, using monovalent  $A_{22}$ , but combined, when necessary, with  $O_1$  vaccine. Technical assistance to Turkish and Greek FMD laboratories was intensified.

In the second half of this period, a new form of collaboration developed with French laboratories subsequent to the opening of a private French laboratory at the Razi Institute, Teheran, using the Frenkel method of production, which became the main FAO supplier of exotic vaccine and established technical collaboration with the Ankara FMD Institute. This was another step towards regionalization of FMD vaccine production in the region.

Between 1963 and 1969 some 5 million US dollars were provided by the Commission for the production of vaccine, laboratory supplies, transportation and expertise in the area.

#### 4.3 Main features of the technical progress in the '60s

During this period, the Standing Technical Committee of the Commission studied progress in the field of diagnosis and control and kept the Commission informed on developments, thus contributing to the ever-increasing efficiency of disease control and prophylaxis.

Of significant importance were the studies carried out on: 1) air borne transmission of the infection and preclinical virus shedding; 2) carrier state and virus recovery by probang testing; 3) significance of the upper respiratory tract as a portal of entry for the virus; 4) demonstrated correlations between antibody levels and immunity and also between laboratory animals (guinea pigs, mice) and cattle in the response to vaccinations; 5) industrial developments of the monolayer technique and promising results of cell culture in deep suspension; 6) the use of saponin to enhance immunological response in cattle; 7) first encouraging experience with oil or DEAE-Dextran vaccines in pigs; 8) the choice of PD50 evaluation, as the criterion of vaccine potency, and first attempts to define minimum numbers of PD50's; 9) criteria for innocuity testing of vaccines and for an improved security system in and around vaccine production plants.



## **5. ACTIVITIES AND ACHIEVEMENTS IN THE '70's AND '80's**

The beginning of this period was marked by four new countries becoming members of the Commission: this added to the authority and prestige of the Commission's decisions and its status in the international community.

Following a suggestion by the FAO Regional Conference for Europe, in 1971 the Commission reviewed its position and functions. It was unanimously concluded that no duplication of activities or overlapping existed with other organizations and agencies. This was also the case of the Research Group (Standing Technical Committee) activities, primarily directed towards advising the Commission on current technical problems, harmonizing and coordinating work among European FMD laboratories, and assisting in training and specialization activities. It was also emphasized that the position of the Commission within the FAO framework was proving to be an important feature which was furthering, as in the case of campaigns in southeastern Europe, the most efficient utilization of the Organization's network facilities and expertise in implementing the Commission's tasks/programmes and projects.

### **5.1 Europe approaching FMD freedom**

The tendency of FMD to become a sporadic occurrence continued during the early 70s and has since been consolidated on the continent due to maintenance and extension and especially to solid vaccination coverage. Large gaps, due to the presence of unvaccinated livestock, have remained in Portugal, where FMD caused extended outbreaks in 1971 and, again, 10 years later, and in some eastern European countries where an alternative to vaccination has been rigid application of veterinary police measures and rigorous control of animal movements and importations. The result has been long periods of disease freedom in northern Europe, the British Isles, and Eastern Europe including USSR, where over 200 million animals are vaccinated every year.

***The average number of outbreaks declared every year in Europe during the first half of the 1970s was 1,500; from 1976 the average decreased to 200 and to 165 at the end of the decade. (See Table II)***

In judging the real value of these figures it has to be taken into account, however, that they refer, in general, to clinical cases in a vaccinated population within which low level infections may remain undetected.

To combat residual potential sources of infection both internal and external, the Commission has tirelessly insisted on the rigorous implementation of stamping out and the need to make further progress in disease prevention by ensuring, that adequate inactivation takes place to ensure vaccine supply and that improved techniques are employed to detect residual infectivity in inactivated vaccines.

Virus escapes from laboratories were a major preoccupation until, under the leadership of Pirbright, Tübingen, Lindholm and Lelystad, other FMD institutes adopted very efficient systems of disease security to eliminate contamination possibilities by materials, effluents and people.

**TABLE II Number of FMD outbreaks in Europe since the A<sub>5</sub> panzootic (Turkey included since 1962)**

Year	1951–1952	1953	1954	1955	1956	1957	1958	1959	1960
Outbreaks	860 873 <sup>1</sup>	44 711	15 171	15 783	116 181	16 147	49 205	29 779	22 500

Year	1961	1962 <sup>2</sup>	1963	1964	1965	1966	1967	1968	1969	1970
Outbreaks	29 579	28 862	21 341	26 781	33 295	13 163	12 491	3 658	3 134	1 989

Year	1971	1972	1973	1974	1975	1976	1977	1978 <sup>4</sup>	1979	1980
Outbreaks	2 349 1 641 <sup>3</sup>	2 657 737	4 235 2 412	1 099 440	656 185	1 166 106	885 49	923 63	796 36	1 459 585

Year	1981	1982	1983	1984 <sup>5</sup>	1985 <sup>5</sup>	1986 <sup>5</sup>	1987 <sup>5</sup>
Outbreaks	1 199 350	663 50	606 147	569 74	532 130	286 135	381 168

<sup>1</sup>A<sub>5</sub> panzootic; <sup>2</sup> USSR included as of 1962; <sup>3</sup> Europe excluding USSR and Turkey (Anatolia);

<sup>4</sup> Turkey from 1978 European side (Thrace) FMD free- disease occurring in Anatolia; <sup>5</sup> Italy from November 1984 to July 1987 and Federal Republic of Germany from October 1987

Despite all these measures, FMD has not completely disappeared from the continent, due to other factors coming into play, such as imported livestock products, virus carriers or other agents. The recommendation, reiterated at the Twenty-sixth Session in 1985, that programmes of mass vaccination should be maintained and if necessary extended and in particular, that "stamping out" should be applied, whenever possible, to eliminate potential virus carriers, is but a confirmation of the 30-year old principle, which guided the formulation of the Commission's overall plan for FMD control in Europe.

