



FEDERATION OF VETERINARIANS OF EUROPE

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**INTERNATIONAL CONFERENCE ON PREVENTION AND CONTROL OF FMD  
(12-13 December 2001, Brussels)**

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FVE is the umbrella body for veterinary organisations from more than 30 European countries, including all EU and EFTA countries and most of Eastern and Central European countries.

FVE represents and promotes the veterinary profession in Europe.

FVE also includes four specialised groups, each representing a specific branch of the profession.

- Practising Veterinarians (UEVP)
- Hygienists and Public Health Veterinarians (UEVH)
- State Veterinary Officers (EASVO)
- Veterinarians in Industry and Research (FEVIR)

FVE welcomes the opportunity to contribute to the discussion of the International Conference on Prevention and Control of FMD to be held on 12-13 December 2001 in Brussels.

This contribution includes a statement released in early March at the height of the crisis and the outcome of the work of an ad hoc group established to review the European Union FMD risk management strategy and in particular the much controversial issue of the EU non-vaccination policy.

FVE takes also this opportunity to re-assert that the veterinary profession can no longer support the killing of healthy animals for the purpose of disease control where vaccination is an appropriate alternative.

FVE looks forward to the discussion and compliments the EU Presidency, the European Commission, the Netherlands and the United Kingdom for their initiative.

**President**

F. Nind

**Vice-Presidents**

O. Bro-Jorgensen  
A. Meisser  
A. W. Udo  
B. Zemljic



## STATEMENT ON FOOT AND MOUTH DISEASE

**The Federation of Veterinarians of Europe (FVE) represents all the veterinarians of Europe. Its biggest division is the Union of European Veterinary Practitioners (UEVP), which represents all those in practice.**

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FVE and UEVP together issue the following statement.

The current outbreak of Foot and Mouth Disease (FMD) in Europe is a disaster not only for agriculture but also for many related enterprises and organisations. FVE and UEVP offer their support to all those fighting to control the disease and to all those directly or indirectly affected by it.

**FVE and UEVP share the concern of the general public over the death and destruction of large numbers of animals, many of which are not infected with the disease.**

This situation results from several factors, among which is the non-vaccination and “stamping out” policy adopted in the 1990’s to eradicate the disease and to open new export markets. This policy leaves however non-vaccinated countries vulnerable, as the current outbreak demonstrates.

### *Emergency vaccination*

There has been extensive debate on whether vaccination should be used to combat the current outbreaks. The answer is not simple and, if vaccination is used, as part of the control strategy, there are many ways in which it could be employed.

This is a risk management decision, which must be based on epidemiological data, such as geographical and climatic conditions, the density of the susceptible animal population, and the susceptible species involved, as well as on ethical concerns and not on economic grounds alone.

**FVE and UEVP welcome the latest decisions from the European Commission to allow emergency vaccinations in the Netherlands and in the UK as an instrument of risk management.**

### *Fate of vaccinated animals*

It has to be recognised that the killing and destroying of vaccinated animals requires a political decision and depends on how quickly a country wishes to regain its FMD-free status.<sup>1</sup>

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<sup>1</sup> These status are granted by the Office International des Epizooties, the world organisation for animal health

If FMD occurs in an FMD free country or zone where vaccination is not practised (like the European Union) and if the infected country has recourse to emergency vaccination, with stamping-out and serological surveillance, the country can only regain its FMD free status 3 months after the last case and after the slaughter of the last vaccinated animal.

If vaccinated animals are not slaughtered, the situation is more complex and needs to be discussed in the context of the International Animal Health Code of the Office International des Epizooties, the world organisation for animal health.

On the other hand, the Amsterdam Treaty recognised animals as sentient beings and Member States consequently agreed that the Community and Member States shall pay full regard to the welfare requirements of animals to ensure improved protection and respect for the welfare of animals.

**FVE and UEVP therefore urges Member States of the European Union and the European Commission to explore with the Office International des Epizooties the options for dealing with vaccinated animals and for minimising the unnecessary slaughter of healthy animals to regain FMD free status.**

#### *Rehearsal of the FMD risk management strategy*

This major outbreak demonstrates that the European Union FMD risk management policy may not be appropriate or that the risk assessment, on which it is based, should be reviewed.

**FVE and UEVP call for a review of the FMD risk management strategy. This review should include a discussion of the EU non-vaccination policy as well as other aspects, which may have contributed to the seriousness of the current outbreak.**

#### *Non-vaccination policy*

The benefits of the non-vaccination policy will have to be reviewed in the light of the current developments. In that review the benefits of persevering with a non-vaccination policy in order to preserve export markets have to be set against the implications for the farming community, animal welfare, ethical values and the acceptance of such a policy by the public.

**FVE and UEVP call on the Commission to initiate a debate on the non-vaccination policy, not only in regard to FMD but also to other animal diseases such as Classical Swine Fever.**

#### *Marker vaccines and diagnostic tools*

Marker vaccines and/or diagnostic tools that could allow the vaccination of animals, whilst enabling to make a distinction between vaccinated animals and animals carrying the virus, are needed, as they could provide greater flexibility in the prevention and combating of FMD outbreaks. Such marker vaccines and/or diagnostic tools are however not yet available.

