Short Report

FOOT-AND-MOUTH DISEASE IN THE EUROPEAN UNION

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Since the cessation of routine prophylactic vaccination against foot-and-mouth disease (FMD) in Europe, there have been two episodes of FMD in the European Union (EU), in Italy and Greece. Both were the consequence of illegal importation (animals entered Italy with false certificates) of live animals, and both were due to strains of type O virus which had previously been identified circulating in the Middle East. The artificially large differences in the price of farm livestock between the EU and surrounding countries has encouraged the trade in live animals. Existing EU legislation aims at preventing the importation of FMD infected animals, but it is the animals being moved illegally that pose the greatest threat to the health status of the EU livestock.

Routine vaccination against foot-and-mouth disease (FMD) has now stopped in all European countries including the former communist countries, except for certain areas in Russia such as around Moscow because of the international airport, Vladimir where Russian FMD vaccine is made, and Russia's southern borders with the republics of the Former Soviet Union. Consequently Europe contains a population of highly productive cattle, sheep, goats and pigs fully susceptible to FMD. However, FMD is present in many of the countries to the south and east of Europe.

The agricultural industry in the European Union (EU) has been a victim of its own success. The large and rich market within the EU, subsidies and guaranteed prices has supported the development of a highly productive but generally high cost industry which for many items, such as wheat, dairy products and meat has resulted in over production and accusations of dumping on the world market. This has lead to a policy of paying farmers in many sectors of production to reduce their output. Superimposed on this situation has been the opening of trade with the countries of Eastern Europe which are members of the European Free Trade Association (EFTA), and the previously existing trade agreements with countries in South America and Southern Africa. In the future, the newly negotiated GATT will create further pressure for the EU to relax restrictions on imports of livestock products.

Within the EU there is free movement of industrial and agricultural merchandise, including live animals. A computer network links EU border posts and member countries which monitors the movement of animals and animal products

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as they enter the EU (SHIFT) and their movement between member countries (ANIMO). This relies on proper certification and identification of all live animals being moved. However, it cannot accommodate illegal movements, false certification and counterfeit identification. In February 1993 there was an outbreak of FMD in Potenza province of Southern Italy, and in July 1994 there was an outbreak of FMD in the prefecture of Xanthi in Greece (although the first outbreak in Greece was possibly as early as April). Both introductions of disease were the result of illegal importation of live animals.

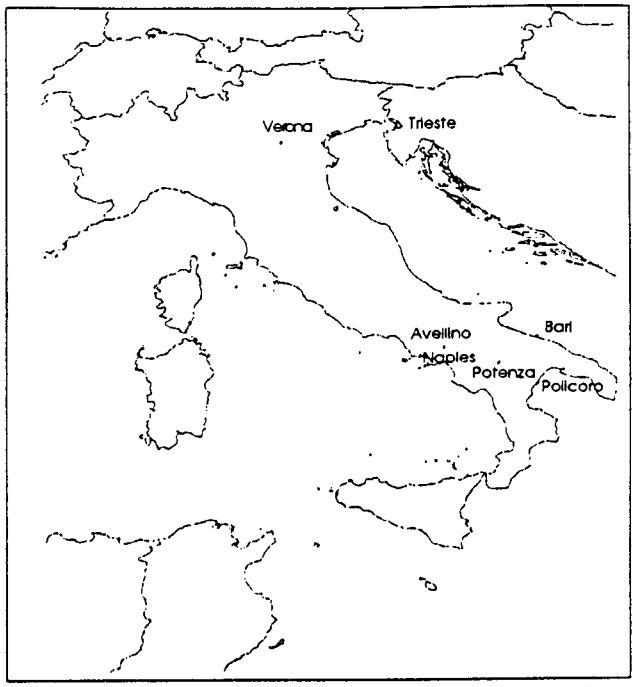

Figure 1. Italy 1993. Areas in which foot-and-mouth disease was identified

ITALY 1993

An outbreak of type O FMD was identified in Southern Italy at the end of February 1993. Cattle had been imported across the border at Trieste with certification indicating their origin as Croatia (part of former Yugoslavia). These cattle were taken to a slaughter house near Potenza where prior to slaughter they were mixed with four young cattle; these were then sold to a nearby farmer on whose premises the first outbreak was reported, affecting these four cattle. The disease was first suspected by a private practitioner carrying out artificial insemination; having reported his suspicion to the veterinary authorities, he continued his visits to other farms, some of which subsequently became infected. Some further local spread of disease was reported, but two unrecorded movements of cattle from the premises of the original importer resulted in outbreaks 120 km north of Potenza, in Avellino (figure 1).

