

The dynamics and impact of foot and mouth disease in smallholder farming systems in South-East Asia: a case study in Laos

B.D. Perry ⁽¹⁾, L.J. Gleeson ⁽²⁾, S. Khounsey ⁽³⁾, P. Bounma ⁽³⁾
& S.D. Blacksell ⁽⁴⁾

(1) International Livestock Research Institute (ILRI), P.O. Box 30709, Nairobi, Kenya

(2) Office International des Epizooties (OIE) South-East Asia Foot and Mouth Disease Regional Coordination Unit, c/o Faculty of Veterinary Medicine, Kasetsart University, Chatuchak, Bangkok, 10900, Thailand.

(Present address: Commonwealth Scientific and Industrial Research Organisation [CSIRO], Australian Animal Health Laboratory, P.O. Box 24, Geelong, Victoria 3220, Australia)

(3) Department of Livestock and Fisheries, Ministry of Agriculture and Forestry, Vientiane, Laos

(4) Australian Centre for International Agricultural Research Act (ACIAR) Project AS1/94/38, c/o Department of Livestock and Fisheries, Ministry of Agriculture and Forestry, Vientiane, Laos

Summary

There is a general lack of data on the different patterns of dynamics and impact of foot and mouth disease (FMD) in South-East Asia and the impact the disease has on different sectors, in particular the smallholder sector in which livestock play such an important role. A pilot study was conducted of a recent outbreak of FMD that swept across the southern part of Laos during the second half of 1999. The main objectives of the study were to investigate the possible routes of transmission of the disease and the impact of FMD on the predominantly smallholder rice/livestock production system of Savannakhet Province. The study was performed by group interviews of farmers in ten villages, located in five districts across the width of the Province, and of district and provincial veterinary officials.

Results suggested that the infection had probably been introduced from the eastern border and had spread rapidly west, along a principal trading route of pigs, cattle and buffalo. In the process, many villages adjacent to this trading route became infected and the disease spread rapidly within infected villages.

The disease had a significant impact on the agricultural system, but the impact would have been much greater had the epidemic occurred during the season of paddy field preparation. Mortality was observed in young buffalo, cattle and pigs, and long periods of morbidity were observed in buffalo, often requiring extended treatment. The sale of livestock for cash was severely restricted, creating additional repercussions on that sector.

It was concluded that the most appropriate approach to FMD control would be to prevent infected animals from entering the principal trading routes for pigs, cattle and buffalo. This will require the involvement of all the stakeholders of the livestock industry, including traders and veterinary authorities. A further tactic to be considered would be to protect livestock systems adjacent to these trading routes by vaccination. An economic study of the market incentives of both traders and smallholders is recommended and this approach is advocated in other parts of South-East Asia where livestock trading routes present the major risk of FMD outbreaks.

Keywords

Animal movement – Asia – Disease dynamics – Foot and mouth disease – Impact assessment – Laos – Vaccination.

Introduction

Statements such as 'foot and mouth disease (FMD) is endemic in much of the South-East Asia region' are common and possibly give an impression to the outsider that there is a constant and widely diffused presence of the disease, with a uniform impact. This is not the case. Firstly, the disease is not evenly distributed throughout the region. Indonesia is free of FMD, as are the southern island groupings of Mindanao and the Visayas in the Philippines. Furthermore, in mainland peninsular South-East Asia (Myanmar, Thailand, Malaysia, Laos, Cambodia and Vietnam) the distribution also varies, both spatially and temporally. Although the empirical data on this are limited, certain geographical regions and production systems appear to be particularly at risk (1, 2, 3, 5, 6), and within these high-risk groups, FMD occurs in epidemic waves at varying but relatively frequent intervals, often with little impact on productivity, particularly in the indigenous livestock in smallholder systems. In addition, occasional epidemics of the disease occur in lower risk areas and these are often associated with higher productivity repercussions, even in smallholder systems.

Given the lack of data on both the patterns and impact of FMD in the region, essential for disease control planning purposes, a pilot study of an outbreak that occurred in the central areas of Laos was examined retrospectively to try and obtain a greater understanding of the behaviour of the disease and the effects the disease has on the livelihoods of smallholder farmers.

