

Alternative methods of foot-and-mouth disease control in a closed system

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The modern method of combating disease and its results:



When one sick animal is discovered, the whole herd is killed and burned.



An alternative method of combating disease and its results:



Symptoms are treated and the milk of a sick animal is given (after pasteurization) to pigs. The meat of animals who do not recover from the disease is canned.

Background

Foot-and-mouth disease (FMD) is today considered to be one of the most problematic animal diseases, because it is very harmful to even-toed ungulate livestock farming. However, FMD has been endemic in Europe for a very long time, as early as the 17th century. The disease has become more common since the beginning of the 20th century because of the widespread emergence of cattle breeding and increased trade in farm animals between regions (Sobrino, Domingo 2001). The vaccination of animals was introduced in Europe in the 1920s to prevent FMD (Lombard et al. 2007). However, the European Union banned the preventative vaccination of animals in 1991. Another method was also introduced in the 1930s: healthy animals are massacred to prevent the spread of the disease. This practice of mass slaughter continues to be used in Europe to this day for various animal diseases.

But how was the disease controlled in a closed system during this same time? Let us look at the case of the Estonian SSR. The Republic of Estonia was forcibly annexed to the USSR in 1940. Before World War II, Estonia was the only country free of FMD. This was achieved by maintaining good sanitary conditions. It was not until 1952 that the disease first arrived in the Estonian SSR. As local veterinarians, who were hired after the war, did not initially have experience in controlling the disease, it suddenly became widespread. The greatest obstacle in combatting the disease was strict secrecy: the disease was not allowed to be talked about in public and thus people were not informed about the actual extent of the disease. The second and also last outbreak of the disease occurred in the Estonian SSR in 1982. The USSR completely denied this outbreak and lied to international organizations that such a disease was spreading in the Baltic States. Due to the supreme secrecy, there is no data about it in the archives today. So, we used the memories of local people as a data source.

Results

- It was revealed that in a closed system under planned economy conditions, any waste of food was reprehensible. Any preventative killing of animals was ruled out.
- When the disease appeared, many methods that are not currently accepted were used to control it. For example, workers were locked in cattle barns until the disease had subsided in the barn, the movement of people out of an infected area was restricted, etc.
- As a preventative measure, roads leading to the infected area were closed. Disinfecting mats were put on the road, which vehicles and people had to pass over.
- Signs banning the movement of strangers were placed on barns. Signs banning strangers from going inside cattle barns have remained to this day. Animal barns were disinfected with lime or ash water.
- The symptoms of the disease were treated: the animal's mouth was disinfected with a potassium permanganate solution, wounds were smeared with both natural ointments (spruce resin, birch tar, etc.) and those purchased in pharmacies (e.g., zinc ointment).
- Animals that did not recover from the disease and were weak were transferred to a meat processing plant. When the meat is heated, it is no longer contagious, and so it was canned.
- The milk from the infected barn was pasteurized locally using mobile heating machines and fed to pigs.