A secondary focus of FMD was found on 11 March on the premises of an importer in Policoro, on the South East coast of Italy. 175 Croatian cattle had been imported via Greece and had entered Italy through the port of Bari. They had then been distributed to 11 different locations, six of which reported disease. One of these was in the north of Italy, in Verona. It is not clear whether this represented a new introduction of disease, as a contact was suspected but not proven between this importer and the dealer in Potenza. No FMD was reported from Greece or Croatia during 1993.

The outbreaks of FMD in Italy affected mainly cattle and sheep, although one herd of buffalo was also affected in the Campania region to the north of Naples. Control was complicated by difficulties in tracing animal movements, the mild clinical signs in the affected sheep, and the prevalence in Italy of swine vesicular disease, which is clinically indistinguishable from FMD, and which accounted for one of the reported FMD outbreaks. In all 57 outbreaks were reported, but subsequent serological investigations indicated that disease had been more widespread than realized. There was also evidence for the illegal use of FMD vaccine, imported by the owners of the buffalo herds around Naples, in an attempt to protect their buffalo from slaughter should they have become infected. The EU has a policy of FMD control based on slaughter of affected and in-contact susceptible animals, and strict cleansing and movement controls. It is prohibited for individuals to use FMD vaccine in their animals without Government permission, as this

could interfere with the clinical recognition of FMD, with subsequent serological investigations and future trading arrangements.

The certificates that accompanied the cattle imported through Trieste were shown to be false, and the true origin of all the cattle is still not known. The majority of them originated in Czechoslovakia, but it is thought that these were then joined by an additional group, before entering Italy. The virus causing the outbreaks was characterised in the OIE/FAO World and Community Reference Laboratory for FMD, Pirbright (WRL). By comparing the nucleotide sequence of the 1D gene of the outbreak strain with that of other strains within the WRL library of field isolates, it was possible to show that the strain had previously been circulating in the Middle East, first appearing in the Sultanate of Oman in 1991 (figure 2). Only one strain was identified in the Italian outbreaks, suggesting that there had been only one introduction of disease. Although vaccination was not used to help control the outbreak, except unofficially, the option to vaccinate was considered, and O Manisa was identified as a suitable vaccine strain.

GREECE 1994

At the end of July 1994, samples sent to the WRL from Greece for diagnosis of suspect FMD were shown to contain FMD virus type O. FMD had been suspected for over a month, and although samples processed in the laboratory in Athens had been negative, epizootiological investigations had been started a week before the confirmation of disease from Pirbright. The disease was first suspected in sheep on the Island of Lesbos in May. However, because of the failure of the laboratory to confirm FMD, no action was taken, and in June sheep were sent by boat to the mainland of Greece, in particular to the prefecture of Xanthi, but also to a number of other sites in Greece. The positive samples had been submitted from Xanthi, but the presence of FMD on Lesbos was soon after also confirmed.

Within the EU, sheep farmers are given subsidies according to the number of sheep they have on their premises on a specific date during the year. This is an important source of income to farmers in many parts of the EU, where farming would otherwise be uneconomic. Greece possesses a large number of islands within the Aegean Sea on which sheep are kept; some of these are geographically very close to Turkey. It is considered likely that sheep were imported illegally from Turkey onto the Island of Lesbos prior to the subsidy assessments at the end of May, and that these sheep were infected with FMD virus. Sheep were then traded in June and July from Lesbos, and introduced FMD into Xanthi. The mild clinical signs of FMD in adult sheep, and the delay in laboratory diagnosis allowed the disease to become well established before effective control measures were introduced. However, even then, because of the decentralised veterinary infrastructure in Greece, it was difficult to establish a consistent policy in all the affected areas.

By the end of October, 91 infected premises had been identified in the prefectures of Lesbos, Xanthi, Rodopi, Chalkidiki, Evros and Serres (figure 3), involving almost entirely cattle, sheep and goats; pigs are not common in the region of these prefectures, and on only two farms were pigs present. Spread of disease was due to the movement of infected animals or direct contact between animals on neighbouring premises.

The virus causing the outbreak was characterised in the WRL, and shown to be indistinguishable from a strain circulating in Turkey and other Middle Eastern countries (figure 3). This was consistent with the supposition that it had been introduced with illegally imported sheep. Although vaccination was not used to control the outbreak, the WRL recommended the use of the O Manisa vaccine strain should vaccination have been required.