Background to the Laos case study

Laos is a land-locked country with extended borders on the west and east with Thailand and Vietnam, respectively, and less extensive borders with Myanmar and the People's Republic of China in the north, and Cambodia in the south. The country has the lowest human population of the region, with approximately 5 million people (19 per square kilometre) who have an average annual gross domestic product (GDP) per capita of US\$258. While rice is the major agricultural commodity in Laos, livestock play a significant role in the predominantly smallholder farming systems of the country. The buffalo and cattle populations are both approximately 1.1 million, and the pig population approximately 1.5 million. Not only do buffalo and cattle make a very significant contribution to rice production itself, through the ploughing of fields and transport of rice, but these and other species, in particular pigs, poultry and goats, also play a key role in cash income generation. Furthermore, large ruminants convert the straw by-product of rice production into animal protein and provide organic fertiliser that contributes significantly to the maintenance of soil quality in the rice production system. Beyond this, buffalo play a role as units of investment, which

have traditional values as assets for negotiation at times of weddings and other ceremonies.

With such a prominent position for livestock in this system, disease has a significant impact and appears to be the priority constraint to both increased livestock productivity and increased trade in livestock and livestock products in a region with a rapidly expanding human population. Currently, the Government of Laos is engaged in programmes of strengthening the animal health services of the country, in particular through bilateral technical co-operation projects with the European Union and Australia. In addition, Laos is an active participant in the regional foot and mouth disease control programme coordinated by the Office International des Epizooties (OIE: World organisation for animal health). A pilot study of the economic impact of FMD was conducted under the auspices of the OIE in early 2000.

Study objectives

The main objectives of the study were as follows:

- to describe the recent epidemic of FMD in Savannakhet Province and determine the principal routes of dissemination in the Province and beyond
- to develop recommendations on how FMD control could be more effectively implemented
- to evaluate the impact of the recent epidemic of FMD in Savannakhet Province on smallholder agricultural production
- to develop recommendations on how a structured impact assessment study might be conducted.

Study methodology

The pilot study evaluated retrospectively an outbreak of FMD that had swept across the southern part of Laos in a westerly direction during the second half of 1999. The study centred on the Province of Savannakhet, which is traversed by highway number 9 from an eastern border post with Vietnam to the provincial capital of Khanthabouly on the banks of the Mekong River, the western border with Thailand (Fig. 1).

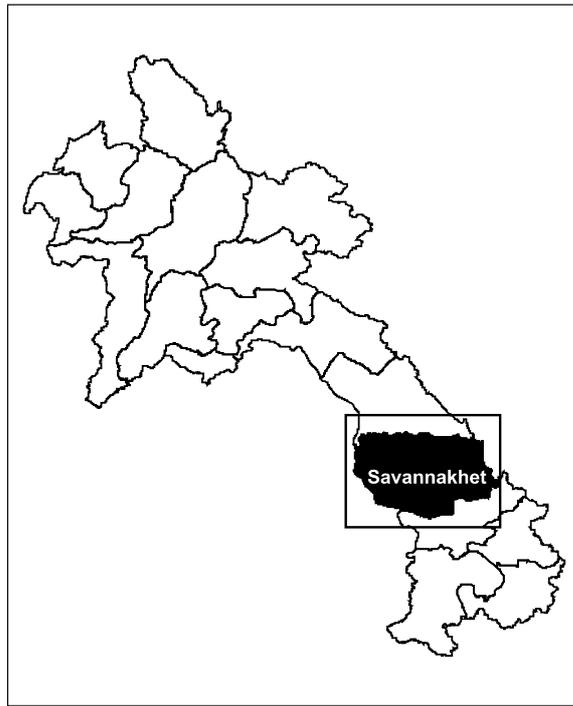
Interviews were conducted at the District Agricultural Office and purposively selected villages in each of five districts in Savannakhet Province. Districts were selected to provide broad geographical coverage of the width of the Province. In the District Agricultural Office, interviews were conducted jointly with the Head of the livestock and fisheries units and the veterinary section. Interviews covered demographic statistics of humans and livestock in the districts, a review of animal production and health constraints, a description of the livestock trade and movement patterns and a review of the temporal and spatial features of the FMD epidemic and control of the disease in the district.

Group interviews were conducted in two villages in each district, resulting in a total of ten interviews. The district