The continuation of routine vaccination has been questioned, especially in recent years, in some countries by agricultural associations for reasons of cost and, occasionally, of adverse effects attributable to the use of certain vaccines. In consideration of this concern, the Commission represented the matter for discussion at the Twenty-sixth Session (1985). Following discussion it was proposed that a group of countries, should carry out a cost/effective study related to their procedures for control of FMD. It was agreed that the study would be based on the model elaborated by the Working Group of the Commission, and the following countries agreed to participate: the Federal Republic of Germany, Finland, the Netherlands, the Republic of Ireland, Spain, Switzerland and the United Kingdom.

The results of this study show that the model can be effectively applied for a cost-benefit study on vaccination policy by individual countries in Europe. This cost effective study on national FMD policies compares two alternatives: continued vaccination and "stamping out". This provides veterinary administrators with a comparison of costs of alternative strategies for FMD control and prophylaxis. The Guide was approved and accepted by the Commission at the Twenty-seventh Session held in Rome in April 1987. Member countries were invited to use the guide in order to determine which of the two is the better alternative for the country concerned.

## 5.2 Turkey's position and the continuing challenge of exotic FMD A<sub>22</sub> and ASIA-1 campaigns

The SAT-1 and A<sub>22</sub> campaigns of FAO marked the commitment of Turkey in controlling exotic infections in Thrace by ensuring an effective vaccination coverage which has been essential for the protection of Europe.

Concomitantly, the Commission engaged in the organization of campaigns and emergency action to combat the presence of exotic FMD virus types in Turkey. At a special meeting held at Ankara in August 1972, involving the Commission, OIE and EEC, it was agreed that international assistance for Turkey should be intensified in order to solve the problems which had arisen and to strengthen the sanitary-prophylactic system in Anatolia. This entailed increased supplies of exotic vacc under the campaign funds and special assistance by EEC and UNDP to allow for adequate expansions of vaccine production at Ankara.

Simultaneously, plans were drawn up with FAO expert assistance, for new industrial units and, for this purpose, the Turkish Government requested a special contribution of 4 million US dollars from EEC for the installation of technical equipment at the new laboratory

which would enable it to have a production capacity of 90 million doses of monovalent vaccine.

The Commission assisted in all these developments by approaching international agencies and governments and supervising, through the Secretary, the progress of work at the UN project at the Ankara Institute.

A UNDP Special Fund Project initiated in 1969 was continued in the '70s with the objective of developing modern techniques in virus production in cell suspension including provision of a pilot unit with a capacity of 10 million doses of vaccine.

In recent years, Bulgaria has also been assisted, through the UN Special Fund, in the development of an FMD laboratory at Sofia, later transferred to Sliven where a new FMD Institute, created with the support of an FAO project became operational in 1986.

In June 1984, a new emergency arose when, unexpectedly, cases of FMD, caused by virus ASIA-1 appeared in a border area of Greece with Turkey. Prompt action, taken by FAO in procuring an immediate supply of specific vaccine succeeded in bringing the situation back to normal.

To sum up, since the beginning of the FMD campaigns in 1962 in southeastern Europe 25 million doses of vaccine at a cost of US\$ 12 million have been supplied by FAO and used, in some 30 vaccination campaigns, for the maintenance of the buffer zone in Thrace and the neighbouring territories in Bulgaria and Greece (see map of buffer zone).

### 5.3 Contribution of the Research Group and training activities

The Research Group has made an invaluable contribution in keeping the Commission up to date with scientific and technological progress in the field of FMD research.

Every year, the Group has met to analyze problems and provide answers to questions submitted by the Commission and its member countries.

An important activity for the last ten years has consisted in an international collaborative interlaboratory study aimed at eliminating the difference in results obtained in virus-antibody assays. Six phases of the collaborative study, directed and coordinated by the World Reference Laboratory for FMD, WRL, have been carried out and results have been encouraging though further work is required to achieve full standardization of laboratory techniques in Europe.

The Group has recognized the value of the ELISA test in current diagnostic work and the importance of the use of monoclonal antibodies in the characterization of virus.

Vaccine potency and safety have been the subject of discussion at various meetings and laboratory demonstrations.

The study of allergic-anaphylactic post-vaccination reactions has led to the purification of antigens and vaccine components and the avoidance of most post-vaccination accidents.

The problem of disease security has been studied with a view to eliminating virus escapes from laboratories. Minimum standards for laboratories working with FMD virus "in vivo" and "in vitro" were recommended in 1985.

In the field of genetic engineering and chemical biosynthesis of new vaccines, the Group has noted the preliminary experimental results obtained in protecting animals but has recognised (Tübingen, 1981) that more work is required before the practical value of such new vaccines can be assessed.

The Group has advised the Commission when decisions had to be taken on various complex subjects, such as: definition of "exotic" virus in relation to European situations and vaccines; movement of slaughter stock and meat from areas where outbreaks due to exotic strains of FMD virus have occurred or inactivated exotic vaccines have been applied; milk products as possible vectors of FMD virus; subtype formulation of the European vaccine; carrier state with particular reference to vaccinated animals; etc.

