



## AGRICULTURE & LIVESTOCK INSURANCE

### FOOT AND MOUTH DISEASE (FMD):

**Under certain circumstances, diseases like FMD are (re)insurable**

#### INTRODUCTION

Like human beings, animals can become ill. To keep valuable livestock healthy, farmers invest in quality food, water, injury prevention, and medical care. However, identifying sick animals is not always easy because herd animals seek to hide illness from predators. Illness is often initially detected indirectly by observing changes in appetite, weight, drinking behavior or activity – such as spending time away from the herd.

Humans and animals are all surrounded by microorganisms, some of which, called pathogens, can produce infectious illness and disease. Some pathogens affect both humans and animals, while others affect only animals or only certain species of animals. This newsletter looks at a disease that infects several types of farm animals and causes significant losses, both within and beyond the agricultural sector: foot and mouth disease (FMD).

#### WHAT IS FMD AND WHAT CAN BE DONE TO STOP IT FROM SPREADING?

##### DESCRIPTION

FMD is considered one of the most significant diseases to affect cloven-hoofed ruminants. Unlike animal-specific diseases, FMD affects different farm animals such as cattle, pigs, sheep and goats at the same time. Farm animals are not the only ones at risk: around 70 species of wildlife, including deer, antelope, buffalo, elephants and giraffes are susceptible to FMD. FMD is not a direct threat to humans, nor does it affect horses, dogs, cats or other animals without cloven hooves. FMD, therefore, is not a public health concern, but an outbreak could ultimately threaten the entire economy of a country as it leads to the culling of animals, restrictions in movement and disruptions to trade in animals and animal products.

##### WORLDWIDE DISTRIBUTION OF FMD

Historically, the disease has been present nearly everywhere with livestock, but developed countries have eradicated it. It remains endemic in parts of Asia, most of Africa, and the Middle East. However, increased travel and trade raise the potential for dangerous outbreaks of this contagious disease in disease-free areas. The World Organization for Animal Health (OIE) has established an official list of FMD-free countries and zones based on a transparent, science-based and impartial procedure.