1. Countries bordering Laos (Thailand, Myanmar, People's Republic of China, Vietnam and Cambodia)



2. Savannakhet Province



3. Location of foot and mouth disease outbreaks in the Savannakhet Province during the 1999 outbreak

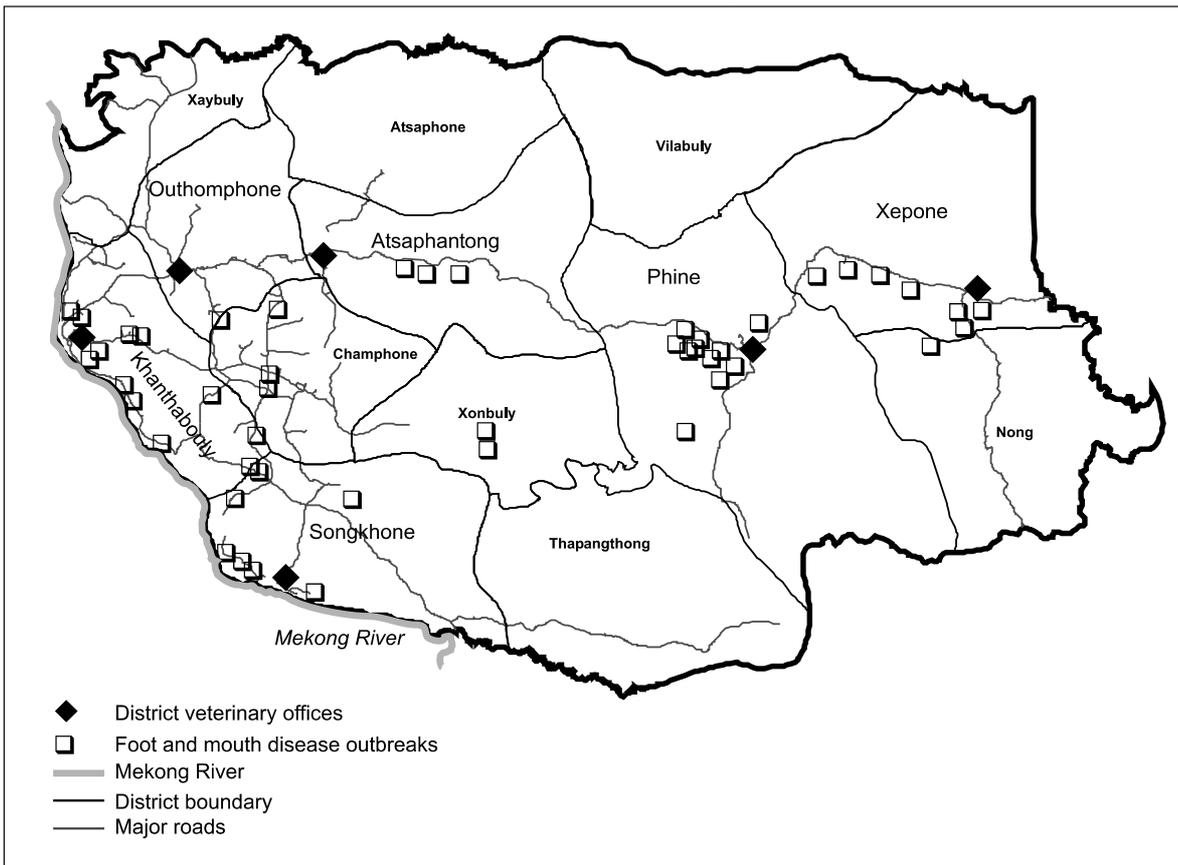


Fig. 1
Study site of the investigation into the dynamics and impact of foot and mouth disease in the Savannakhet Province of Laos

Table I
Protocol for village group interviews

Questions asked as part of the interview	
Human inventory	Livestock inventory
– number of people _____	– number of buffalo _____
– number of families _____	– number of cattle _____
– number of houses _____	– number of pigs _____
	– number of goats _____
	– number of horses _____
	– number of poultry _____
Animal disease problems	
Priority diseases in each species	
Description of each disease:	
– when seen	last week – six months ago – all the time
– which age groups	_____
– which time of year	_____
– morbidity and mortality	_____
– clinical signs	_____
– duration of disease	_____
– treatments and other interventions	_____
For foot and mouth disease, in addition to the above	
– species affected	_____
– date of the outbreak and the last new case	_____
– suspected source of the outbreak	_____
– duration of the outbreak (including recovery from secondary problems)	_____
– when was the last previous outbreak	_____
– in whose cattle did the first case occur	_____
Impact of foot and mouth disease (what are the impacts of foot and mouth disease [FMD])?	
Examples:	
– difficulties in selling animals	_____ Yes _____ No
– loss of weight and condition	_____ Yes _____ No
– mortalities (in which species and age)	_____
– unable to work (buffalo and cattle)	_____ Yes _____ No
– for what period	_____
– how is this overcome	_____
– labour time looking after sick animals	_____
– abortion in sows	_____ Yes _____ No
What happens if working buffalo are affected at the time of rice planting?	_____
Are buffalo rented out or rented in?	_____ Yes _____ No
– if so, how many last year	_____
– what is the cost (usually paid in rice)	_____
Rice production	
What is the area of rice production?	_____
What is the yield per hectare?	_____
Is this sufficient for the population of the village?	_____ Yes _____ No
– if not, how many months is rice purchased	_____
– from where	_____
– at what price	_____
– if sufficient rice production, is rice sold	_____ Yes _____ No
– how much is sold	_____
– to whom is it sold	_____
– at what price	_____
What happens if working buffalo are affected at the time of rice planting?	_____
Are buffalo rented out or rented in?	_____ Yes _____ No
– if so, how many last year	_____
– what is the cost (usually paid in rice)	_____
Sales of livestock from the village	
What were the animal sales from the village last year?	_____
Buffalo, cattle, pigs (weight or type range). Goats and poultry – numbers required	_____
Prices for each category including the male and female differences	_____
To whom are animals sold	
– outside traders and middlemen	_____ Yes _____ No
– middlemen in the village	_____ Yes _____ No