As in the previous periods, the Commission, through its Research Group members and the relevant FMD institutes or laboratories has played a prominent role in training activities, generally by providing financial support and technical assistance for laboratory workers from European and also non-European FMD laboratories.

#### 5.4 Importation policies

Importation from both within and outside of Europe presented in the past an important source for the introduction of infection and persistence of disease especially in those countries, which were major importers of slaughter stock and meat, and, in addition, transit countries were often infected.

Following considerable improvements in the disease position achieved on the continent, especially during the '60s, it was easier to identify overseas sources of infection, often associated with the intercontinental trade of frozen carcass meat and offals. In these cases, virus strains could often be isolated which immunologically were so different from the European vaccine strains that on some occasions homologous vaccine had to be produced to overcome dangerous situations.

Of particular note, are the outbreaks caused by O Bruges in 1965, A Valais in 1961, the very dangerous C Thorout (= C5) in 1969 in Belgium and Greece, A Santander, introduced into Spain with slaughter cattle in 1972, A Netherlands and Aachen in 1976, A Sicily and Greece in 1977, A Novara in 1979. The agent of the British epizootic 1967-68' was O1 Campos, a South American virus strain.

The firm attitude taken by U.K. following the 1967-68 epizootic, in stipulating new and stringent import conditions for carcass meat from South America, was the basis for the Commission's recommendation of 1972, which stipulated that deboned beef only should be admitted, with the observation of additional safeguards concerning animal health and slaughtering procedures, from countries where non-exotic FMD is still present. Countries which have strictly

adhered to this policy have had no more cases of FMD attributable to meat importation.

Close attention has been paid by the Commission to the prophylactic programmes carried out in South America to reduce FMD incidence and in the maintenance of a disease-free zone in Patagonia. Visits have been made by the Secretary on numerous occasions to different countries and to the Pan American Center for FMD in Rio de Janeiro, where FAO experts have been engaged in carrying out epidemiological studies and running training courses in extension services.

The Italo-American cross-immunity trials carried out in Argentina and Uruguay (1971) are also noteworthy.

Importation from countries where "exotic" FMD is known to exist, has always been opposed in principle, by the Commission. Exceptions were considered, however, under special guarantees and conditions which were laid down at Brussels in 1960 by a joint meeting of representatives of the OIE Permanent Commission of FMD and the European Commission to make their implementation feasible. The conditions were reviewed by FAO and OIE experts in Paris in 1971 after experience had been gained in the organization and management of feedlots within disease free areas placed under strict government controls.

#### 5.5 Regionalization of FMD vaccine production

The concept of a regional approach to the world problem of FMD control has guided FAO action in this field since the early fifties: the European Commission has been an example of this policy.

The importance of regional self-sufficiency in the supply of FMD vaccines became obvious with the recognition of the great immunological differences between FMD agents, and, consequently, the need to produce in a given region the appropriate vaccine to meet local epizootiological situations. This has also served to avoid unnecessary manipulation of FMD viruses outside their original areas.

To conform with the recommendations made by OIE at Vienna in September 1962 and jointly confirmed two months later at Paris by FAO and OIE, the objective of the FAO campaigns against exotic FMD in southeastern Europe has been for 23 years to create sources of vaccine and vaccine production facilities both in the infected and in the neighbouring non-infected countries of the European continent.

In addition to the support given by the Commission, FAO, UNDP and EEC, to the development of vaccine production in Turkey, FAO has participated through the Commission's Secretary and FMD Institutes in FMD projects of various countries of the Near and Middle East.

In the developing world the capacity to deal with FMD is generally limited, both at the laboratory and at field level. At a meeting held in 1974 at FAO Headquarters by a Working Group composed of FAO and OIE experts, criteria and technical data for the establishment of regional and subregional FMD centers were laid down.

#### 5.6 Emergency and strategic reserves of FMD vaccines (vaccine banks).

Ever since its establishment, the Commission has been concerned about the possibility that new FMD viruses might cause emergencies in its member countries. Among the measures to be taken, the supply of type specific vaccines had to be considered.

The Commission decided in 1967, to stockpile seed virus of at least 8 epizootiologically significant FMD virus strains of exotic types and sub-types. Procedures for dealing with outbreaks and for obtaining the relevant seed were also approved (XVI<sup>th</sup> Session) and are still in operation.

The assumption that by receiving the appropriate seed virus, vaccine producers could promptly switch over, at any time, to industrial manufacture of the corresponding vaccine lost ground some years later and interest was raised again in the establishment of strategic reserves of vaccine. In the meantime, progress has been made in the preparation of concentrated antigens, which can be stored almost indefinitely, in a relatively small space, as compared with the stocks of perishable vaccines.

More interest in vaccine banks has been obviously shown by countries which are disease-free, do not practise routine vaccination, and in many cases, are not equipped for the industrial production of FMD vaccines.

As a result of a British initiative, in the course of meetings held in 1983 in Rome and in 1984 in Paris, the establishment of an FMD vaccine bank, to be located at AFRC, Pirbright, was finalized with the participation of five European countries, Australia and New Zealand. The bank consists of concentrated antigens for an equivalent of 0,5 million cattle doses each of the FMD virus types O<sub>1</sub>, A<sub>22</sub>, A<sub>24</sub> and C<sub>3</sub>. The bank is managed by a Commission of the member countries represented by their Chief Veterinary Officers and the relevant costs are shared on the basis of the drawing rights of the individual participants. The Bank became operational in 1985

#### 5.7 Swine vesicular disease

The first European case of SVD was seen in July in 1966 and the Commission has been concerned with the disease since its appearance in several other European countries in 1972.

