

# **Classical Swine Fever and Emerging Diseases in Southeast Asia**

**Vientiane, Lao PDR, 19–22 September 1999**

*Editor:* S.D. Blacksell

The Australian Centre for International Agricultural Research (ACIAR) was established in June 1982 by an Act of the Australian Parliament. Its mandate is to help identify agricultural problems in developing countries and to commission collaborative research between Australian and developing country researchers in fields where Australia has a special research competence.

Where trade names are used this constitutes neither endorsement of nor discrimination against any product by the Centre.

### **ACIAR PROCEEDINGS**

This series of publications contains technical information resulting from ACIAR-supported programs, projects and workshops (for which proceedings are not published), reports on Centre-supported fact-finding studies, or reports on other useful topics resulting from ACIAR activities. Publications in the series are distributed internationally to selected individuals and scientific institutions.

© Australian Centre for International Agricultural Research,  
GPO Box 1571, Canberra, ACT., 2601 Australia

Blacksell, S.D. (ed). 2000. Classical Swine Fever and Emerging  
Viral Diseases in Southeast Asia  
Proceedings of an International Workshop, Vientiane, Lao  
19–22 September 1999. Canberra. ACIAR Proceedings No. 94, 154 pp.

ISBN 1 86320 286 2

Editorial management: P.W. Lynch  
Production editing: PK Editorial Service Pty Ltd, Brisbane  
Typesetting, page layout and illustrations: Sun Photoset Pty Ltd, Brisbane  
Printing: Watson Ferguson & Co., Brisbane

# CONTENTS

- Welcome Address and Introduction 5
- Importance of Livestock and Livestock Diseases in Southeast Asia**
- The Role of Pigs and Disease in Southeast Asian Livestock Systems  
*D. Hoffmann* 9
- Emerging Viruses of Animals in Australia and Southeast Asia  
*H.A. Westbury* 15
- Classical Swine Fever Pathology**
- Pathological Study of Experimentally Infected Chronic Swine Fever in Pigs  
*Tuangthong Patchimasiri, Wasana Pinyochon and Sudarat Damrongwatanapokin* 23
- Classical Swine Fever Diagnosis**
- Diagnosis of and Emerging Diagnostic Technologies for Classical Swine Fever  
*T.W. Drew* 29
- Considerations Regarding the Transport of Samples and Development of Diagnostic Protocols for the Detection of Classical Swine Fever Virus under Endemic Conditions  
*Zhang Fuqing, Syseng Khounsy, Zhang Nianzu and S.D. Blacksell* 31
- Retrospection of Research into Classical Swine Fever, National Institute of Veterinary Research, Vietnam  
*Nguyen Tien Dzung* 38
- Molecular Epidemiology of Classical Swine Fever**
- Molecular Epidemiology of CSF: An Overview  
*I. Greiser-Wilke and D. Paton* 43
- The Family Flaviviridae: A Brief Overview of the Family with Particular Reference to Members from the Asian and Australasian Regions  
*J.S. Mackenzie* 48
- Genetic Characterisation of Classical Swine Fever Viruses from Lao PDR Collected during 1997 and 1998  
*S.D. Blacksell* 57
- Molecular Epidemiology of Classical Swine Fever Virus Isolates in Thailand  
*S. Parchariyanon, K. Inui, W. Pinyochon, S. Damrongwatanapokin, P. Lowings and D. Paton* 62
- Control Strategies and Local Impact of CSF**
- Approaches to CSF Control Using Vaccination  
*Annette Bonde Larsen* 67
- Monitoring CSF Antibody Levels in Vaccinated Swine  
*Shanyi Naichun, Li Chundi, Zhang Yinguo, Zhang Wendong, Wan Jiaju, Gao Huafeng, Liu Yin Wu, Li Xinrong and Du Jian* 70
- Controlling Pig Diseases in Vietnam and Lao PDR in Village Smallholder Systems  
*T. Gibson and I. Wilkie* 73
- Monitoring CSF Maternal Antibody in Piglets from Vaccinated Sows  
*Jin Weihua, Li Jinfu, Li Zhenping, He Xiaohui, Liu Luyu and Gao Huafeng* 79