Table I (contd)

Questions asked as part of the interview	
What other products are sold?	
– handicrafts, bamboo, other forestry products	_____
– what other 'off-farm' income is received?	_____
– if labour, what sort of work is undertaken?	_____
– how many middlemen live in the village?	_____
– what species of animals do they trade?	_____
– how many animals per year do they trade?	_____
Management of income and expenditure	
– who has responsibility in the family for livestock management (different by species)?	_____
– who has authority for sales and purchases of animals?	_____
– who has responsibility for the use of income?	_____
Use of animal manure	
– is manure used in rice production?	___ Yes ___ No
– if so, how is it applied (directly by holding cattle on paddy field, manure collected in village holding pens and transported to fields)?	_____
Unexploded ordinances (UXO)	
– describe the ways the presence of UXO affected livestock	_____

veterinary officer accompanying the team selected villages on the basis of recorded presence of FMD during the epidemic. Interviews were conducted in the Lao language. A summary of the general format followed in the group interviews is given in Table I.

Results

The locations of suspected FMD cases and study districts are shown in Figure 1. The village interviews indicated that the earliest outbreak of FMD was reported in August 1999, in a village called Sa Kuan in Phine District, about a third of the way across the Province from the Vietnam border. Outbreaks in the villages interviewed in Xeponé District, further east, were reported in September, those in Atsaphantong District in September and October, those in Outhomphone in October and November, and those in Songkhone District, in January 2000. The disease appears to have spread from east to west, with the entire distance from the border with Vietnam to the Mekong River (approximately 250 kilometres) being covered in a period of three to four months. There was a clustering of reported outbreaks in villages close to the highway (route 9), although whether this was a function of the proximity of these villages to the district veterinary offices, all situated along the highway, is unknown.

Information indicated that all susceptible species (buffalo, cattle, pigs and goats) were affected, but there was considerable variation in the patterns reported. In all villages interviewed, buffalo and cattle were affected with a morbidity of 100%. In some villages, mortality was reported in buffalo, attributed to a progression from severe lameness to recumbency and inappetence. In most villages, pigs were reportedly affected with morbidities ranging from 30% to 100%. Mortalities ranged from zero to moderate, but there may have been some

confusion with classical swine fever, which reportedly also occurred in the region in the last quarter of 1999. Three villages reported that FMD did not occur in their pigs. Foot and mouth disease in goats was only reported in the two villages interviewed in the easterly District of Xeponé, with mortality reported in both cases. Goats appeared to be more abundant in the east of the Province.

How FMD virus was introduced into these villages is unclear. There were two main movements of animals across the width of the country in Savannakhet Province, both running from east to west. The first was the movement of live pigs originating in Vietnam and transported to several points on the Mekong River, and the second was movement of live cattle and buffalo originating both in Vietnam and within the province, also being transported to points close to the Mekong River. Both types of shipments were destined for Thailand and reportedly further afield. In addition there is a local market for beef in the Savannakhet provincial capital of Khanthabouly.

The trade in live pigs involved animals of approximately five weeks of age, weighing 3 kg to 5 kg. These crossed the border from Vietnam into Laos, where documents were inspected at the veterinary post. A trader interviewed at the border reported that there were approximately 15 shipments per month by each of two traders in lorries that accommodate 1,500 pigs. He also described a third trader on route 8 (another highway further north, originating in Vietnam), shipping a similar quantity across another province. The pigs, kept in baskets, were off-loaded after crossing the border into Laos, and transferred into a vehicle from Laos. The provincial veterinary offices in Savannakhet reported that there were an estimated 200,000 pigs transported in this way each year, but using the statistics of the trader, this number could have approached one million. The imported pigs were transported to the banks of the

Mekong River north and south of Khanthabouly, where they were slaughtered. This was an intensive operation often involving about 300 people, mostly women, from the nearby villages. The pigs were eviscerated and their brains removed, packed in ice and transported the same day in small boats across the Mekong River to Thailand. This trade had been suspended during the month prior to the study because the authorities of Vietnam had forbidden the export to take place.