At an "ad hoc meeting held at FAO headquarters in January 1973, the distribution, epizootiology, pathology and control of the new disease were discussed and recommendations were agreed upon by the representatives of all interested countries as to the adoption of appropriate control measures including eradication by stamping-out methods.

Stamping out has been applied also on the occasion of sporadic foci in other countries but extensive epizootiological surveys have been rare outside Britain and Denmark so that a true picture of the distribution of the agent in continental Europe is not available.

In some countries, restrictions are only applied for clinical cases of the disease: pigs are kept in isolation until normality is restored in the group. It is possible that in these countries many cases may be missed. This inevitably will not be conducive to the eradication of SVD in Europe as a whole.

## 6. CONCLUSIONS

FMD was endemic for centuries in Europe. Epizootics occurred periodically affecting seriously the development of the livestock industry and causing enormous economic losses.

The establishment in 1954 of the European Commission for the Control of Foot-and-Mouth Disease as one of FAO's statutory bodies, provided a forum for countries to discuss the disease position and agree on improved methods of control. As the implementation of the European Commission's overall plan for FMD control made progress in continental Europe (including USSR), the incidence of the disease steadily decreased. This improvement became more significant during the second half of the 60's.

The downward trend in incidence continued during the first half of the 70's followed by a still sharper drop in the 80's. This coincided with a substantial improvement in the national mass vaccination schemes and their gradual extension over the western part of the continent combined with the stamping out policy and the application of strict sanitary measures.

While systematic mass vaccination must have had a definite influence in reducing to less than 1% in 1987 the original incidence on the continent (63%), the consolidation of the results and the remarkable further improvement more recently recorded can be attributed to the success of new vaccination schemes, to improved testing for safety and potency of vaccines, and to wider adoption of security measures in vaccine production plants.

The application by all members of the Commission of the recommendations adopted at its Nineteenth Session in 1972, and updated by the Twenty-seventh Session in 1987, limiting the importation of boneless meat from infected countries, has marked a definite progress in disease prevention.

The disastrous effects of exotic FMD on European agriculture and economy were effectively offset by the introduction of the FAO vaccination campaigns against FMD which commenced in 1962 in the southeastern Europe buffer zone. Initially they were carried out against the SAT-1 virus and were subsequently continued to the present date against two other exotic virus types, A<sub>22</sub> and ASIA-1.

The campaigns have been a concrete example of international cooperation. FAO, UNDP, OIE, EEC, the Governments of non-EEC countries, national institutes, and private vaccine producers have all participated in providing financial and technical assistance to the best of their possibilities. Thanks to the successful implementation of the campaigns, Europe succeeded at its southeastern borders in preventing the introduction of exotic FMD virus from the Near East region.

The impact of the Commission through its activities has not been limited to the European continent. Its position within the framework of FAO makes it possible for the Commission to utilize the Organization's network, contacts and services in implementing many of its tasks. The conduct of surveys outside of Europe, for example, would be much more difficult without FAO facilities. In return the Organization has access to the expert advice of the many European



scientific and technical institutions with which the Commission works.

The Research Group of the European Commission is concerned with solving current practical problems referred to it by the Commission in the field of virus epidemiology, vaccine production and control, and security requirements for vaccine production plants. Standardization of laboratory techniques is another subject that has received much attention by the Research Group. During the last few years considerable time has been paid to new developments in the field of molecular biology and immunology for FMD virus. The ELISA technique is being applied more and more, not only for diagnosis but also, especially with monoclonal antibodies, (Mab's) for analysis of virus strain differences.

The work carried out by the Research Group is valuable and it has greatly contributed to the successful implementation of the Commission's objectives in the field of FMD control and eradication in Europe.

Once a satisfactory disease position had been achieved in Europe the protection of Europe against the reintroduction of the disease became, and still is the Commission's major objective. Bearing this in mind the Commission expanded the scope of its activities outside the continent and as a result increased its participation in the FAO programmes in developing countries.

Thanks to the joint efforts of the European countries individually and through the Commission, considerable progress has been made towards controlling and eradicating FMD in Europe. In addition the experience gained in Europe in controlling the disease and in developing new technologies, especially in FMD virus diagnosis and vaccine production and control, has been transferred directly or indirectly to countries outside of Europe. The work carried out by the FAO World Reference Laboratory for FMD, Pirbright, UK, in virus typing and characterization of field samples received from all over the world has been a further contribution to this.

The establishment, operation and achievements of the European Commission for the Control of Foot-and-Mouth Disease in over 30 years activities is an example of a regional approach to the control and eradication of a livestock disease. The operation of regional control and eradication schemes such as that being carried out by the Commission will, it is hoped, lead eventually to a linking up of the different regions of the world in a worldwide campaign aimed ultimately at disease eradication in the world.