Because animal movement records were not always kept, and because of the interval of time between introduction of FMD and the start of the control programme, the Commission of the EU recommended an extensive serological survey within Greece, concentrating on the affected prefectures on the mainland. At the time of writing (December, 1994) almost 20,000 sera have been tested by the WRL and the ID-DLO, Lelystad in the Netherlands, in an effort to define the extent of the outbreak.

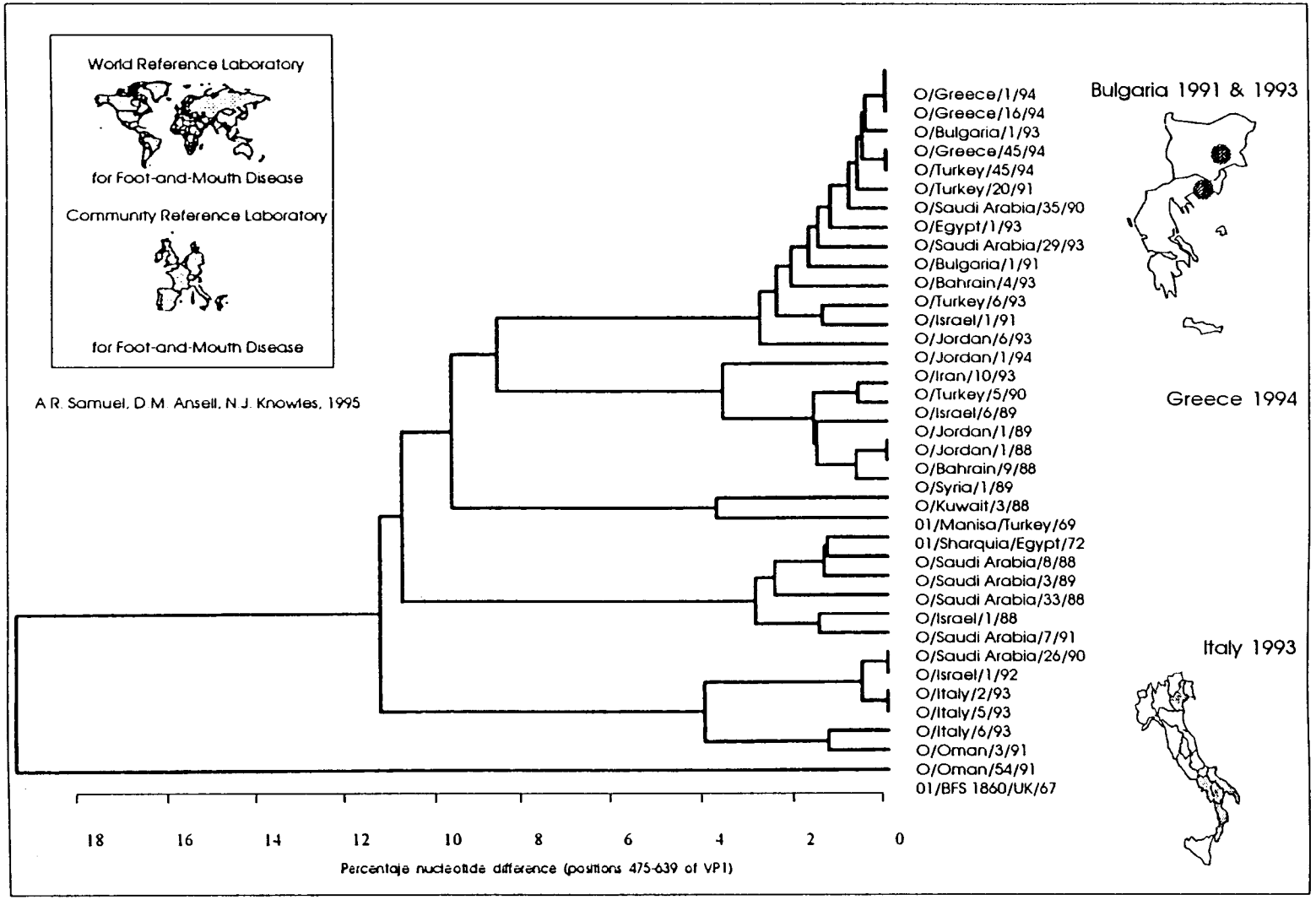

Figure 2. Dendrogram showing percentage nucleotide relationship between isolates of serotype O FMD virus received from Italy and Greece with reference strains and strains circulating in the Middle East (Knowles, Ansell and Samuel, 1995

