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# The outbreaks of foot-and-mouth disease and swine vesicular disease in Malta

by G.W. Ford

The three islands comprising Malta have a total land area of about 316 km<sup>2</sup> and a population of 300 000. The livestock population comprises 80 000 cattle, sheep, goats and pigs that are susceptible to foot-and-mouth disease. Of these, about 50 000 are pigs.

The 1975 outbreak of foot-and-mouth disease was the first in nearly thirty years, and there was no record of swine vesicular disease; however, both diseases had occurred on many occasions in neighbouring countries bordering the Mediterranean. The relative freedom from disease enjoyed by Malta was largely attributable to the strict preventive measures enforced because of the high density of both human and animal populations. Meat imports from countries where foot-and-mouth disease was endemic were prohibited. In case meat, fodder and feed were being imported from a country which had an outbreak of the disease, imports were suspended until at least two months after the end of the last known outbreak. Any live susceptible animals that were imported were appropriately quarantined. But one preventive measure that was not effectively practised was the control, destruction or prohibition of entry of swill at the sea ports and airport. However, because of the continuing risk of foot-and-mouth disease outbreaks in Malta, basic planning against such an eventuality was undertaken. This included periodic discussions between the Senior Government Veterinary Surgeon in Malta and FAO Headquarters staff, as well as guidance from the latter. Nevertheless, when the outbreak did occur, many of the arrangements had to be made on an *ad hoc* basis. Fortunately, since Malta's internal and external communications are very good, it was possible to make the eradication plans very quickly.

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## First outbreak

The first outbreak of foot-and-mouth disease occurred on 5 June 1975 on a pig farm. Samples of suspected pig carcasses were sent immediately to the Animal Virus Research Institute (Pirbright, United Kingdom), which diagnosed foot-and-mouth disease caused by the type "O" virus.

The first outbreak was on the east coast. It was therefore hoped that the prevailing northwesterly wind and the usual hot weather during the month of June would assist the eradication process. Unfortunately, the northwesterly wind was not as strong as usual, and on occasion even came from the opposite quarter, and there were not many hot sunny days. A series of vital countermeasures were therefore planned. Not all of them were brought into force at once because it was not easy to bring home to the authorities and to the farmers concerned the seriousness of a disease that had never before significantly affected the country. Moreover, with only one outbreak on a relatively isolated farm, it was hoped that perhaps the first control measures taken would be adequate.

**Control measures.** The first measures taken included the destruction of all susceptible animals on the infected farm, the disinfection of the farm, the isolation of the farm and the farmer, and the issue of warnings to all other livestock farmers to keep their animals under cover. But perhaps the most important measure taken was the decision to vaccinate all susceptible animals in the islands, with priority given to animals nearest the infected farm. Malta had never before vaccinated its animals against foot-and-mouth disease. It was thus necessary to train teams quickly to carry out this work. It was also necessary to obtain "O" type vaccine at short notice. Fortunately, this was received very quickly from the Animal Virus Research Institute.