**FVE and UEVP call on the European Commission, Member States of the European Union and the pharmaceutical industry to actively pursue the development of marker vaccines and/or diagnostic tools.**

#### *Tighter controls on imports from third countries*

It is likely that the infection originated from material entering the EU from a third country. This illustrates the need for stricter controls at the European Union external borders.

**FVE and UEVP call on the Commission and Member States to introduce and implement tighter controls on imports from third countries so that the same situation does not happen again.**

#### *Swill feeding*

It is also likely that this infected material was fed to pigs and that the virus then spread from this first contamination. Although, swill (i.e. treated household and catering waste) fed to pigs should be heat treated to destroy possible pathogens<sup>2</sup>, experience demonstrates that these requirements are either not always sufficient or not complied with in all cases.

**FVE and UEVP therefore call for a review of the practice of swill feeding and for a phasing out of such activities.**

#### *On-farm veterinary presence*

It is also likely that the original infection in the UK had been present on a farm for some time before it was eventually discovered in a slaughterhouse during an ante-mortem inspection and reported to the authorities. Had the infection been diagnosed on the farm, earlier animal movement restrictions would have been introduced, thus avoiding the spread of the virus and limiting the total number of outbreaks.

**FVE and UEVP therefore call for adequate veterinary presence on all livestock holdings so that catastrophic diseases such as this are identified more quickly. FVE and UEVP also call for the development of herd health surveillance programmes involving routine visits by practicing veterinary surgeons.**

#### *Resources*

This major disease outbreak has strained the State Veterinary Service of the Member States concerned to the limit. This confirms previous reports from the Food and Veterinary Office of the European Commission that many Member States of the European Union have inadequate veterinary manpower to deal with not only animal health but also animal welfare and veterinary public health requirements, including such control measures as the BSE ones, imposed by the European Union legislation.

**FVE and UEVP call on the Member States of the European Union to ensure that their veterinary services are properly resourced.**

#### *Animal identification and animal movement controls*

The control of this outbreak has been complicated by difficulties in tracing animal movements due in particular to the lack of an effective system of identification of all farm animals. Furthermore, the ANIMO system, used in the European Union to track movements of animals between Member states of the European Union must be improved to a more effective system.

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<sup>2</sup> Article 15 of Council Directive 80/217 introducing Community measures for the control of Classical Swine Fever.

**FVE and UEVP call for the identification of all farm animals allied to a more effective system for tracing all animal movements be they international, within a Member State, or between individual livestock holdings.**

*Movement restriction*

It seems that the spread of the virus has been facilitated by intensive animal movements from farm to farm throughout the UK, then from the UK to the continent and eventually from farm to farm on the continent.

**FVE and UEVP invite the Commission and Member States to consider the introduction of standstill periods to limit movements of animals recently introduced on a farm.**



## REPORT OF THE AD HOC GROUP ON FMD

### Introduction

With 2030 farms infected and 3,964,000 animals culled in the UK<sup>3</sup>, 26 farms infected and 267,992 animals culled in the Netherlands, 2 outbreaks in France and 1 in Ireland, the 2001 outbreak of Foot and Mouth Disease (FMD) in four countries of the European Union has been one of the worst animal health crises in living memory. At its height over 2,000 veterinary surgeons, in the UK alone, were working to control it. Farmers, veterinary surgeons, legislators and the general public are all concerned to learn lessons from the outbreak and to try to ensure that nothing like it happens again.

At the Annual General Assembly in Budapest in May 2001 an ad hoc group was established with the following remit:

- To develop further the FVE/UEVP statement on FMD and in particular the call for a review of the European Union FMD risk management strategy.
- This review should include a discussion of the EU non-vaccination policy as well as other aspects, which may have contributed to the seriousness of the current outbreak.
- The group should explore options within the OIE Code for dealing with vaccinated animals and for minimising the unnecessary slaughter of healthy animals to regain FMD free status.
- If necessary, additional experts could be invited to provide oral contributions to the group.

The members of the ad hoc group were able to benefit from the advice of several experts:

P.-P. Pastoret (Faculty of Veterinary Medicine of Liège), D. Sibley (UK practitioner), F. Pluimers (Chief Veterinary Officer of the Netherlands), A. Laddomada (European Commission), P. Wood (UK practitioner), D. van Weel (MERIAL), H. Roedder (Bayer), P. van Aarle (Intervet) and O. Breeuwsma (Intervet).

The group was composed of P. Buisson, T. Held, F. Nind (Chairperson), J. Vaarten and R. Zilli.

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<sup>3</sup> Including 597,000 cattle, 3,221,000 sheep, 140,000 pigs, 2,000 goats, 1,000, deer, 1,000 other animals (source DEFRA)

## **I- PROBLEMS OF CURRENT OUTBREAKS**

### **1) Ethics**

The ethical aspects of destroying so many animals which are showing no signs of disease has troubled the veterinary profession. The public seem to share these concerns and call for alternative policies that result in less loss of life.

### **2) Animal Welfare**

Present policies compromise animal welfare in a variety of ways.

#### **a) Welfare of stock to be slaughtered**

In the case of stock that is to be slaughtered on site, considerable stress is caused during the gathering and moving process on the farm. Young animals become separated from their mothers and there is potential for injury and pain.

In the vast majority of cases however the slaughter process has been carried out in an efficient and professional manner.

#### **b) Welfare of restricted animals**

Movement restrictions have had serious welfare consequences for the care of many livestock. Some have had inadequate care during the periparturient period. Others have gone short of food or have been left with inadequate shelter. In some cases such situations have persisted for weeks or even months.