The second principal trans-provincial movement of livestock was that of cattle and buffalo. These originated from both Vietnam, and from within the Province of Savannakhet. On the Vietnam/Laos border, these shipments were reportedly inspected. The inspector at the veterinary border post reported that if an infected animal was found, the entire shipment would be returned to Vietnam, but that no shipment had been returned to Vietnam during the previous three years. Considerable trade of animals purchased from the villages by traders also took place within the Province. All villages visited reported selling buffalo and cattle during 1999 to raise cash. From the ten villages visited, there was a reported sale off-take of 11% of the buffalo, and 11% of the cattle (with considerable variation from village to village). Given the possible reluctance to divulge actual numbers sold, this estimated off-take proportion was probably on the low side.

Once introduced into a village along route 9, many possible modes of spread of FMD appear to be possible within and between villages. From observations made during the village visits, there was considerable unrestricted local movement of animals within villages that facilitated rapid spread of the disease. Risk factors for local spread identified during the interviews included the following:

- the movement of traders between villages
- the movement of government extension staff between villages, possibly bringing infected meat in their meal and leaving behind scraps
- the movement of village chiefs between villages to attend administrative meetings
- the movement of buffalo to and from rice field or grazing, depending on the season
- the mixing of animals from different villages in grazing areas
- the purchase of meat from a roadside shop or local market, among many others.

In the village group interviews, an attempt was made to identify the classes of impacts caused by the FMD epidemic. These have been tabulated and appear in Table II. Considerable mortality in all species was recorded from some villages. Most of the losses were reported in young animals but in general, they were higher than expected from a disease such as FMD. Whether some of the mortality in buffalo and cattle could have been confused with haemorrhagic septicaemia, and that in pigs with classical swine fever, is unclear. A common feature was that

secondary infections occurred in the foot lesions of the large ruminants that took a long time, sometimes several weeks, to recover.

Generally, because of the timing of the epidemic, sick buffalo had little effect on rice planting, but several spoke of the impact that this could have had. Many cases were cited where buffalo had to be hired to complete planting on other occasions when no buffalo were available. Under these circumstances, a payment of between 400 kg to 600 kg of rice has to be made for the services of one buffalo for the season. Another reported impact of sick buffalo was a potential delay in planting while ensuring animals were being treated, which could result in a poor rice crop due to inappropriate timing of the rice planting. The death of buffalo calves was reported, which could have a significant effect on herd dynamics. Buffalo reportedly produce their first calf at the age of approximately five years, so that mortality could have significant impacts on replacement of working buffalo. Loss of weight and general condition in buffalo and cattle following the occurrence of FMD were also reported frequently by villagers.

The loss of income as a direct result of the FMD outbreak appeared to be significant. Buffalo and cattle, as well as pigs and goats, are sold when they are no longer able to provide traction and/or when cash is required. Many villages reported that a large part of their cash income was derived from the sale of livestock. Buffalo were reported to fetch between 1,700,000 Kip (US\$1 = approximately 7,500 Kip) for a female, to 3,500,000 Kip for a male, and cattle between 600,000 Kip for a female, to 2,500,000 Kip for a male. At the time of the FMD epidemic, movement of buffalo and cattle, including sale to traders, was prohibited by the veterinary offices, thereby restricting and delaying access to cash. The ten villages reported selling between 1 and 40 cattle and buffalo during 1999, and this averaged approximately one large bovine annually per 23 inhabitants. One village reported that sales continued during the epidemic, but at half the price normally obtained. In another village, a local trader or 'middleman' reported considerable personal losses in income as a result of the inability to buy and sell livestock. Another important repercussion was the cost of treatment. Many villages reported the purchase of antibiotics and other remedies, including vinegar. The use of local medicines was widely reported.

Discussion

This epidemic provided a valuable demonstration of how animal movement can result in widely disseminated FMD should infection be introduced into the pathway of the movement, and subsequently spread along the route. Information to the Department of Livestock and Fisheries from the World Reference Laboratory for FMD in Pirbright indicated that the strain of type O was the pan-Asian strain. This strain had been introduced earlier into Vietnam. Furthermore, one trader interviewed on the Laos/Vietnam border reported large

Table II
Summary results of the pilot study of the dynamics and impact of foot and mouth disease in Laos
 All prices in Kip (approximately Kip7,500 = US\$1)