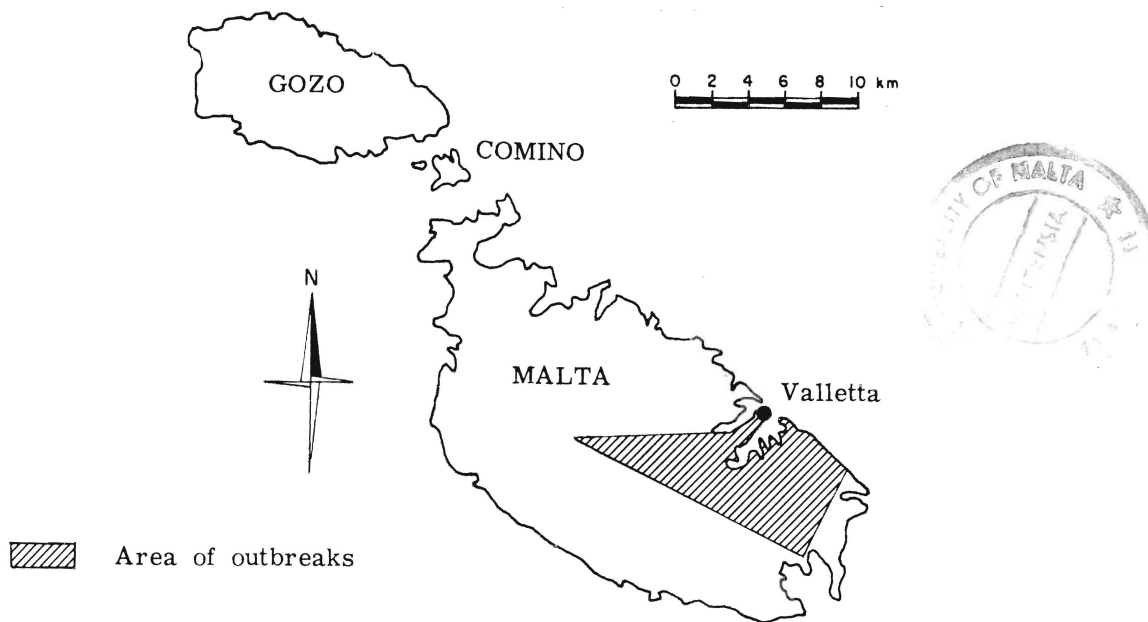


Figure 1. Area of foot-and-mouth disease outbreaks in Malta in 1975

### Later outbreaks

However, the first control measures proved to be inadequate. Nine days after the first outbreak, two more were identified, and on subsequent days there were further outbreaks. It thus became evident that the disease had spread before effective isolation of the first infected farm was achieved, and before the vaccine was able to provide sufficient protection. It also became clear that Malta's small veterinary staff would not be adequate to contain the disease.

**Further control measures.** It was therefore decided to secure additional veterinary assistance from the United Kingdom and elsewhere. The services of a team from the Animal Virus Research Institute (team leader Dr. John Watson, some 20 veterinary surgeons, two scientists and three senior technical assistants) were made available to combat the disease. In these circumstances, it was not necessary to take advantage of FAO's offer to send an animal health officer.

At first glance it might seem that 20 veterinary surgeons were an unnecessarily large contingent; however, some of them not only undertook "combat" work, but were also engaged in teaching and training the hastily assembled corps of veterinary assistants, and while this corps was being trained, some of the veterinarians had to perform tasks that were later taken over by assistants. The success of the campaign was demonstrated by the

fact that despite the congested conditions of Malta, there was a total of only 24 outbreaks, and these were contained within a relatively narrow segment of land comprising about one fifth of the area of Malta. Furthermore, no outbreaks occurred on the neighbouring islands of Gozo and Comino.

Numerous other measures were also adopted. An operations control centre was established in a wing of the local prison, which was just outside the infected area, and an adjoining prison building was established as a decontamination centre for the teams that visited the farms. The movement of all animals was prohibited except under licence, and this was only granted following a veterinary inspection of the herd. The movement of farm-grown animal feedstuffs was prohibited. The abattoir was closed for disinfection and later opened on a restricted basis. The Minister of Agriculture and a Maltese veterinary officer explained on television the general situation and gave detailed advice to farmers, i.e. to keep everyone to the greatest extent possible off the farms, erect a disinfection ditch at the farm entrance and report all suspect symptoms to the veterinary service. An important decision that helped to secure the farmers' cooperation was the promise made by the Government to compensate the owners for all animals slaughtered. These included all infected animals as well as all susceptible animals on the farm where infection was known to have occurred. The burning of carcasses, however, was a difficult problem in a country where there is only a thin

layer of soil over the limestone rock, and where most quarries could not be used because of the water-bearing strata underlying the rock, which is often fissured. Herds were inspected as frequently as possible. Infected farms were cleaned and disinfected — a formidable problem because large accumulations of dung and other debris had to be dealt with. The police and the animal welfare organization cooperated in rounding up the many stray dogs. Improved control measures were established with regard to swill arriving at the sea ports and airport. Special precautions were taken to keep the disease out of the islands of Gozo and Comino: disinfection was established at the points of exit and entry, and restrictions were placed on Gozitans visiting Maltese farms. The Government's artificial insemination service for cattle was suspended. It was decided that fresh milk would continue to be accepted from non-infected farms, but the state dairy took many special disinfection and cleansing measures at the milk reception depots and processing dairies. Horse races and agricultural shows were prohibited. The Chief Government Medical Officer also appeared on television in an endeavour to allay the anxiety of the public from a medical point of view; however, there was a marked (though temporary) decline in consumption of meat, especially pork.