#### **c) Problems in relation to artificial insemination**

Where animals enter the production process on a continuing basis as in dairy farms or pig breeding units, there have been welfare problems associated with the sudden introduction of restrictions and the efforts that farmers then have to make to continue in business.

### **3) Effect on Pedigrees, bloodlines, rare breeds, zoo animals**

Where the slaughter policy has engulfed units stocked with rare breeds and in heavily infected areas where geographically restricted breeds are present there has been a catastrophic effect on the gene pool. It is possible that some bloodlines may be lost forever.

### **4) Economic effect**

It is very difficult to get an accurate figure for the total cost of the outbreak, but it is clear that it is substantial (Annex I). The direct cost of the slaughter and disposal process for animals and the financial compensation to the affected farmers is only a small part of the total figure.

#### **a) On farmers**

The total financial compensation that farmers have been paid is a huge sum but even this is unlikely to represent the entire financial loss on affected properties. Even farmers that did not have their stock slaughtered have suffered financially. In addition, it is likely that many farms will never be re-stocked.

**b) On slaughterhouses**

While some individual slaughter men may have secured alternative employment killing animals on affected and controlled premises, there has been significant loss for slaughter facilities unable to move stock for processing.

**c) On hauliers**

Many trades ancillary to the farming industry have been affected by the situation to a varying degree.

**d) On traders**

While it is clear that the activities of livestock dealers expedited the spread of FMD infection in the time before it was identified, movement controls have imposed severe restrictions on these activities with consequent direct financial costs.

**e) On other industries**

Many other industries have been affected by the animal health emergency. These include those servicing outdoor pursuits such as skiing or walking, as well as the pharmaceutical, fertiliser and plant health industries. It is clear that the tourist industry in some affected areas is worth much more than agriculture and the losses for visitor attractions and hotels have been enormous.

**5) Social effect on those people**

The psychological effect on farmers and their families of seeing all their animals killed has been incalculable. In the UK, some children have had their schooling disrupted and some farmers have lived in virtual isolation, in some cases for many weeks.

**a) Short term**

The stress of waiting for the disease to strike, seeing all the animals killed and then having to live on the empty farm has had an extremely disruptive effect on many lives. Where disposal of carcasses was delayed, the farmer and his family may have had to live in close proximity to the dead and decaying animals before they were removed.

**b) Long term**

The long-term effects of the catastrophe on those directly involved are not known. The average age of farmers in the UK is said to be 58 years and it is likely that many will never return to livestock farming.

## 6) Environmental effects of cadavers disposal

An ideal disposal method for destroyed livestock does not exist. All methods used have their costs and disadvantages.

### a) Possible leak of prions out of cadavers

Sheep infected with scrapie and cattle with BSE will have been included in the cull. However, cattle over 30 months of age were, in the UK, sent for rendering as a precaution against contamination of ground water. In addition, all burial sites have been monitored and where there is evidence of leakage, carcasses have been exhumed and disposed of elsewhere.

### b) Incineration products

Some animal pyres have burned for many weeks. Burning material includes fuels such as wood and coal as well as chemicals such as disinfectants and plastics. Incineration products may contain any of a huge array of harmful and potentially harmful chemicals.

The UK Food Standards Authority monitored the food commodities coming from areas around the pyres. About 120 food samples, including milk, have been tested from Anglesey, Cornwall, Cumbria, Carmarthenshire, Dumfries and Galloway, Northern Ireland, Devon. Other foods sampled include hen eggs, duck eggs, chickens, cheese, butter, lamb, trout, cream, ice cream. Soil and herbage has also been tested. Concentrations of dioxins and dioxin like PCBs in all samples were mostly within the normally expected ranges<sup>4</sup>.

### c) Disinfectants

In the early stages of the outbreak large quantities of powerful disinfectants have been used and workers have been widely exposed. Later on citric acid was used. There is concern about the long-term effects on the people involved and on the environment.

## 7) Management of the crisis

Before the crisis there were 700 state veterinary officers in the UK and at its height there were over 2,000 veterinary surgeons involved. Managing this sudden and unexpected increase was difficult.

Yet, because of the late detection of the first case (during an ante-mortem inspection in an abattoir) and because of the important and complex animal movements that took place between the introduction of the disease and its identification (almost three weeks), the UK authorities were confronted with a problem of an unprecedented magnitude. Understandably, the UK authorities had been running behind the virus for some time and it took them time to meet their target of 24 and 48 hours to destroy infected and in-contact animals respectively and to eventually get ahead of the disease.

The other three infected countries were in a different position, as they were not taken by surprise and had the time to organise themselves and put preventative measures in place to identify outbreaks as early as possible and thus limit the spread and the consequences of identified cases. In that context, the Dutch, French and Irish authorities did well as indicated

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<sup>4</sup> Third report (20 September 2001) of the Food Standards Agency on *dioxins and dioxin-like polychlorinated biphenyls in foods from farms close to pyres* ([http://www.foodstandards.gov.uk/pdf\\_files/fmd3rd\\_report.pdf](http://www.foodstandards.gov.uk/pdf_files/fmd3rd_report.pdf))

in reports of visits done by inspectors of the European Commission Food and Veterinary Office to these countries.