Variable	Village									
	1	2	3	4	5	6	7	8	9	10
People	705	545	287	220	370	312	443	628	110	327
Families	110	96	91	44	70	56	80	109	26	52
Houses	105	–	45	39	57	50	58	96	26	52
Buffalo	420	27	89	44	160	80	126	152	15	68
Cattle	50	61	42	9	200	120	124	214	80	166
Pigs	50	90	108	30	70	50	60	108	15	18
Goats	120	45	68	0	0	15	25	10	30	0
Horses	– ⁽¹⁾	–			1	0	0	0	0	0
Poultry	–	–	1,780				2,350	1,325		340
Rice area (ha)	–	–	15	17	50	528	84	97	70	256
Rice per ha	–	–	2	0.9	1.2	1.5	2.8	3	2	0.8
Rice (enough?) ⁽²⁾			67%	58%	50%	100%	100%	100%	100%	75%
Rice sale	–	–	0%	0%	0%	2.5t	10t	6t		0
Price								650,000		–
Buffalo sold	10	5	8	1	5	80	8	5	1	
Buffalo price (male)	2,000,000	2,500,000	3,500,000	3,500,000	2,500,000	2,600,000	2,800,000	2,500,000	2,600,000	2,500,000
Buffalo price (female)	1,500,000	1,800,000	1,500,000	2,400,000	2,000,000	2,000,000	1,700,000	2,000,000	2,000,000	1,800,000
Cattle sold		10	5	0	10		20	50	0	
Cattle price (male)	1,200,000	1,500,000	800,000	1,500,000	800,000	1,500,000	1,800,000	2,500,000	2,100,000	2,000,000
Cattle price (female)	900,000	1,200,000	600,000	800,000	700,000	900,000	800,000	900,000	1,200,000	1,000,000
Pigs sold	–	60	30	–	10	–	20	30	5	–
Pigs weight	30 kg	–	30 kg	40 kg	30 kg	40 kg	40 kg		30 kg	
Pigs price	200,000	400,000	300,000	300,000	200,000	200,000	300,000	100,000	250,000	300,000
Goat sold									3	
Goat price	200,000	–							140,000	

1) Dash indicates data not available

2) Proportion of requirements met by home production

numbers of pigs infected with FMD in a recent shipment. Thus, to prevent this type of outbreak, it is essential to keep movement pathways free from FMD.

Most of the large-scale movement of animals across the Province, from which the greatest risk of FMD probably arose, appeared to be managed by a few well-organised traders. The main destination also appeared not to be Laos, but Thailand, and even beyond. Surprisingly, the trader interviewed at the Laos/Vietnam border reported that additional destinations for some of the pig trade were Malaysia, Singapore and Hong Kong. Regional discussions on the difficulty in controlling animal movements across international borders often evoke the fact that animals can cross international borders anywhere, and that this is the main constraint to preventing the spread of disease, such as FMD, across borders. While this is undeniable, this investigation indicates that most of the significant trans-border movement into Savannakhet Province was likely to take place along the main road, and furthermore, specific sites were used to cross the Mekong River.

Once FMD was introduced into the smallholder system in Savannakhet, it would appear that there was little that could be done to prevent dissemination of the disease. The populations were all highly susceptible, with FMD not having been reported for at least a decade, possibly longer in some areas. Animal movement within and between villages was virtually impossible to control. Although instructions were given to village chiefs that animals could not be moved, this at best only restricted the sale of animals to traders, and the limited resources at the disposal of district veterinary offices did not allow movement restrictions to be monitored. The instructions to chiefs did not prevent the extensive mixing and movement of animals in the course of their daily foraging, and the movement of people and fomites within and between villages. This limited investigation indicates that under current circumstances of smallholder farming and given the veterinary service infrastructure in Savannakhet Province, effective control, and certainly eradication, of FMD in village livestock is highly improbable.

Conclusion

Countries in South-East Asia would clearly benefit from optimising their trading opportunities as their economies, and the demand for livestock products, grow. However, there will be increased regional and international pressure to restrict the illegal movements of animals along trading routes as national programmes to control and eradicate FMD gain momentum. There are a number of generic approaches to managing the risk of FMD outbreaks in these pathways that are replicated in many locations in the region. One is to achieve control of the disease at the source of the livestock marketing route. This might be achieved by identifying and certifying animals or areas participating in the control scheme. A second is to build a buffer vaccination zone along the trading route and a third is to manage the outflow at the destination. Clearly, the first option is the ideal but at this point of the South-East Asia foot and mouth disease control and eradication campaign (co-ordinated by the OIE Sub-Commission for Foot and Mouth Disease in South-East Asia: SEAFMD), all three tactics probably need to be combined in order to reduce the risk of outbreaks associated with trading. From the position of the transit region or country, the major recommendation arising from this study is that consideration be given to the control of FMD along the selected trading routes, and in the short term, village livestock adjacent to the trading route be protected by barrier vaccination. Developing disease-free trading routes will require the identification of the location, origin and source of different routes, the identification of stakeholders involved, the interaction between stakeholders and veterinary authorities, and the provision of incentives for disease freedom to traders, such as access to trading routes, accompanied by much more rigorous clinical inspection and document control at border crossing points. There must be a concurrent, increasing deterrent for traders who choose not to pass livestock through this 'green' channel. It is considered that the stakeholders in this trade hold the key to FMD freedom in these routes. They have what appears to be a thriving business and are therefore likely to recognise the benefits to be achieved from reduced FMD occurrence, and may have resources to invest in FMD control. They also have the knowledge of the routes, frequencies and incentives behind such movement, as well as a desire to legitimise their trade (this trade in pigs, cattle and buffalo is already legal on the Laos side of the border). It is important to acknowledge that these stakeholders may be distributed in many countries along the trading route. One of the issues to be dealt with is that much of this trade is not officially acknowledged and therefore mechanisms for formal cross-border co-operation in dealing with the route will be difficult to establish. However, while governments have limited resources to apply to building vaccination barriers, this may be the most productive approach to the problem in the long term.