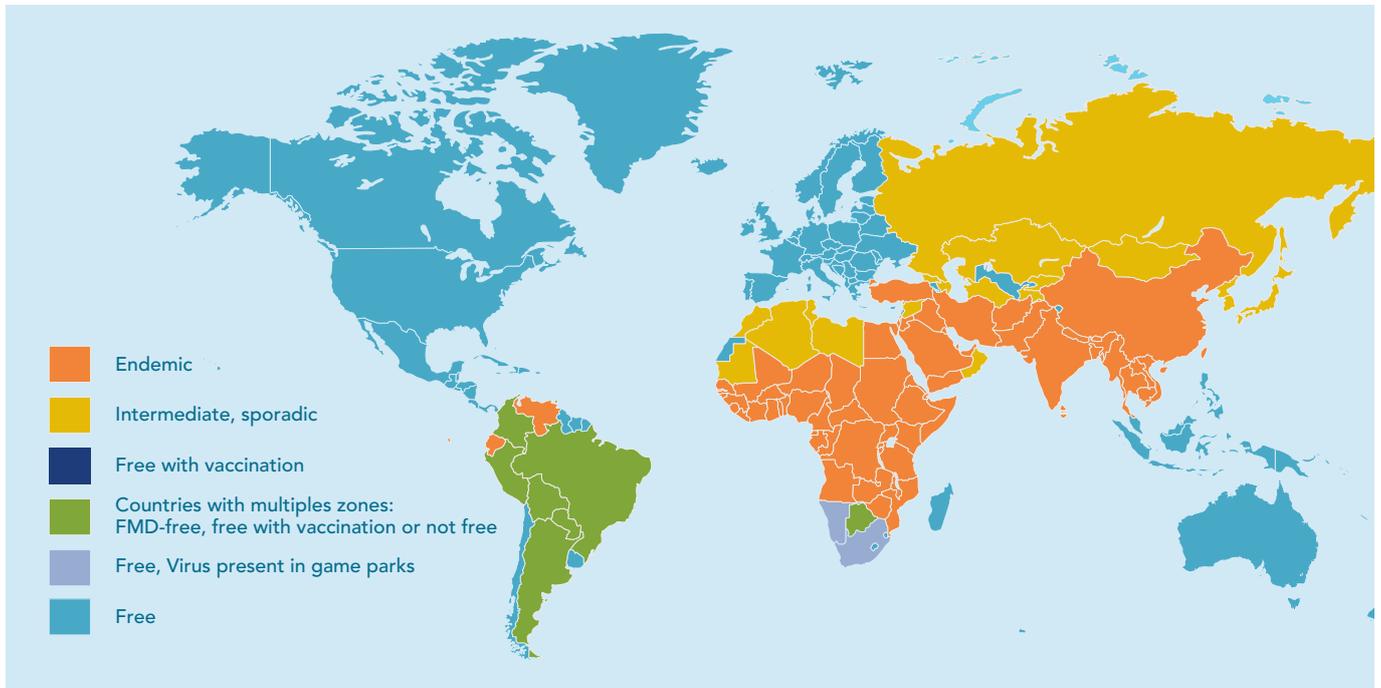


FIGURE 1: PROCEEDINGS OF THE FAO/OIE GLOBAL CONFERENCE ON FOOT AND MOUTH DISEASE CONTROL, 2012

Source: FAO

## VACCINATION

In many parts of the world, vaccines have been successfully used to keep the disease under control. Nevertheless, vaccination is cost-intensive and problematic. Vaccinated animals are not totally resistant – they can still carry the disease even though they are asymptomatic themselves. Routine blood tests relying on antibodies cannot distinguish between an infected and a vaccinated animal. Countries using vaccines are no longer allowed to export animals to other countries, which means that they suffer trading restrictions. Moreover, there are seven different strains of the virus, each one requiring a specific vaccine strain to provide immunity to a vaccinated animal. Vaccines must therefore be polyvalent. Protection through vaccination only lasts around six months; to maintain immunity, revaccination at regular intervals is necessary (every 4-6 months).

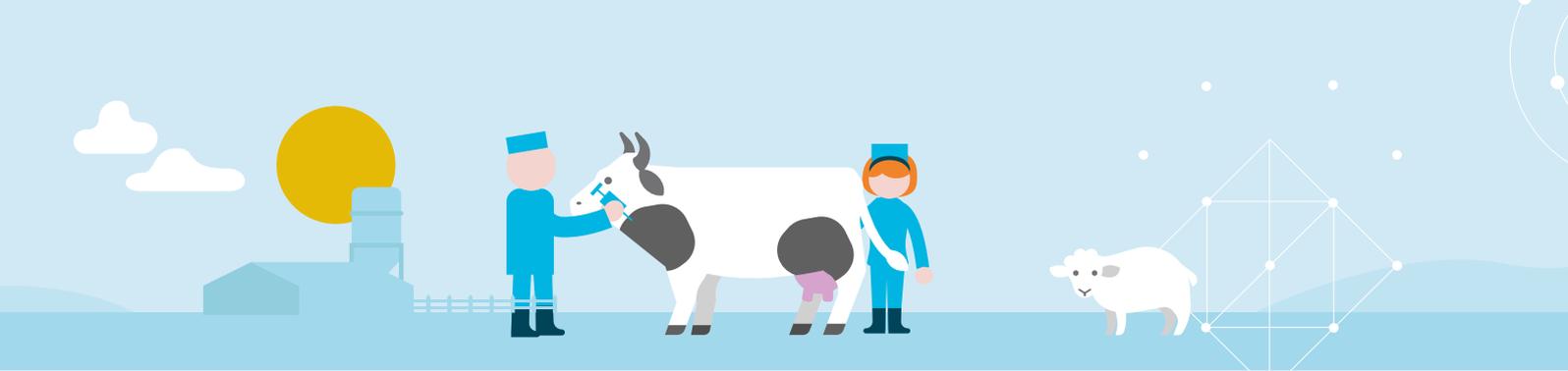
## CLINICAL SIGNS

The severity of clinical signs depends on the strain of virus, and the age and species of the animal. The signs can range from a

mild to severe infection. Clinical signs are more severe in cattle and intensively reared pigs than in sheep and goats, so it may be difficult to recognize an outbreak in the latter.