Conclusions

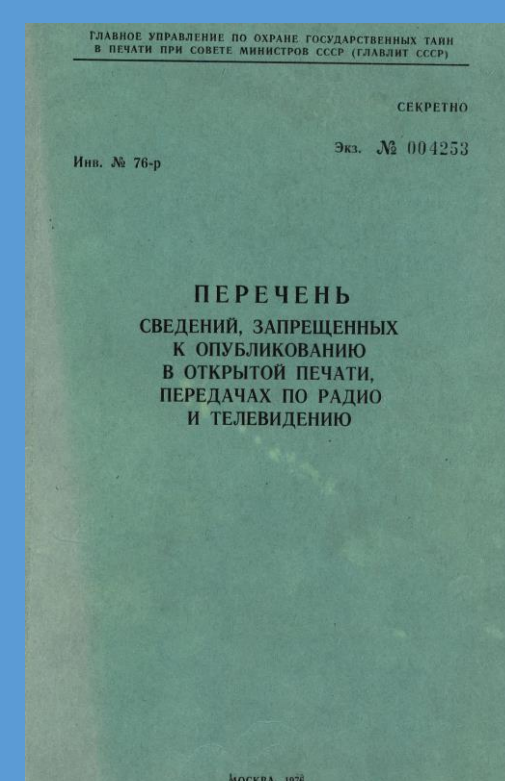
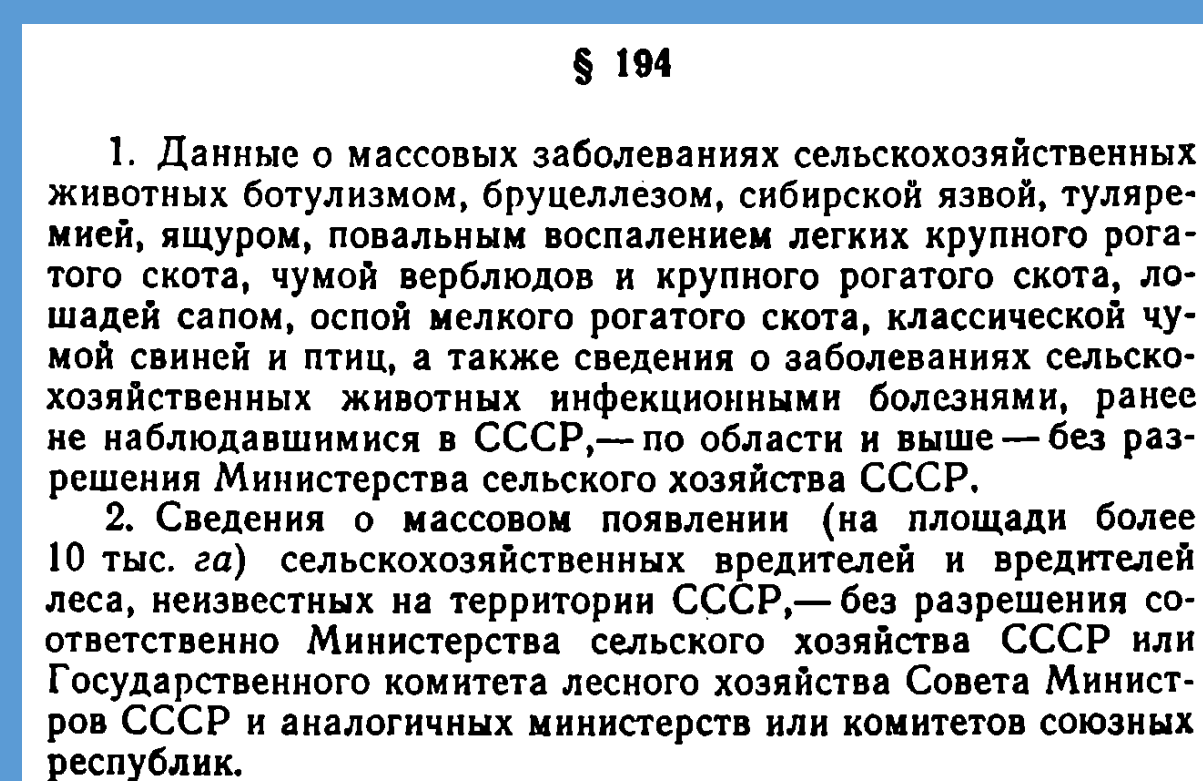
- Large outbreaks of FMD disease began to spread rapidly in the 20th century, when very large herds started to emerge.
- Limited spread of the disease and resulting minor damage to livestock occur when there are smaller herds and farms. On smaller farms, it is also easier to treat animals individually.
- Preventative vaccination is not a solution because it is costly and not beneficial to animals in the long run.
- The treatment of symptoms, including with alternative methods, has shown good results. For example, scientific experiments with folk medicines have been successfully conducted in India and Kenya. The treatment of FMD wounds with honey ointment is particularly promising (Gakuya et al 2011, Ranjan et al 2016).
- After heating, the meat and milk of diseased animals is no longer infectious. Thus, the solution is to change the currently narrative, namely that the only solution is to kill and incinerate the animals. The meat and milk of an animal suffering from FMD is suitable for eating and drinking after heat treatment. The cured animal will live for many more years and fully recover from the disease.
- Instead of large slaughterhouses, it would be prudent to build small mobile ones, as these are more flexible and can process sick animals without spreading the infection.

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Soviet-era secret order for everyone who worked in various press and media outlets. It contains a list of topics prohibited from publication in newspapers, as well as on radio and television broadcasts. Among other things, this includes a ban on publicly speaking about massive outbreaks of diseases among farm animals, like botulism, brucellosis, anthrax, plague and foot-and-mouth disease.

Materials and methods

For data collection, we searched online databases and conducted searches of libraries, archival sources and written memoirs in the press. In addition, we used interviews with former zootechnicians, veterinarians and other farm workers as a source of oral history - a total of 14 people. As it was forbidden to talk about the disease in the press, there is very little information about the outbreak in 1952. It was not until the conditions of glasnost and perestroika in the late 1980s that the first and only recollections of that time appeared. The most important of these is an interview given in 1988 by Heino Mikk (1924–2001), the former head of the State Veterinary Service. Two interviews with farm workers about the 1982 outbreak also appeared in the press in the 2000s. However, the press published in Estonia at that time did not present any data on the spread of the disease. The 1982 outbreak was highly classified and so there is also no information in official archives and international documents. However, data on the disease were published by Estonian diaspora newspapers in the Western free world. These newspapers published rather detailed descriptions of the control of the disease in a closed system. We also obtained a fairly good overview of the 1982 outbreak from our interviewees.