- *The response of the Dutch authorities to the outbreaks, once the first case was identified, has been rapid and efficient. Equally the vaccination programme is very well organised.*<sup>5</sup>
- *The French authorities had, in general, responded promptly and efficiently both to the risk of introduction of FMD and to the identified outbreaks.*<sup>6</sup>
- *The response of the Irish authorities to the presence of FMD in the UK was prompt and vigorous. A high level of awareness of the risks was achieved through these actions.*<sup>7</sup>

The Dutch authorities did particularly well in that respect and were astonishingly well prepared with plans in place well before the first outbreak was confirmed on their territory. Obviously, the lessons from the 1997 Classical Swine Fever outbreaks were learnt.

Lastly, the contribution of the European Commission must be acknowledged and in particular its efforts to work very closely with all Member States and to keep all Member States and the civil society informed of the latest developments in an unprecedented effort to achieve transparency.

However, some managerial issues will have to be looked at and in particular:

- In countries with a decentralised structure there is not always good and efficient co-operation between the veterinary authorities in neighbouring administrations.
- As the outbreak progressed there were inevitably alternatives considered and changes in policy made. Not enough information was made available to veterinary practitioners to explain to farmers the decisions taken to control the outbreaks and to limit their spread.

## **8) Transport, movement and tracing of movement of animals**

### **a) Identification of animals**

While all bovine animals are individually identified, the same does not always apply to sheep and pigs. Tracing movement of such unidentified livestock quickly and reliably has been extremely difficult.

### **b) Movement of animals**

Early in the UK outbreak, it became clear that there had been a huge number of animal movements, sometimes over very long distances. Such frequent mass movement exacerbated the disease situation.

By contrast, the Netherlands decided on a collection ban of all susceptible species as early as 20 February, the day when the first outbreak was confirmed in the UK, and on a national

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<sup>5</sup> European Commission Food and Veterinary Office: Final report of a mission carried out in the Netherlands from 4 to 7 April in order to evaluate the situation with regard to suppressive vaccination against FMD.

<sup>6</sup> European Commission Food and Veterinary Office: Final report of a mission carried out in France from 2 to 6 April in order to evaluate the situation with regard to outbreaks of FMD.

<sup>7</sup> European Commission Food and Veterinary Office: Final report of a mission carried out in Ireland from 14 to 16 May in order to evaluate the action taken in response to the outbreak of FMD.

transport ban for all susceptible species on 13 March, 8 days before the first FMD outbreak was confirmed in the Netherlands.

In France, further to the investigation initiated into the movements of animals of the susceptible species imported into France from the UK since 15 January 2001 on the basis of ANIMO data, administrative orders placing restriction measures on animal movements were issued from 4 March 2001<sup>8</sup> in all *départements*<sup>9</sup>, where positive serological results were obtained.

**c) ANIMO system**

While the ANIMO system proved a useful tool in the tracing of animals that had been moved across state boundaries, it was never designed to deal with subsequent internal animal movements and was therefore unable to help with the subsequent movement of those animals.

**9) Resources of the veterinary services**

Coping with the outbreak of FMD has stretched some State Veterinary Services to the limit of their abilities. This confirms previous reports from the Food and Veterinary Office of the European Commission that many Member States of the European Union have inadequate veterinary manpower to deal with not only animal health but also animal welfare and veterinary public health requirements imposed by the European Union legislation.<sup>10</sup> In the UK in particular, the conclusions of a FVO mission carried out between 12 and 16 March were unambiguous that *it was evident that the veterinary and allied resources initially available to eradicate the disease were insufficient in light of the very rapid development of the epidemic.*<sup>11</sup>

**10) Public support/resistance for policy – public education**

**a) Hobby farmers**

It has become popular in some areas for people to keep small numbers of farm animals on a hobby basis. Such livestock are more akin to pets than farm livestock. The application of the slaughter policy on such enterprises has met with significant resistance and high emotion fuelled in some cases by widespread publicity.

**b) Public education**

**i) Meat/milk can be treated to be sure there is no virus**

The rules of the Office International des Epizooties (OIE), the world organisation for animal health, clearly specify the techniques to be employed for rendering meat and milk reliably free of FMD virus, whether these come from infected or vaccinated animals. Furthermore there is very little evidence that the FMD virus can infect man on anything other than a

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<sup>8</sup> European Commission Food and Veterinary Office: Final report of a mission carried out in France from 2 to 6 April in order to evaluate the situation with regard to outbreaks of FMD.

<sup>9</sup> Administrative area.

<sup>10</sup> The 1998 Royal College of Veterinary Surgeons Manpower Survey indicates that between 1998 and 1992 the total number of veterinary surgeons in the UK increased by 19% and that, whilst the number in general practice grew by 21% and the number in universities by 63%, the smallest increase (4%) was in the Government Service.

<sup>11</sup> European Commission Food and Veterinary Office: Final report of a mission carried out in the UK from 12 to 16 March in order to evaluate the situation with regard to outbreaks of FMD.

freak basis. Even then the disease is very mild. This has not prevented an irrational public antipathy to consuming such products. This has driven the policy adopted by the major food retailing supermarkets of not using these products and, in turn, has also influenced central disease management policy.

**ii) Vaccines do not contain live virus**

Modern FMD vaccines are prepared from 'killed' virus and therefore contain no live virus. This means that there is no chance for vaccinated animals that are not infected with a wild field virus of hosting or transmitting any virus. Claims to the contrary are usually founded on a period, many years ago, when less effective inactivants such as formaldehyde were commonly used. Once again this scientific fact has not allayed public fear.