The Institute scientists monitored the disease situation and decided to give a second (booster) vaccination to the animals about one month after the first vaccination. For cattle, sheep and goats, an aqueous inactivated monovalent "O" type vaccine was used, and the tests showed that it provided a good level of protection. For the second vaccination of pigs, a French oil-based vaccine was used in order to produce longer-lasting protection.

There was, however, one desirable precaution which could not be taken. This relates to the widespread practice in Malta of private (licensed) persons collecting domestic refuse from dustbins to use in an unsterilized form for feeding pigs. The Government did not consider it practical during the epidemic to prohibit this system, or to cause the swill to be sterilized.

### **Last outbreak**

The last outbreak of foot-and-mouth disease occurred on 3 July 1975, and the various follow-up measures took another six to seven weeks to complete. Thereafter it was possible for the veterinary service to return to normal working conditions.

By the end of the 1975 outbreak 251 cattle, 25 sheep, 155 goats, and 1 368 pigs had had to be destroyed; these represented just over 2 percent of the total number of susceptible animals in Malta. The source of the original outbreak was not ascertained, but there was considerable evidence pointing to infection from imported swill.

By March 1976, there was no recurrence of foot-and-mouth disease, and a third vaccination had been completed. It is hoped that this vaccination, together with

a more effective control of swill at the sea ports and airport, will provide a sufficient safeguard in the future.

### **Outbreak of swine vesicular disease**

On 28 August 1975 a suspect case was reported from a herd of pigs in the centre of the island of Malta. On this occasion, the Institute diagnosed swine vesicular disease. This posed a considerable dilemma for the Maltese authorities. No commercial vaccine was available, and the disease spread very rapidly. Fortunately, the disease is limited to pigs, and most affected animals recover. Other countries with the disease have pursued varying policies: in the United Kingdom a slaughter policy is adopted, but many other countries "live with the disease" and endeavour to isolate the farm (or farms) concerned. The biggest problem for Malta was that the disease broke out so quickly after the last outbreak of foot-and-mouth disease. Since the clinical symptoms of the two diseases are similar, there was the very real danger that a further outbreak of foot-and-mouth disease might be wrongly diagnosed locally as swine vesicular disease.

Malta decided not to slaughter the infected pigs, but to keep the farms isolated as far as was practical, and to send samples from infected pigs to the Institute so as to ensure that the disease was in fact swine vesicular disease. This policy did not require the same "mass" attack by the veterinary staff. Nevertheless, there were a number of post-foot-and-mouth disease matters on which advice was required, and so three experts from the Institute returned to Malta and remained there for about a month.

As with the original foot-and-mouth disease outbreak, it was not possible to ascertain the source of the swine vesicular disease outbreak, but it could well have been imported swill. Within a short time, a large number of pig farms were infected in Malta and in Gozo, to which the disease spread on this occasion. It is probable that most pig farms in the islands have now had swine vesicular disease to some degree. In a few instances there were deaths among pregnant sows, in sows that had recently farrowed, and among boars. Some of these animals developed signs of meningoencephalitis before death, but these accounted for less than 0.1 percent of the pigs on affected farms.

### **The future**

The British veterinary team recently provided the Government of Malta with a detailed report containing a number of recommendations for improved veterinary control. The setting up in Malta of a proper system of collection and disposal of garbage has also been recommended by the European Commission for the Control of Foot-and-mouth Disease following the visit made to the country by the Secretary of the Commission in October 1975.