In infected animals, FMD is characterized by blisters and vesicles on the nose, tongue, lips and oral cavity, between the toes, and above the hooves, teats and pressure points on the skin. Ruptured blisters can result in extreme lameness and reluctance to move or eat. Secondary bacterial infection of open blisters can also occur. Other common symptoms are fever, depression, hypersalivation, loss of appetite and weight and lower milk production. In general, the disease is very painful and spreads to all the susceptible animals in a population.

The disease is rarely fatal in adult animals, but there is often a high mortality rate in young animals. The health of young animals (calves, lambs, piglets, etc.) may be compromised by lack of milk from infected dams. In adult animals, the disease causes severe production losses. While the majority of affected animals recover one month post-infection, they often remain persistently infected and the disease leaves them weakened and debilitated. These animals carry the virus and initiate new outbreaks of the disease.



## DISEASE TRANSMISSION AND SPREAD

### EARLY DETECTION IS ESSENTIAL TO REDUCE THE POTENTIAL IMPACT OF THIS DISEASE.

The virus causing FMD can be found in all excretions and secretions from an infected animal. An infected animal already spreads the virus before showing any clinical signs of the disease (incubation time). So, the virus may be present in saliva, milk and semen for up to four days before the disease can be recognized visually. Infected animals breathe out a large amount of aerosolized virus, which can infect other animals via the respiratory or oral routes.

### THE SIZE OF THE OUTBREAK DEPENDS ON HOW EASILY THE VIRUS CAN SPREAD.

This can happen rapidly through direct contact between animals (exhaled air, lesions, blood, semen, saliva), through products carrying the virus such as animal feed (hay, straw, feed, cooked food infected with the virus and fed to susceptible animals, water), animal products (milk, meat, garbage from boats, planes and ships, illegal transportation, smuggling) or human beings entering the farm: veterinarians, animal feed agents, other farmers, travelers, airline passengers (clothes, shoes, equipment, animal trucks).

## CONTROLLING OUTBREAKS OF FMD

The FMD virus can be killed with heat, low humidity and some disinfectants. In countries with endemic FMD, susceptible livestock are vaccinated. To control outbreaks of FMD in previously FMD-free countries, quarantine areas may be established around known or suspected FMD-infected herds. Within these areas, livestock are tested and examined for the presence of FMD. Animal movements between quarantine and non-quarantine areas are restricted or stopped. The quarantine area is expanded if neighboring farms are found to have suspected or confirmed cases.

Surveillance zones surrounding the quarantine area may be established to monitor for signs of FMD. Using a practice called "ring vaccination", an emergency vaccine may be used to slow or stop the spread of an outbreak.

Livestock on many farms may be examined and tested for the presence of FMD. Animals from infected farms will be humanely euthanized and properly disposed of according to state and local requirements, and neighboring farms will also be assessed for infection and possible depopulation.

Depending on the situation, the government will decide the extent to which animal movement must be stopped. Movement may be stopped within a specific region or across a wide area of the country, depending on the severity of the outbreak. Vehicular movement on and off farms may also be restricted to limit the spread of the disease as much as possible. Animal movement and traffic restrictions could last from a few days to several weeks.