**11) Vaccination**

Since 1991, vaccination against FMD is no longer practised in the EU. The current policy is to slaughter infected and contact animals of susceptible species in the case of an outbreak. This policy is known as 'stamping-out'.

However, the current policy leaves room for the use of vaccination as an emergency measure to prevent the spread of FMD. Emergency vaccination is however only useful if the outbreaks are concentrated in a precise geographical area.

Two types of vaccination may be allowed.

**a) Suppressive vaccination**

In the case of a 'suppressive vaccination', the vaccinated animals must still be killed and destroyed after the vaccination.

Such vaccination may be justified when there is an urgent need to reduce the amount of virus circulating and to limit the risk of the virus spreading further.

This type of vaccination may also be useful when the competent authorities have insufficient capacity to carry out the killing and slaughter with the speed necessary to prevent the further spread of the disease. This was the case during the recent outbreaks in the Netherlands, which were allowed to have recourse and did have recourse to a 'suppressive vaccination' because neither incineration nor burial were permitted and because there was insufficient rendering capacity.

**b) Protective vaccination**

'Protective vaccination' does not require the killing and destruction of the animals concerned. Following the build-up of sufficient immunity, the meat and milk of such vaccinated animals may be used on the local market under certain conditions that would ensure that any possible virus in such products is destroyed. However, as the tests to distinguish vaccinated animals from infected ones have not been approved at Community and international level, very strict controls on the movements of vaccinated animals and their products are necessary to ensure that the disease does not spread. These controls have important trade and economic implications for the region or country concerned.

The Netherlands were also authorised to use 'protective vaccination' for cattle in the Oene region. Vaccination was to be clearly entered on the passports of the cattle concerned. Any vaccinated cattle were not to be moved from the vaccination zone for at least one year after

the last outbreak in that area. The meat and the milk of these animals were to be used subject to specific treatments to ensure destruction of possible FMD virus (see above).

The decision in relation to the United Kingdom also provided for 'protective vaccination'. It allowed in principle the vaccination of dairy cattle only in the counties of Cumbria and Devon. Other species were not to be vaccinated but pre-emptively killed in a certain radius around infected premises. However, the movement of these vaccinated animals, by and large dairy cows, would effectively have been confined to the regions concerned. And there would also have been important restrictions on the movement of their milk and milk products and - when eventually slaughtered - of meat and meat products from these animals.

However, both the UK and the Netherlands eventually decided not to make use of this 'protective vaccination'.

## 12) International trade

Contagious animal diseases such as FMD can affect international trade of livestock or of products of animal origin. The OIE has therefore established a set of rules to protect importing countries as well as to avoid animal health related undue restrictions to trade. For FMD, countries are classified into three categories, depending on the sanitary status and on whether vaccination is practised or not on their territory. All countries are included in one of these three categories:

- FMD free country where vaccination is not practised
- FMD free country where vaccination is practised
- FMD infected country

To be listed as an FMD free country, a country, where vaccination is not practised, should:

- have a record of regular and prompt animal disease reporting;
- send a declaration to the OIE that there has been no *outbreak* of FMD and no vaccination has been carried out for at least 12 months, with documented evidence that an effective system of surveillance is in operation and that all regulatory measures for the prevention and control of FMD have been implemented;
- not have imported animals vaccinated against FMD since the cessation of vaccination

When FMD occurs in an FMD free country, the country loses its FMD free status and needs to go through a waiting period before regaining its original status. The length of this period depends on whether vaccination was practised or not in the country in the first place and on the strategy used to control the outbreak(s).

- In an FMD free country where vaccination was not practised, FMD free status can be regained 3 months after the last case, where stamping-out and serological surveillance are applied; or 3 months after the slaughter of the last vaccinated animal where stamping-out, serological surveillance and emergency vaccination are applied.
- In an FMD free country where vaccination was practised, FMD free status can only be regained 12 months after the last case where stamping-out is applied, or 2 years after the last case without stamping-out, provided that an effective surveillance has been carried out.

The period to regain FMD free status is always longer in countries having recourse to vaccination, as there is always an uncertainty as to whether vaccinated animals might be infected with the virus without expressing clinical signs. This phenomenon, known as the

carrier state, is one of the major limiting factors to the use of vaccines in the prevention and control of FMD outbreaks today.

Thus, in the event of an outbreak, eradication of the disease by slaughter is the preferred method as this allows a country to regain its FMD free status according to the OIE criteria in the shortest possible time. Trade may then resume with other disease free countries.

### **13) Import controls**

The borders of the EU are porous. Although there is not much data on the illegal introduction of products of animal origin into the EU via land, air or sea routings, the limited data available (see Annex II) suggests that the smuggling of illegal food into the EU plays an important role.

This illegal trade means that food arrives from countries, in which FMD - and possibly other highly infectious animal diseases - is endemic.

Furthermore, no information is given to the passengers coming to Europe about the risk of disease introduction. Also, there are only limited controls compared to that in the US or Australia to reduce the risk of introducing FMD virus with imported food.

The UK authorities said that while the actual source of the current outbreak may never be known for certain, the most likely source is illegally imported meat, which was then fed to pigs as swill.