### **Chairpersons of the European Commission for the Control of FMD**

1. Dr. J.C. Nagle	Ireland	1954-1957
2. Dr. J.M. Van den Born	Netherlands	1958-1959
3. Sir John Ritchie	United Kingdom	1960-1964
4. Dr. R. Gaier	Austria	1965-1966
5. Dr. C. Werdelin	Denmark	1967-1970
6. Dr. A.G. Beynon	United Kingdom	1971-1972
7. Dr. A. Nabholz	Switzerland	1973-1975
8. Dr. A. Brown	United Kingdom	1977-1980
9. Dr. H. Van den Berg	Netherlands	1981-1982
10. Prof.. Dr. A. Rojahn	Federal Rep. Germany	1983-1987
11. Dr. W.H.G. Rees	United Kingdom	1987-

### **Secretaries of the European Commission for the Control of FMD**

Sir Thomas Dalling ( <i>ad interim</i> )	United Kingdom	1954-1958
Dr. E. Fogedby	Denmark	1958-1962
Dr. G.M. Boidrini	Italy	1962-1978
Dr. P. Stouraitis	Greece	1978-

### **Administrative Assistants of the EUFMD Secretariat**

Ms. D. Guarino	Italy	1962-1976
Ms. J. Raftery	Ireland	1976-

### **Composition of the Committee for the First and Second Session**

#### ***First Session:***

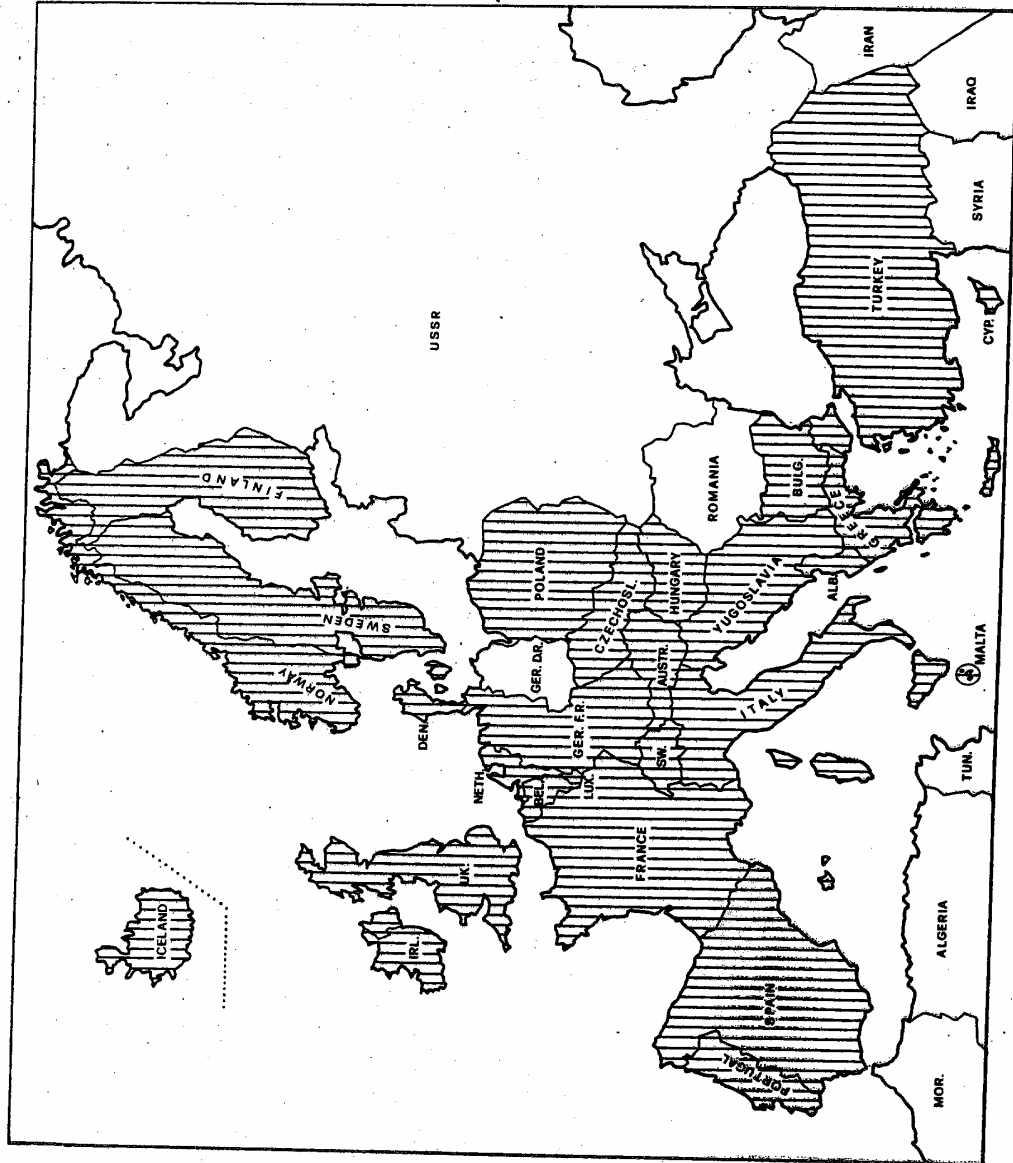
***27-30 July 1954***

#### ***Second Session:***

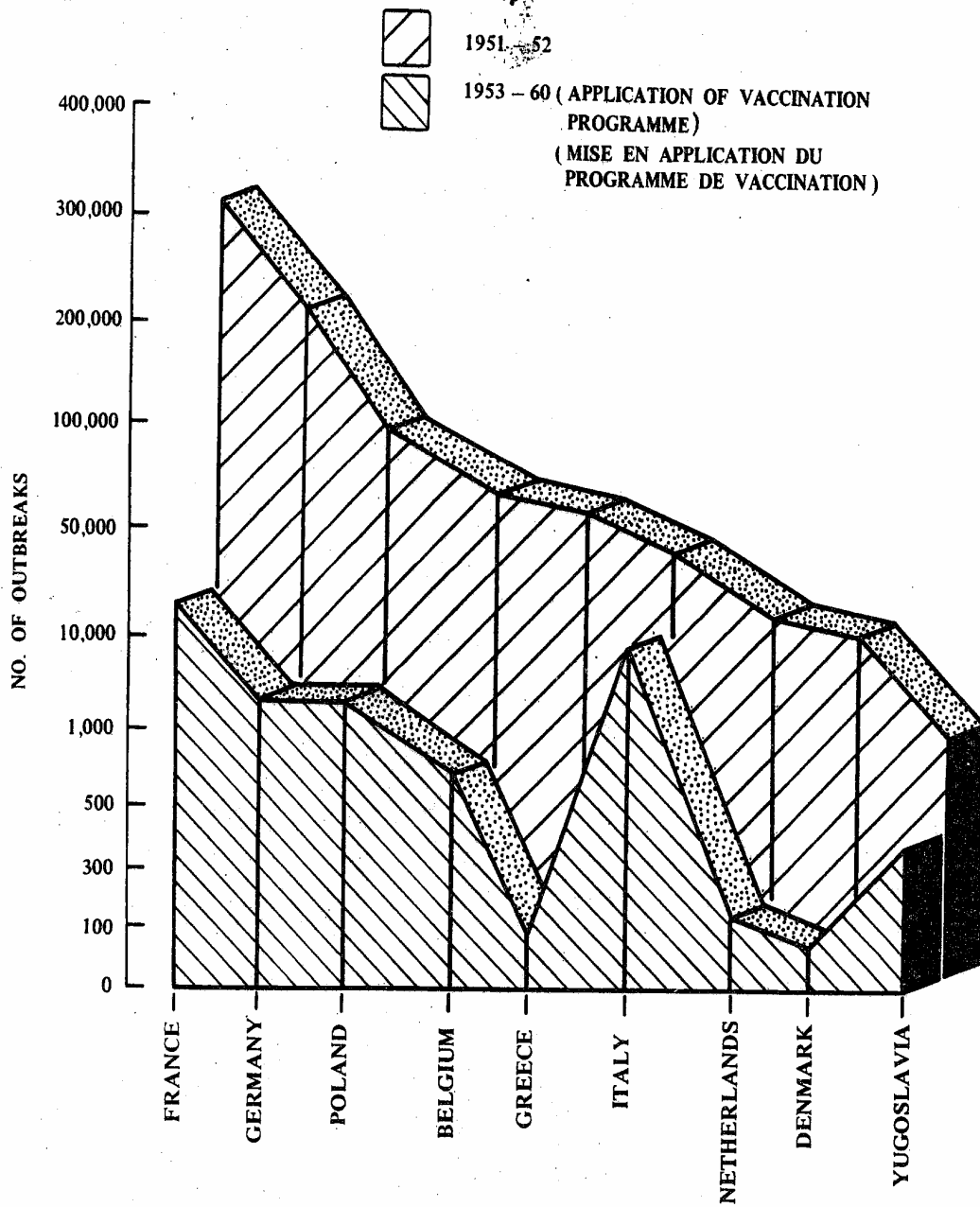
***16-17 March 1955***

<b><i>Chairman</i></b>	Dr. J.C. Nagle	Ireland
<b><i>First Vice Chairman</i></b>	Dr. J.M. Van den Born	Netherlands
<b><i>Second Vice Chairman</i></b>	Dr. S. Mihajiovic	Yugoslavia
<b><i>Technical Secretary</i></b>	Sir Thomas Dalling	United Kingdom

MEMBER COUNTRIES OF THE EUROPEAN COMMISSION FOR FMD  
PAYS MEMBRES DE LA COMMISSION EUROPEENNE DE LUTTE CONTRE LA F.A.