This pilot study was conducted in one province only, with a limited number of districts and villages involved, using an informal group interview technique. The study was designed to

identify the issues associated with the described 1999-2000 epidemic of FMD in Savannakhet Province, in terms of dynamics and impact of animal diseases in the smallholder village systems, which could be used, if required, in the development of a full impact study. To estimate the impact of disease control measures for FMD, including costs and benefits, the avoidable losses in the village livestock and rice production system must be quantified. These include avoiding losses of cash income from the sale of animals. However, the results of this study do indicate that the livestock trade is of considerable value at the individual owner level. The variables that must be dealt with in this environment are complex, due to the informal cross-border trading system that prevails and the general non-commercial attitude to cattle and buffalo raising at the village level. There are development issues that also require consideration in any attempt to control FMD. Strictly applied international-standard FMD control measures can potentially have a negative short- to medium-term impact in a developing economy such as Laos, as they may reduce income generation at the farm level. The SEAFMD programme was established because the problems of disease control were regarded as regional, but as has been pointed out on several occasions, the benefits are neither uniformly regional nor evenly distributed within any one country. Some effort to ensure a better distribution of the benefits of FMD control to this smallholder system would therefore seem worthy of investigation.

In respect of FMD control, local control measures must not place a greater burden on the livestock industry than the disease. This is not an easy balance to achieve in a low investment/low return livestock production system. During the outbreak described in Savannakhet Province, significant repercussions of FMD were the restrictions on trade due to the imposition of control measures. Gaining a better understanding of the economics of such trade, the nature and magnitude of the economic contributions it makes and who benefits from these will therefore be important. In addition, the epidemic occurred in a relatively naïve livestock population and as a result, did cause considerable losses and much concern for livestock owners. Some owners could see the potential for an even greater impact on agricultural productivity should the disease have occurred during paddy preparation. Animal diseases clearly play a very important role in the smallholder rice-livestock system, a situation not dissimilar from that described by Maclean in Cambodia (4). This is also recognised by the European Union-supported project on Strengthening Livestock Services and Extension Activities in Laos. It is considered that a more comprehensive and structured study of the impact of FMD and other epidemic diseases, such as haemorrhagic septicaemia and classical swine fever, Newcastle disease and fowl plague, would be useful both in terms of quantifying effects of disease on smallholder production in the region, but also to evaluate the scope for strengthening the delivery of veterinary services to impoverished farmers and improving rural family livelihoods.

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Dynamique de la fièvre aphteuse et impact sur le petit élevage en Asie du Sud-Est : une étude de cas au Laos

B.D. Perry, L.J. Gleeson, S. Khounsey, P. Bounma & S.D. Blacksell

Résumé

On constate un manque général de données concernant les dynamiques et l'impact de la fièvre aphteuse dans le Sud-Est asiatique, ainsi que les effets de la maladie sur divers secteurs, notamment celui des petites exploitations, où le bétail occupe une place importante. Une étude pilote a été réalisée sur une épizootie récente de fièvre aphteuse, qui avait frappé toute la partie méridionale du Laos durant le second semestre de 1999. L'étude avait pour objectifs principaux d'établir les différentes voies possibles de transmission de la maladie et d'évaluer ses effets sur le système d'agriculture mixte, basé principalement sur la riziculture et l'élevage, dans la province de Savannakhet. Cette étude a été réalisée sur la base d'entretiens avec des groupes de paysans dans dix villages situés dans cinq districts, couvrant toute la largeur de la province, et de consultations de responsables vétérinaires de province et de district.

