Chapter 1

Introduction

1.1 Principles, Rationale and Hypotheses

Foot and mouth disease (FMD) is considered to be the most contagious disease of livestock. Essentially all cloven footed species are susceptible to Foot and mouth disease virus (FMDV) (J. House & C. House, 1999). FMD had absented from Europe, North America and Australia, sporadic in South America and endemic in most of Asia and Africa. FMD outbreaks have widespread economic and social impacts including disruptions of animal feed, veterinary pharmaceutical and tourism associated industries. The country in which FMD is found reflects in many ways their level of economic development (Kitching et al., 2007). FMD is transmissible disease that has the potential for very serious and rapid spread, irrespective of national borders, that are of serious socio-economic consequence and that are of major importance in the international trade of animals and animal products. Therefore the World Organization for Animal health (OIE) has classified FMD into list A of diseases notifiable to the OIE (The World Organization for Animal health, 2005).

FMD cause by FMDV which is a virus in the family Picornaviridae and the genus *Aphthovirus.* Seven serotype of FMDV have been identified by cross protection and serological test including type A, O, C, Asia 1 and South African Territories (SAT) 1,2 and 3 (Murphy F.A., 1999). In Thailand, FMD was first recorded in 1953 when type A FMDV was confirmed, type Asia 1 and type O virus were subsequently confirmed in 1954 and 1957 respectively. Since then, Thailand has

been an endemic area of FMD (Chaisrisongkram, 1993). The outbreak of FMD can occurs rapidly since the virus can spread out into the surrounding areas rapidly with the low temperature and high humidity atmosphere (Leech, 1981). Other factors which may enhance the outbreak including virus contamination in transport vehicle, water supplies, pets, birds, meat products and human. Limitations of these factors challenge the prevention of occurrence and control the spread of FMD (Mezencio & Babcock, 1999). In order to eradicate FMD, the authority should have a transparent and strict animal movement control policy as well as the effective vaccines and diagnosis method.

The major clinical signs of FMD include high body temperature, blanched epithelium, followed by formation of vesicle and erosion after loss of the epithelium. Vesicular lesion extended on nares, the lips, tongue, hard/soft palate, and coronary band on the soft tissue of the feet and soft tissue around the dewclaws (Pfeiffer., 1999). FMD can spread rapidly through the population. FMD affects productivity and results in an economic loss in livestock production. FMD is an important trade barrier, since countries which are free from FMD do not import beef and pork product from FMD affected countries. FMD has become a serious impediment to an efficient production in Thailand as well as a development of livestock export opportunities. Thailand could not export pig and cattle product such as pork, beef, milk including breeder to several countries especially in Europe.

The Department of Livestock Development of Royal Thai Government (DLD) has begun to implement the disease control measure in 1958. These initial measures comprise strict control of animal movement, vaccination program, animal quarantine, sanitary control, outbreak investigation, field surveillance and

slaughtering of sick animal. DLD apply this program to all parts of country where FMD remain endemic (Chaisrisongkram, 1993).

The Regional Co-ordination Unit (RCU) of South East Asia Foot and Mouth Disease (SEAFMD), under the World Organization for Animal health (OIE) and DLD has agreed to set Nan province in northern Thailand as a clear zone of FMD with other provinces in northern Thailand as a buffer zone especially Chiang Mai and Lamphun provinces. In order to achieve that goal the cooperation practice between the government, farmers, DLD officer and other stake holder such as retailers, animal transporters and slaughter house owners must be established. The information including the situation of FMD and risk factors in pig and ruminant industries should be studied. Thus the outbreak of FMD in the area, the risk factors associated with FMD in this area, and FMD control strategies at farm level should be clarified. This study is designed to determine the occurrence and risk factors of FMD which will facilitate the setting of Chiang Mai and Lamphun provinces as the buffer zone.

1.2 Objectives of this study were:

- To determine the status of FMD in pig and cattle farms in Chiang Mai and Lamphun area
- To identify risk factors of FMD in pig and cattle farms in Chiang Mai and Lamphun area
- To identify effective control strategies of FMD in pig and cattle farms in Chiang Mai and Lamphun area

1.3 The advantages of this study

- Provide information necessary for setting control strategies to establish of FMD free status in pig and cattle farms in Chiang Mai and Lamphun area