## **II – LESSONS FOR THE FUTURE**

### **1) Farm management**

#### **a) Swill feeding**

There is the question of whether swill feeding should be banned. Up to half of the food destined for human consumption is not eaten by people and then becomes waste. A disposal problem arises and a way must be found to safely re-cycle at least some of this material for animal food or for some other useful purpose.

#### **b) Livestock densities**

In the present FMD outbreak, as well as in recent epidemics of Classical Swine Fever, it has become clear that livestock densities are sometimes too high. Contagious animal disease control in such situations is made much more difficult by close proximity of other livestock. Consideration should be given to restricting the density of livestock.

#### **c) Biosecurity measures**

In an effort to control the spread of disease, farmers have adopted a range of biosecurity measures to restrict movement of people, vehicles and animals onto their properties and to reduce the chances of such movements introducing disease. While such activity is to be encouraged it has to be set in the context of the debate on the public's right to visit the countryside for recreational purposes. Veterinary surgeons and farmers groups should co-operate in the development of advisory codes to enhance biosecurity on the various different types of livestock enterprise.

#### **d) Breeding**

In the presence of a suspected or of a confirmed FMD outbreak, breeding procedures should be slowed down or stopped. Indeed, as animal movements may be prohibited for some time and export markets closed for an even longer period, the risk of overpopulation is high and animal welfare problems may arise as a result.

### **2) The State veterinary services**

One of the lessons that should be learned from the FMD and other recent crises is the need for strong State veterinary services.

#### **a) Surveillance**

The most crucial period in an FMD outbreak is the time between the moment when virus enters the country and moment where it is identified. Surveillance measures must be put in place to be sure that any outbreak of serious infectious disease is identified as quickly after its introduction as possible.

##### **i) On farm veterinary presence**

The veterinary practitioner is in the front line of veterinary surveillance and his frequent presence on all farms is essential for the surveillance process. There is a need to develop epidemiological surveillance systems as laid down in Article 14 of Council Directive 97/12/EC. Veterinary practitioners must play a prominent part in this work as there is no other labour resource readily available.

**ii) Clinical ability**

Diseases that occur rarely in the EU will be unfamiliar to practitioners. Ongoing training must be available to ensure that practitioners are able to recognise these diseases confidently.

**b) Contingency plans**

All State veterinary services must plan on a national and local basis for sudden highly contagious animal diseases crises. These plans must involve veterinary practitioners and others, such as farmers, slaughterers and hauliers, and must include realistic exercises. Veterinary practitioners held on standby for this type of emergency should be compensated.

Such plans should also include measures for the rapid, safe and efficient disposal of cadavers.

While disease control policy should be co-ordinated centrally, operational control is best conducted locally

The establishment of a single, widely publicised free phone number manned 24 hours each day for the reporting of any suspicion of a notifiable animal disease should be encouraged. This free phone number should also serve as a central source of information in the case of an outbreak.

**c) Diagnostic laboratory facilities**

Diagnostic laboratory capacity must be capable of rapid expansion to cope with the sudden huge increase in workload generated by a major disease outbreak.

**d) Early standstill**

The early introduction of a complete standstill on the movement of animals was a major factor in limiting the outbreak in the Netherlands and in France. Preparations should be made for the rapid establishment of such standstill whenever an outbreak is suspected or confirmed.

**e) Animal identification**

Individual animal identification is essential for efficient disease control and would also be helpful in other areas such as ensuring meat traceability. Individual identification should therefore be introduced for all livestock.

**f) Animal movement**

The further live animals are moved, the greater the potential consequences of disease transmission. Controls must therefore be introduced to raise the animal health barriers for long distance transport. Consideration should thus be given to the requirement for all livestock moving out of a farm to be subjected to a clinical examination by a veterinary surgeon on departure, as is already required by Directive 97/12/EC<sup>12</sup> for intra-Community trade of bovine animals and swine, and at arrival.

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<sup>12</sup> Council Directive 97/12/EC of 17 March 1997 amending and updating Directive 64/432/EEC on health problems affecting intra-Community trade in bovine animals and swine *Official Journal L 109, 25/04/1997 P. 0001 - 0037*

All route plans must be checked, returned and properly followed up in all EU Member States. The ANIMO system should also be refined, or a new system designed, to allow the tracing of animal movement up to their point of final destination with the possibility of sending back information to the point of departure.

**g) Reduce number of contacts**

The more contact an animal has with other animals, the more opportunity there is for the spread of disease. Consideration should be given to measures to reduce such contact, such as:

- Moving slaughter stock from the farm direct to the slaughterhouse without regrouping the animals
- Identifying ways to sell livestock without moving them through markets

Also, in the light of their contribution to the spread of the FMD virus within France and from France to the Netherlands, the policy on staging points should be reconsidered. In general the long distance transport of animals should be discouraged.

**h) Standstill period after introduction on a farm**

There should be a mandatory standstill period after new stock arrives on the farm to allow the identification of any health problems before they, or other in-contact animals, are moved again. Special attention must be paid in that respect to sheep, which may carry the virus and only show mild clinical signs, if any at all.

**3) The EU**

**a) Research funding**

The Commission has spent €10M in recent years on research into contagious animal diseases, such as FMD and Classical Swine Fever. In view of the catastrophic costs of the current disease outbreak, this sum should be increased and research on measures to control FMD, as well as other highly contagious animal diseases, should be one of the priorities of animal health research of the EU 6<sup>th</sup> Research Framework Programme.