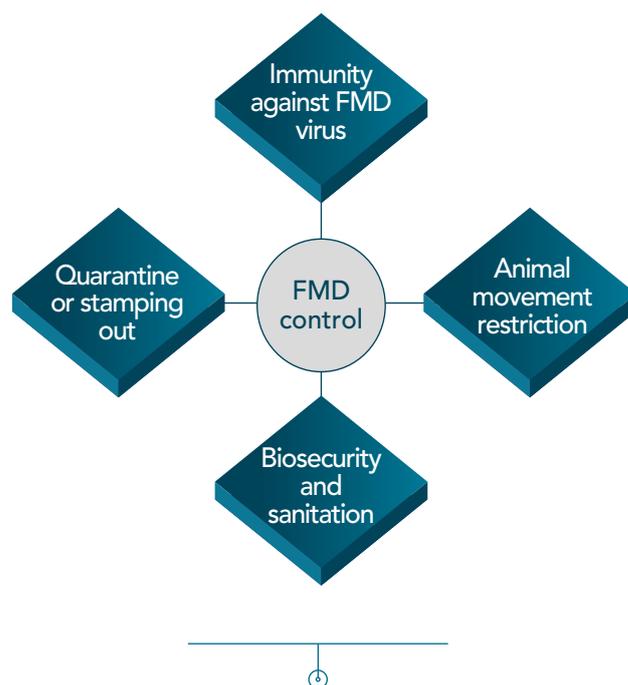


FIGURE 3: ELEMENTS OF CONTROL OF FOOT AND MOUTH DISEASE  
Source: FAO

Ultimately, countries wishing to regain FMD-free status will be required to demonstrate the absence of virus circulation and animal infection. This means that even their vaccinated animals will need to be culled. Vaccination-to-cull (all vaccinated animals are culled after the outbreak has ceased) is not considered as economical or as ethical as a vaccinate-to-slaughter (vaccinated animals enter the food chain) or vaccinate-to-live strategy.



In some countries, state and federal laws require that indemnity payments be issued for slaughtered animals, for up to 100% of their value. This is often financed through an animal disease fund, into which each farmer pays a certain amount per animal on a yearly basis. In the event of an outbreak, farmers must cover not just losses from slaughtered animals, but also costs for disinfection and the removal of animal carcasses, as well as the shortfall from keeping barns free of animals until they are allowed to start producing and restock a herd again (waiting period). Losses are suffered not just by the farmers whose herds are infected, but also by all the neighboring farmers who are affected by quarantine and surveillance zoning (protective zone). The normal production cycle is also interrupted. Few countries offer insurance for these kinds of business interruption losses.

## PREVENTION AND CONTROL MEASURES

The initial measures in the global strategy for dealing with FMD are early detection and warning systems and preventative actions. The protection of FMD-free countries, areas or zones is enhanced by stringent import and cross-border animal movement controls and surveillance.

At a farm level, livestock owners and producers should maintain sound biosecurity practices to prevent the introduction and spread of the virus. Recommended measures include controlling access to livestock by people and equipment, controlling the introduction of new animals to existing stock, maintaining the sanitation of livestock pens, buildings, vehicles and equipment, monitoring and reporting illness immediately to a veterinarian, and the appropriate disposal of manure and dead carcasses. Similarly, in the processing industry, continuous and daily inspections in slaughter facilities, commercial shipping and transport are necessary to prevent possible infection.

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## NATIONAL GOVERNMENTS SHOULD MONITOR THE DISEASE SITUATION IN FOREIGN ANIMALS AND COLLABORATE WITH THE OIE, WTO, AND FAO.

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Borders and other ports of entry must be regulated and inspected. Any potential animal products that could carry animal diseases must be intercepted and quarantined.

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## COUNTRIES FREE OF FMD INVEST IN INSPECTION, MONITORING, SURVEILLANCE, EMERGENCY MANAGEMENT, RESEARCH AND EDUCATION.

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Within their borders, a strong animal health infrastructure is maintained that includes self-surveillance, monitoring and an emergency response capacity.

## POTENTIAL ECONOMIC RAMIFICATIONS

Because of the potential for rapid spread, with nearly 100% of exposed animals ultimately becoming infected, an outbreak of FMD could have sizeable economic consequences that would be felt by many sectors of the economy beyond agriculture. The extent of the economic impact involved would depend on how quickly the disease is identified and contained. If the outbreak is controlled and eliminated quickly, the damage may be minimal. However, if the disease becomes widespread, the economic losses could easily reach billions of euros.

The most serious economic effects would result from large-scale losses of livestock and severe restrictions to agricultural exports. In addition, travel in and to areas affected by an FMD outbreak would be restricted, which would have a negative impact on commerce and tourism. In 1997, there was an outbreak of FMD in Taiwan. Prior to this, the country had been free of FMD for 68 years. In the end, four million pigs (34% of the total swine population) were culled, with costs estimated at EUR 5.4 billion.

The United Kingdom suffered outbreaks of FMD in 1981 and 2001. In 2001, an estimated six to ten million animals had to be destroyed before the disease was eradicated, which resulted in losses of some EUR 3.5 billion to agriculture and the food chain. Neighboring countries like Ireland, France and Netherlands were also hit.