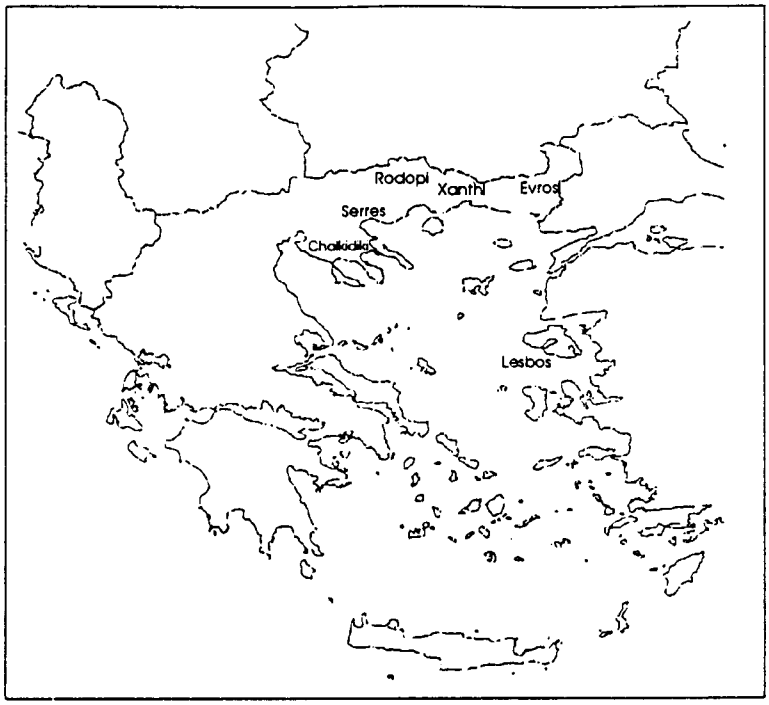

Figure 3. Greece 1994. Prefectures affected with foot-and-mouth disease

DISCUSSION

The occurrence of two extensive outbreaks of FMD within the EU in the last two years has highlighted the vulnerability of the EU to FMD. It is possible that these introductions were not exceptional, but that when the livestock was vaccinated, disease did not become established. In addition, the policy of free movement within the EU makes the possibility of even more damaging outbreaks involving the large pig populations of Northern Europe now more likely. These two outbreaks fortunately were controlled, in spite of early organizational difficulties. However, they have served to help formulate future EU policy and identify certain deficiencies. In addition, they have kept FMD in high profile which will ensure that the veterinary services will remain alert for future outbreaks. The WRL has also been encouraged to concentrate on the application and quality control of the existing and newer diagnostic tests, such as the polymerase chain reaction using nested primers.

The episodes have again confirmed that the movement of infected animals is the most common means by which FMD spreads. The large differential between the price of animals within and outside the EU predisposes to this movement. Although there are adequate regulations which would prevent the legal movement of infected animals, it is the illegal importation of animals or their movement with false veterinary certification which pose the major threats.

RESUMEN

Fiebre aftosa en la Unión Europea

Desde el término de la vacunación profiláctica de rutina contra la fiebre aftosa en Europa han ocurrido dos episodios de la enfermedad en la Unión Europea (UE), en Italia y en Grecia. Ambos fueron consecuencia de la importación ilegal (animales entraron en Italia con certificados falsos) de animales vivos, y la cepa de virus tipo O diagnosticada había sido identificada previamente en Oriente Medio. Las grandes diferencias de precio del ganado entre la UE y los países vecinos ha estimulado el comercio de animales vivos. La legislación existente en la UE propone la prevención de la importación de animales infectados por fiebre aftosa, pero son los animales transportados ilegalmente los que representan la mayor amenaza al estado sanitario de los rebaños de la UE.

RESUMO

Febre aftosa na União Européia

Desde o fim da vacinação profiláctica de rotina contra a febre aftosa na Europa ocorreram dois episódios da doença na União Européia (UE), na Itália e na Grécia. Ambos foram consequência da importação ilegal (animais entraram na Itália com certificados falsos) de animais vivos, e a cepa do vírus O identificada foi a diagnosticada previamente no Oriente Médio. As grandes diferenças de preço do gado entre a UE e os países vizinhos estimularam o comércio de animais vivos. A legislação existente na UE está dirigida a prevenir a importação de animais infectados por febre aftosa, mas são os animais transportados ilegalmente os que causam a maior ameaça ao estado sanitário dos rebanhos da UE.