Les résultats donnent à penser que l'infection a vraisemblablement été introduite à partir de la frontière orientale, avant de diffuser rapidement vers l'ouest, le long d'un axe où les porcins, les bovins et les buffles font l'objet d'un commerce important. De nombreux villages proches de cette voie commerciale ont été contaminés. La maladie s'est propagée rapidement au sein des villages atteints. Bien que son impact sur le système d'exploitation agricole ait été considérable, les conséquences auraient été encore plus désastreuses si l'épizootie s'était manifestée durant la saison de préparation des rizières. Une mortalité a été observée chez les jeunes buffles, bovins et porcins ; par ailleurs, de longues périodes de morbidité ont été constatées chez les buffles, exigeant souvent de longs traitements. L'impact de la maladie sur le secteur a été aggravé par les restrictions imposées à la vente de bétail, source d'argent liquide.

Dans leurs conclusions, les auteurs estiment que la méthode de lutte la plus adéquate contre la fièvre aphteuse consisterait à empêcher que des animaux infectés empruntent les axes commerciaux de porcins, bovins et buffles. L'introduction de cette mesure devra impliquer toutes les parties concernées du secteur de l'élevage, y compris les négociants et les autorités vétérinaires. La protection, par la vaccination, des élevages situés à proximité de ces voies commerciales pourrait compléter l'arsenal des mesures disponibles. Les auteurs préconisent une étude économique des mesures d'incitation au profit des négociants et des petits exploitants. Une démarche analogue est recommandée pour d'autres régions du Sud-Est asiatique, où les voies commerciales du bétail représentent un risque majeur pour l'apparition de foyers de fièvre aphteuse.

Mots-clés

Asie – Déplacements d'animaux – Dynamique de la maladie – Évaluation de l'impact – Fièvre aphteuse – Laos – Vaccination.

Dinámica y consecuencias de la fiebre aftosa en los minifundios agropecuarios de Asia Sudoriental: estudio de un ejemplo en Laos

B.D. Perry, L.J. Gleeson, S. Khoumsey, P. Bounma & S.D. Blacksell

Resumen

En términos generales, faltan datos sobre las pautas que siguen la dinámica y los efectos de la fiebre aftosa en Asia Sudoriental y sobre sus repercusiones en distintos sectores, en particular el minifundista, para el cual el ganado reviste una gran importancia. Los autores describen un estudio piloto sobre un brote de fiebre aftosa que había asolado el Sur de Laos durante la segunda mitad de 1999, realizado con la idea básica de investigar las posibles vías de transmisión de la enfermedad y sus consecuencias para los sistemas minifundistas de producción agropecuaria de la provincia de Savannakhet, que en esencia combinan la producción arrocera y la ganadería. El estudio consistió en entrevistas colectivas con granjeros de diez pueblos situados en cinco distritos diferentes a lo ancho de la provincia, a las que se añadieron entrevistas con veterinarios de los servicios públicos de cada distrito y de la provincia.

Los resultados obtenidos indican que probablemente la infección había penetrado en Laos por la frontera oriental y se había extendido con rapidez hacia el oeste, siguiendo una importante vía de tránsito comercial de porcinos, bovinos y búfalos. En ese recorrido, muchos pueblos adyacentes a dicha vía resultaron infectados y la fiebre aftosa se propagó velozmente dentro de cada pueblo.

Aunque la enfermedad tuvo notables efectos sobre el sistema agrícola, sus consecuencias habrían sido mucho peores si la epidemia se hubiera declarado en la estación en que se preparan los arrozales. Se observaron casos mortales entre búfalos, bovinos y porcinos jóvenes, así como largos periodos de morbilidad en el búfalo, que a menudo requirieron un tratamiento prolongado. Se restringió estrictamente la compra en metálico de cabezas de ganado, lo que vino a agravar las consecuencias de la enfermedad para el sector pecuario.

Se llegó a la conclusión de que el mejor método para controlar la fiebre aftosa consistía en impedir que los animales infectados entraran en las principales vías de tránsito comercial de porcinos, bovinos y búfalos. Semejante medida exigirá la participación de todos los interlocutores del sector ganadero, incluidos los intermediarios y las autoridades veterinarias. Otra medida táctica que se podría contemplar es la de proteger con vacunaciones los sistemas ganaderos adyacentes a las vías comerciales. Los autores recomiendan que se haga un estudio económico de los incentivos que ofrece el mercado a los intermediarios y los minifundistas, y preconizan la aplicación de esta metodología en otras partes de Asia Sudoriental donde el principal riesgo de brotes de fiebre aftosa proviene de las vías utilizadas para el comercio de ganado.

Palabras clave

Asia – Dinámica de enfermedad – Evaluación de los efectos – Fiebre aftosa – Laos – Movimiento de animales – Vacunación.



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