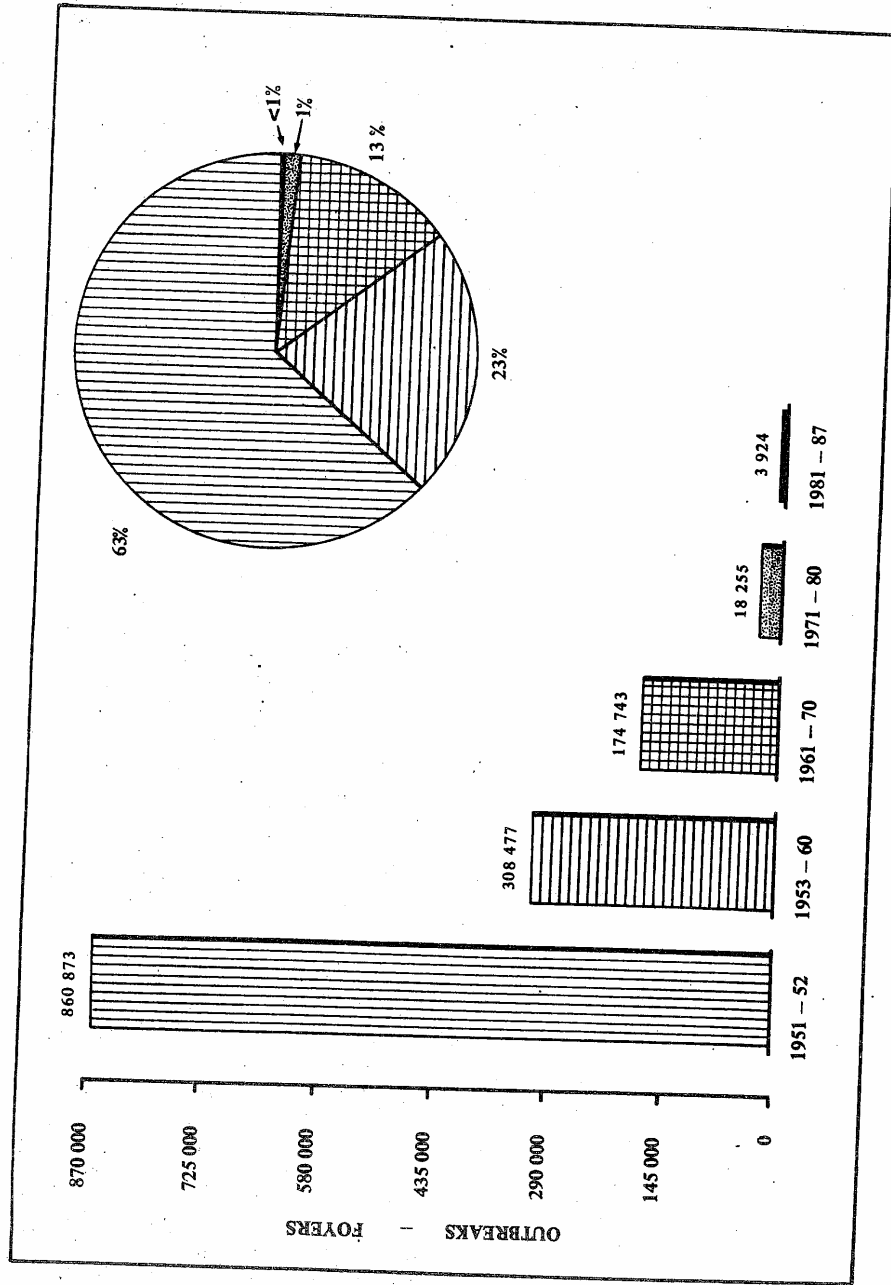


**THE EFFECT OF FMD VACCINATIONS IN EUROPE  
L'EFFET DES VACCINATIONS ANTIAPHTEUSES EN EUROPE**

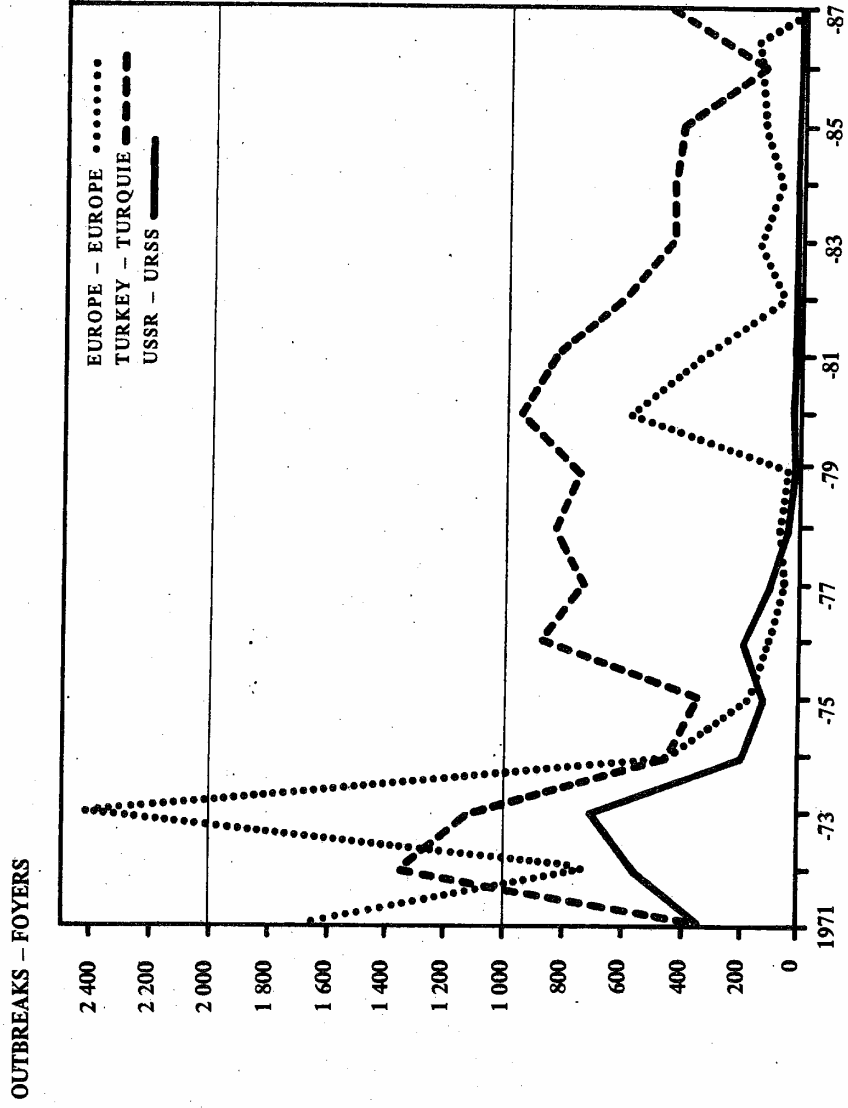




**NUMBER OF FMD OUTBREAKS AND THEIR PERCENT DISTRIBUTION IN EUROPE**  
**NOMBRE DE FOYERS DE F.A. ET LEUR POURCENTAGE DE DISTRIBUTION EN EUROPE**