- Classical Swine Fever Virus Sero-Epidemiology in Savannakhet Province of Lao PDR  
*Syseng Khounsy, S.D. Blacksell, Manivanh Phouaravanh, Khonsavanh Douangphachanh, C.J. Morrissy and H.A. Westbury* **82**
- Clinical, Pathological and Diagnostic Aspects of Classical Swine Fever  
*K.R. Depner and S. Porntrakulpipat* **89**
- Strategies for Epidemiological Surveys in Developing Countries  
*Angus Cameron* **100**
- Country Reports**
- Classical Swine Fever in Thailand  
*S. Damrongwatanapokin, W. Pinyochon, S. Parchariyanon, K. Inui* **109**
- The Distribution and Control Strategies of Classical Swine Fever in Indonesia  
*P.N. Tri Satya, Hutabarat and A.P. Ketut Santhia* **111**
- Developments and Advances in the Prevention and Control of CSF in Yunnan Province  
*Li Chundi and Zhang Yinguo* **116**
- Classical Swine Fever in Lao PDR  
*Sounthone Vongthilath and Stuart Blacksell* **122**
- Pig Production and Classical Swine Fever in Vietnam  
*Nguyen Tien Dzung* **126**
- Classical Swine Fever in Hong Kong  
*T.M. Ellis, L.D. Sims and K.C. Dyrting* **128**
- Emerging Viral Infections and Flavivirus Research**
- Nipah Virus—Considerations for Regional Preparedness  
*P.W. Daniels, J. Aziz, T.G. Ksiazek, B.L. Ong, M. Bunning, B. Johara, H. Field, J. Olson, D. Hoffmann, J. Bilou and Y. Ozawa* **133**
- Flavivirus Research at the Armed Forces Research Institute of Medical Sciences, Bangkok, Thailand  
*Timothy P. Endy* **142**
- Serological Responses to Japanese Encephalitis in Thai Swine  
*Ananda Nisalak* **144**
- Genetic Variations in Chinese Field Strains of Hog Cholera Virus  
*Zongji Lu, Hongwei Li, Changchun Tu, Xinglong Yu, Yuehong Li and Zhen Yin* **146**
- DNA-mediated Protection Against Hog Cholera Virus  
*Xinglong Yu, Chanchun Tu, Hongwei Li, Changfu Cheng, Zousheng Li, Zhen Yin* **150**

# **Welcome Address and Introduction**

## **Mr Singkham Phonvisay Director-General of Livestock and Fisheries Department**

His Excellency Dr Siene Saphangthong, Minister for Agriculture and Forestry, Lao PDR, Her Excellency Karina Campbell, Australian Ambassador to Lao PDR, distinguished guests, delegates and participants: Ladies and gentlemen, I have great pleasure in welcoming all of you to this international conference on classical swine fever and emerging viral diseases in Southeast Asia.

WITHIN this forum, we have distinguished participants from various international organisations: ACIAR, CSIRO, EU, FAO, GTZ, IUCN, OIE and representatives of Australia, Belgium, Cambodia, China, England, Germany, Indonesia, Hong Kong, The Netherlands, Thailand, Vietnam and Laos.

A number of viral diseases including foot-and-mouth disease, classical swine fever, Newcastle disease, rabies and duck plague are still endemic in Lao PDR. Classical swine fever still causes heavy mortality, which decreases incomes and food security for many rural villagers throughout Lao PDR.

In the past 2–3 years, the Department of Livestock and Fisheries has received helpful support via ACIAR, particularly the project 1994/38, to develop diagnostic and control methodologies for classical swine fever and foot-and-mouth disease. This assistance has allowed us to upgrade our diagnostic capability and facilitate improvement in our communications with neighbouring countries and the region.

We realise that this conference will give experience, lessons and practical knowledge for our further investigation of and campaign against classical swine fever.

This is a great pleasure for us. I would now like to invite His Excellency Dr Siene Saphangthong, Minister for Agriculture and Forestry, to open the meeting.

Thank you.

## **His Excellency Dr Siene Saphangthong Minister for Agriculture and Forestry**

ON BEHALF of the Ministry of Agriculture and Forestry, I have great pleasure in extending a warm welcome and congratulations to all participants and guests. This international conference is very important for the livestock sector of Lao PDR and the region. I would like to express our sincere appreciation to all of you in sparing precious time to attend this conference.

Our people are striving to implement the last year of the fourth five-year development program. Based on this effort, the Ministry of Agriculture and Forestry has to coordinate and supervise some related government priority programs, namely, food security and commodity production.

The livestock subsector is one among many in food security and commodity production, and its technical programs must be promoted and implemented. Animal health is of prime importance. Classical swine fever is considered one of the most infectious and endemic diseases affecting the development of pig production throughout the country.

The strong support of ACIAR on this matter has been very helpful to us. We would like to take this opportunity to express our thanks and appreciation for such generous help.

This meeting will produce new outcomes in tackling this disease, particularly possible and efficient ways to control it. This will have great impact on food security and commodity production objectives.

I would like to extend once again my sincere appreciation to ACIAR for its support of the meeting. I would like to convey my best wishes to all of you in finding new research collaboration for closer regional cooperation, and declare the meeting officially open.

## **Her Excellency Karina Campbell Australian Ambassador to the Lao PDR**

Mr Sien Saphangthong, Minister of Agriculture and Forestry, Mr Singkham Phonvisay, Director-General of the Department of Livestock and Fisheries, distinguished guests, ladies and gentlemen.

THE AUSTRALIAN Government, through ACIAR, is pleased to be a partner in this conference. As you know, Australia has a long history of cooperating in the animal health field in Lao PDR.

This is the first conference in Southeast Asia to focus heavily on the very important disease classical swine fever.

I am proud to acknowledge the support of the Australian Government-funded project—the current ACIAR project aimed at improving diagnostic and control methodologies in both classical swine fever and foot-and-mouth disease—actively operational in Laos at this time.

I know Mr Blacksell, the ACIAR project scientist, has taken great steps towards establishing a first-class diagnostic facility with field support to assist in better understanding the nature of this disease, and I thank him, and his team, for their efforts thus far.

Your deliberations during this conference are important. These diseases have potentially negative impacts on the income and food security of many rural villagers in Laos. For this reason, I wish everyone involved in the conference good luck.

On behalf of the Government of Australia, let me add my words of welcome.