**b) External borders control**

Although the source of the 2001 outbreak may never be known, the most likely case is that virus arrived in illegally imported meat.

The EU must therefore firstly adopt and implement measures to reduce the illegal importation of potentially infected material.

Secondly, thorough Community controls should be carried out in third countries to ensure that the requirements of EC legislation for exporting animals and products of animal origin from these countries to the EU are entirely fulfilled. Zones of vaccination may be needed in countries contiguous with the EU and in which disease is endemic to prevent the transfer of the infection

Thirdly, as the consequences of the globalisation of economy, especially the ever-increasing movement of people and goods, are likely to make the importation of disease more likely, special consideration should be given to these aspects:

- Information on the risk of introducing diseases should be provided to passengers coming into Europe and the controls, particularly at airports, strengthened.
- Controls at Border Inspection Posts should be strengthened and uniform throughout the Community.

### c) Future EU FMD non-vaccination policy

The EU FMD non-vaccination policy should be reviewed in the light of the present outbreak and the current world-wide FMD disease situation. However, the killing of healthy animals for the purpose of disease control can no longer be supported where vaccination is an appropriate alternative.

The decision on when and how to use vaccination should be based on:

- Economics
- Community and International trade
- Technical matters
- Animal welfare
- Animal health

Bearing in mind that the major objective must be to contain the disease as quickly as possible.

### i) Vaccination

Modern FMD vaccines, although called ‘marker’ vaccines, are not the result of a genetic modification of the virus genome, such as is the case with deleted vaccines for Infectious Bovine Rhinotracheitis or Aujeszky’s Disease. Because of the frequent genetic mutation of the FMD virus, new strains appear regularly (antigenic drift), which would make it difficult to produce deleted vaccines for each of these strains. Instead, FMD vaccines have been purified so that certain proteins (non-structural proteins) common to all FMD virus strains have been removed from the antigens produced from cell cultures where FMD viruses are grown. These non-structural proteins are only involved in the replication of viruses and have no significance in the development of immunity.

Infection with FMD virus stimulates the production of antibodies to both structural and non-structural proteins. By purifying FMD vaccine from their non-structural element, FMD antibodies in vaccinated animals will be against the structural element. Isolation of antibodies to the non-structural proteins then becomes a tool to identify vaccinates which have subsequently been exposed to FMD virus.

There are currently however no internationally recognised standards for the detection of antibody response to FMD virus non-structural proteins, but an application for these tests is described in the *OIE 2000 manual for standards of diagnostic tests and vaccines*.

Several announcements have been made however that tests will shortly be available for routine use. The data available suggests that this technique can differentiate vaccinated and non-exposed stock from vaccinated and exposed stock on a herd basis. However, it is understood that the technique cannot yet be used as a reliable guide for the status of individual animals as it would seem to be not sensitive enough (false negatives).

In addition, the technique may not be reliable with highly potent vaccines, which stimulate very high levels of immunity quickly and result in limited virus replication after subsequent

infection. It can thus become difficult to identify vaccinated animals that have been exposed to infection, as very little antibodies of the non-structural proteins are circulating.

## **ii) Vaccination policy**

### **(1) Prophylactic vaccination**

It is thought unlikely that the EU policy will revert to prophylactic vaccination in the EU, be it of some or all susceptible animals. Several reasons can justify this:

- Animals would have to be vaccinated against all the major serotypes. There are seven serotypes of FMD virus, namely, O, A, C, SAT 1, SAT 2, SAT 3 and Asia 1. Infection with one serotype does not confer immunity against another. Because there are 7 serotypes and a large number of significant variants within some of the serotypes, this would be difficult to realise.
- Vaccination prevents clinical disease but does not prevent the carrier stage.
- Vaccination may hinder eradication of the disease by making it more difficult to identify all infected livestock.
- Vaccination impacts on trade and trade with non-vaccinating FMD free countries may be restricted as a consequence of vaccination.

### **(2) Emergency vaccination**

However, revision of the policy should concentrate on emergency vaccination and on improving the measures to facilitate the recourse to protective vaccination.

There are several questions to be addressed in that context:

- The availability of approved purified vaccines and of validated diagnostic tests,
- The use of milk, milk products and meat derived from vaccinated animals,
- The period to regain the status of non-vaccinating FMD-free country.

The first might be the easiest to address as there are several indications that purified vaccines and their diagnostic tests would be commercially available in the near future.

If purified vaccines are used in a limited area, and if it is possible to distinguish between vaccinated and infected herds, products from vaccinated herds free of the virus should be allowed to enter normal commercial circuits. There are however several constraints such as consumer acceptance, which was a factor in the present outbreaks.

Secondly, if a country has recourse to protective vaccination, the OIE rules are unclear as to how long after the last outbreak it can regain its FMD-free status, especially if purified vaccines are used. Furthermore, what happens if stamping out is used in some parts of the country and protective vaccination in only a clearly isolated part? Will the whole country be penalised? Can the country – but not the zone where protective vaccination was carried out - regain its FMD free status 3 months after the last case, if the zone of the protective vaccination is kept isolated from the rest of the country? All these questions have to be addressed at OIE level.

New provisions must be flexible so that early recourse can be taken to protective vaccination if this is thought appropriate on epidemiological grounds.