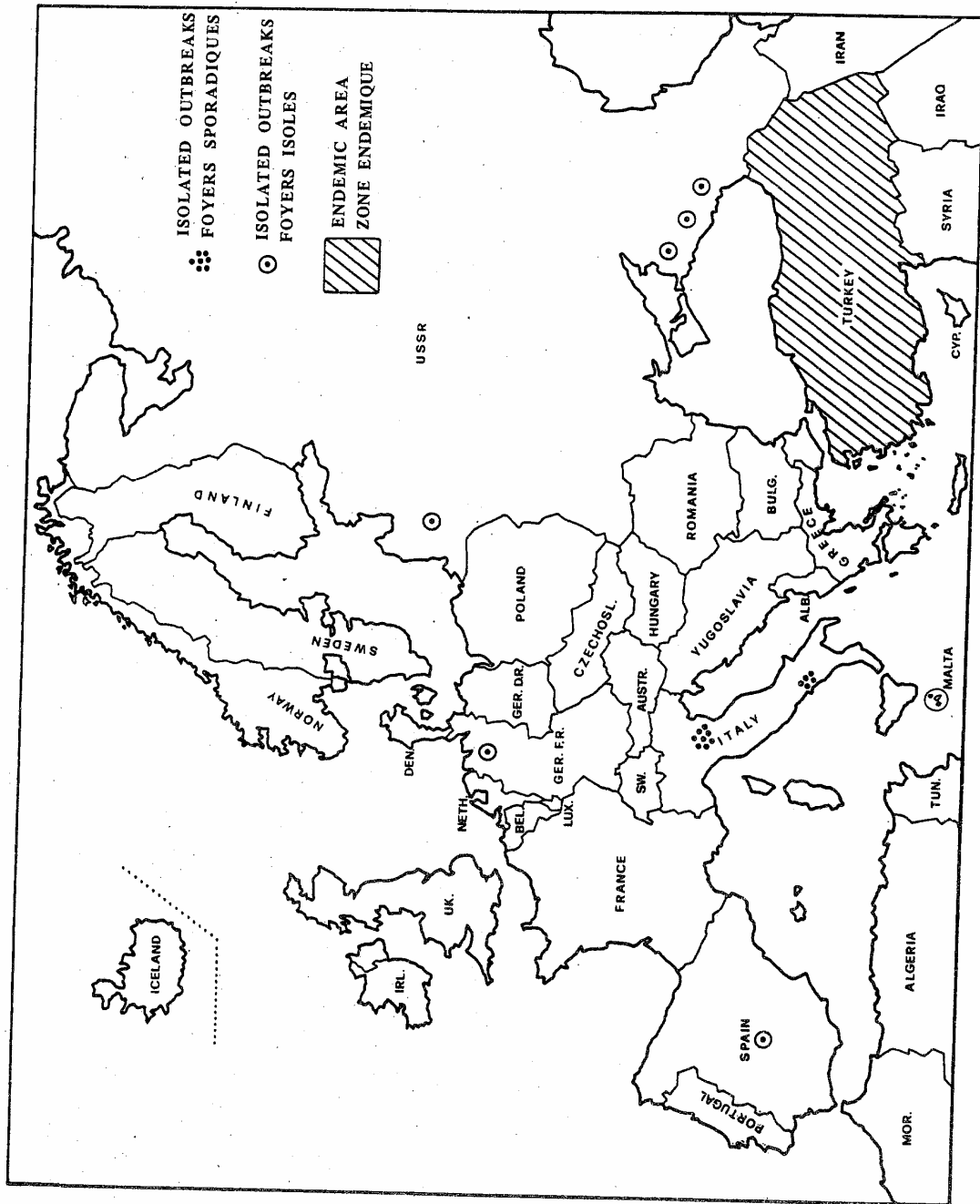


INCIDENCE OF FMD IN EUROPE, TURKEY AND USSR DURING 1971 - 1987  
CAS DE F.A. EN EUROPE, TURQUIE ET URSS PENDANT LA PERIODE 1971 - 1987



THE POSITION OF FMD IN EUROPE 1985-86-87

SITUATION DE LA F.A. EN EUROPE EN 1985-86-87







## Appendix 7 Some figures on losses\* reported on FMD outbreaks in Europe 1951-1987

Country	Year	Losses
Austria	1973-1981	<i>Direct</i> 575M ASc
		<i>Indirect</i> 1,000M ASc
		<i>Total:</i> 1,572M ASc
Belgium	1951-1954	1,000M BF
Denmark	1982	484M DK
France	1974	54M FF
	1978	17M FF
	1981	20.5M FF
Germany, (Fed. Rep. of)	1960-1966	39.2M DM
	1967	22.3M DM
	1968-1982	3.1M DM
Greece	1984 (2 ASIA-1)	1M US\$
Italy	1968-1983	2,426M L
	1984-1987	47,067M L
Netherlands	1974	134,000 US\$
	1975	57,000 US\$
	1977	80,000 US\$
	1983	1,484,632 US\$
	1984	1,571,820 US\$
	<i>Total:</i>	3,427,452 US\$
Sweden	1951-1952	1.7M US\$
Switzerland	1965-1966	23M SwF
U.K.	1967-1968	<i>Direct</i> 35M £STG
		<i>Indirect</i> 11.5M £STG
	1981 (Isle of Wight)	131,900 £STG

\*These losses mainly represent compensation to owners of slaughtered animals