Despite the extensive information available on the virus, the disease and vaccines, FMD remains a major threat to the global livestock industry. The world may never be free of FMD, but we can still protect animals by focusing our efforts on prevention

## A FEW WORDS FROM OUR PARTNERS

### INSURING FMD COVER



**Albert ZIEGLER**  
Agricultural Product Manager,  
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Albert Ziegler is an agricultural engineer. After two years working on a farm, he began his agricultural studies in 1978, focusing mainly on livestock production, plant construction and the agricultural economy at the University of Applied Sciences Bingen (Germany). After his studies, he began his career in 1982 with R+V Versicherung, which is the market leader in the German agriculture insurance market. Within R+V Versicherung, he is responsible for product development, key issues and market and product strategy.

With innovative products such as "business interruption insurance for agricultural livestock production" (1993), animal epidemic cover and the "agriculture insurance policy" (2003), a comprehensive bundle agriculture insurance policy, R+V Versicherung has strongly influenced the German agricultural commodities market and considerably increased its market share.

The different strategies for fighting FMD, depending on the FMD status of the affected country, have a big influence on the economic consequences of an FMD outbreak. The countries in which FMD exists endemically try to protect susceptible animal populations through vaccination. In the event of an FMD outbreak, countries that are usually free of the disease, such as North and Central America, Australia, New Zealand and Western Europe, will try to stamp the disease out again completely in order to attain "FMD-free" status as quickly as possible and regain access to the major world markets.

Stamping out the disease involves killing all infected herds as quickly as possible and establishing large protective zones around the infected farms, in which any transport of animals or animal products like milk or meat is strictly forbidden (standstill zone).

Depending on the agricultural structures in the affected country, this form of animal disease control leads to major financial losses for the agricultural farms within the restriction zones. Generally, state compensation is paid only to farmers whose infected livestock must be killed. This means that farmers affected by transport and commercial bans must carry the economic burden themselves.

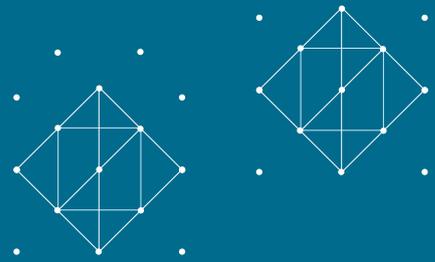
Western Europe, in contrast to North America, has structures marked by a high number of medium-sized farms per unit area. Therefore, as shown by the outbreaks of 2001, an FMD outbreak in Western Europe may only

lead to a relatively small number of farms having to kill their livestock, but several thousand neighboring farms will be affected by the subsequent transport and commercial ban.

In these farms, the livestock is preserved. The farms still have running costs but they have no revenue, so the damage they suffer is actually much greater than in the farms where the FMD outbreak took place. The losses per farm can very quickly reach several hundred thousand euros. In Germany, Austria and Luxembourg, state compensation for losses suffered by farmers in such restriction zones is complemented by private insurance models, as part of a public-private partnership.

From a state point of view, these insurance models have a major advantage in that farmers accept and support them, because they know that they will be compensated if they are affected by legal restrictions relating to animal disease. This goes a long way towards facilitating efficient animal disease control. The high market penetration of such cover also shows that the farmers have recognized its advantages and can therefore considerably reduce the economic risk of animal disease for their farms. A precondition for these insurance models is that the farms have reliable production data available – this is essential for the assessment of damage in the event of a loss.

From a German insurance industry point of view, to achieve a better risk spread it would make a lot of sense to establish these models in other European countries.



## REINSURING FMD COVER: CONCLUSION

FMD is a risk with an extremely high loss potential, with costs that can run to tremendous amounts. **The loss standards are poorly defined;** the disease can break out in one single location or simultaneously in several locations. The events are not independent and the frequency is not well known. The extent of the losses involved is heavily dependent on the early detection of an outbreak, the correct reaction of everyone involved, the number of disease sources, the efficiency of the control measures in place in a country and its capabilities in terms of combatting the disease. With this in mind, SCOR restricts its capacity for diseases like FMD to countries where the government is heavily involved in disease prevention, control and compensation, and only gets involved after a thorough client and insurance product selection process.



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