If vaccination is to be used, then a veterinarian should administer the vaccine and full records kept, identifying each animal vaccinated.

#### **4) General**

Semen and ova banks should be established to ensure the survival of rare breeds and valuable genetic material.

Vaccination of animals in game parks, zoological gardens and vaccination of rare breeds should be allowed or even recommended.

## ANNEX I

### Estimated economic impact of foot and mouth crisis

Forecasts of the impact of the Foot and Mouth Disease outbreak on Gross Domestic Product (GDP) in 2001 in the U.K. vary<sup>13</sup>, ranging from €2.5 billion (0.2% GDP) to €2.7 billion (0.8% GDP). This impact can be divided in the agricultural and tourist sector.

*PricewaterhouseCoopers – March 2001:*

<b>Impact in 2001 (€billion)</b>	<b>Optimistic Case</b>	<b>Pessimistic Case</b>
Lost agricultural output	0.79	2.54
Lost meat processing value added	0.16	0.63
Increased prices to consumers	0.48	1.27
<b>Impact linked to agriculture</b>	<b>1.43</b>	<b>4.44</b>
Lost overseas tourist spending	1.59	5.55
Lost UK tourist spending	2.06	5.4
Offset from other UK spending	-1.11	-2.7
<b>Net impact of crisis</b>	<b>3.97</b>	<b>12.7</b>
- % of GDP (market prices)	0.3%	0.8%
- % of GVA (basic prices)	0.3%	0.9%

Source: PwC estimates

In Holland a study has been done by LEI<sup>14</sup> to give an idea of the economic impact of an emergency vaccination against FMD. In this study three different cases were examined with the following outcome:

- Scenario one: One single outbreak in the Netherlands would cost €77 259 in non-recurrent expense (one time payment) and €4.5 million per month for as long as it lasts.
- Scenario two: Different outbreaks in the Netherlands (50) and no outbreaks in the rest of Europe would cost €36 million in non-recurrent expense and €55.5 million per months after that.
- Scenario three: Different outbreaks in all EU countries and 25 outbreaks in the Netherlands would cost €18 million in non-recurrent expense and €7 million per month after that.

Vaccination will be done in a radius of 1 kilometre around an infected farm. In all these cases the animals will be culled after the vaccination.

No definitive study of the actual costs of this 2001 outbreak in the Netherlands has been done yet, but predictions of €1.27 billion<sup>15</sup> (inclusive other than agricultural impact) and €74 million<sup>16</sup> (primarily agricultural sector) have been given.

The most immediate impact also seems to be on tourism. According to 'Toerisme Recreatie Nederland' FMD has already cost Dutch tourism €17 million<sup>17</sup>.

<sup>13</sup> The Centre for Economics and Business Research revised its forecast to €10 billion, or 0.8% GDP in 2001 (CEBS 15th April 2001), Oxford Economic Forecasting estimates 0.2%-0.6% impact on GDP in 2001, the National Institute of Economic and Social Research estimates 0.2%-0.3% GDP in 2001 and PricewaterhouseCoopers estimates 0.3-0.8% GDP or €3.97-€2.7 billion. All seem to agree that the most immediate impact is on tourism. Thus the range is from €2.54 billion to €2.7 billion.

<sup>14</sup> Landbouw Economisch Instituut, 16<sup>th</sup> of March 2001

<sup>15</sup> CPB

<sup>16</sup> Landbouw Economisch Instituut

<sup>17</sup> Tourism and Recreation in the Netherland

## ANNEX II

### Illegal transport of Products of Animal origin<sup>18</sup>

#### Number of checks on passengers from Turkey at Maastricht Airport in 1998<sup>19</sup>

	Number of passengers	Number of checks	Voluntary cession	Intercept meat	Intercept cheese	Intercept butter	Intercept yogurt
<b>Period:</b>							
Week 35	2343	1640	35	17	174	37	12
September '98	2554	1099	55	35	328	22	15
October '98	1313	223	20	10	101	25	1
November '98	712	192	4	-	4	1	2
December '98	409	?	-	-	-	-	-
<b>Total</b>	<b>7331</b>	<b>3154</b>	<b>114</b>	<b>62</b>	<b>607</b>	<b>85</b>	<b>30</b>

#### Number of checks on passengers from Turkey at Schiphol Airport in 1998<sup>20</sup>

	Checks	Kilograms	Average Kg/Check	Type
<b>Week:</b>				
34	28974	1040	0.34	Cheese, Butter, Yogurt, Meat and Sausage
35	25097	8260	0.33	Cheese, Butter, Yogurt, Biscuits, Chocolate, Meat and Sausage
36	24219	5380	0.22	
37	18339	3500	0.19	
38	17474	2200	0.13	
39	15466	1320	0.09	
40	11365	780	0.07	
41	15559	85	0.01	
42	16315	840	0.05	
43	16870	640	0.04	
44	12003	380	0.03	
45	6492	381	0.06	
46	6476	Nihil	0	
47	6731	Nihil	0	
48	6110	680	0.11	
49	5262	500	0.10	
50	5190	230	0.04	
51	6151	230	0.04	

<sup>18</sup> Wageningen UR; E.Klink en J.A. Korevaar (2000) Risk Factors for the Food and Mouth Disease virus and the structure of the cattle sector in the Netherlands.

<sup>19</sup> Dutch Customs

<sup>20</sup> Dutch Customs