

International Livestock Research Institute

Training course report

Dissection of pig carcasses to improve diagnostic capacity on cysticercosis

November 2019



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Written by Chi Nguyen

Citation

ILRI (International Livestock Research Institute). 2019. *Dissection of pig carcasses to improve diagnostic capacity on cysticercosis*. Report of a training course held on 25-29 November 2019. Nairobi, Kenya: ILRI.

Patron: Professor Peter C Doherty AC, FAA, FRS

Animal scientist, Nobel Prize Laureate for Physiology or Medicine–1996

Box 30709, Nairobi 00100 Kenya
Phone +254 20 422 3000
Fax +254 20 422 3001
Email ilri-kenya@cgiar.org

ilri.org
better lives through livestock

ILRI is a CGIAR research centre

Box 5689, Addis Ababa, Ethiopia
Phone +251 11 617 2000
Fax +251 11 667 6923
Email ilri-ethiopia@cgiar.org

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Contents

Contents	ii
Training summary	1
Agenda	4
Training material	5
List of participants	6

Training summary

Organizer/co-organizers: National University of Laos (NUoL) and International Livestock Research Institute (ILRI)

Lecturers/facilitators:

- Maurice Karani, ILRI Nairobi, m.karani@cgiar.org
- Fred Unger, ILRI Vietnam, f.unger@cgiar.org
- Vannaphone Putthana, NUoL Laos, v.phouthana@nuol.edu.la

Course description

The carried research builds on established strategic collaboration between NUoL and ILRI. More specifically, it follows the research that was jointly conducted on cysticercosis in pigs and humans in 2017 by the two institutions.

Traditionally applied free grazing/roaming of pigs is a known risk factor for selected zoonoses such as cysticercosis which has the potential to cause long lasting health problems in affected humans with sporadic complications such as fatal encephalitis. Recent ILRI/NUoL surveys in communities with pigs of southern Laos indicated the presence of cysticercosis in pigs as well as people at risk. The research also showed considerable diagnostic challenges when using serological techniques such as ELISA for pig serum due to cross-reactions with other *Taenia* spp.

The training course took place from 25-29 November 2019 at Nabong Campus, NUoL and led by Maurice Karani from ILRI in Nairobi and supported by Vannaphone Putthana, NUoL and Fred Unger, ILRI in Hanoi as co-trainers.

Participants included 7 males and 6 females from various institutions. Of those, 11 trainees are from Laos, one from Cambodia and one from Vietnam.

Course goals and objectives

The training aimed to develop diagnostic capacity of trainees related to cysticercosis in pigs as well as to compare dissection results in pigs with other serological methods.

Training methods

The training session started with various oral presentations summarizing previous research and information on *Taenia* spp. including cysticercosis life cycle clarification and experience from trainers, both Africa and Asia, was shared with participants. Equipment used was presented and demonstrated on real carcasses. Trainers explained how to do euthanasia and post-mortem. After that, participants had their own practice which included slaughtering, brain opening, handling of organs and in-depth muscle slicing. Every step was monitored and advised by trainers to ensure correct practice of carcass slicing and checking for cysts. Participants were provided with four days of practical training by slaughtering pigs in the afternoon (day before), and then checking and slicing in the following morning.

To find and identify (macroscopically) *Taenia* spp. cyst in the carcass through careful dissection of pigs was one objective of the training. From 18 sliced carcasses four pigs with cysts were found. All cysts were presumable classified as *Taenia asiatica* because of the cysts location side in the carcass and structure.

Trainers showed photos of cysticercosis and guided trainees on how to collect samples, raw data, data recording and data correction. Data recording for the dissection process was explained and practiced during the training.

At the end of training, all carcasses were disposed following recommended procedures and the autopsy room was disinfected, and certificates were offered to all participants.





Participants practice carcass slicing and checking cysts (photo credit: National University of Laos).

Agenda

Date	Time	Activity	Person in charge
25 November	am	Opening & setting up the scene	Vannaphone, Fred, Maurice
	pm	Slaughter and skinning of pigs)3 pigs(Maurice, Fred, Vannaphone
26 November	am	Dissection training on the 3 slaughtered pigs	Maurice, Fred, Vannaphone
	pm	Slaughter and skinning of pigs)3 pigs(Maurice, Fred, Vannaphone
27 November	am	Dissection training on the 3 slaughtered pigs	Maurice, Vannaphone
	pm	Slaughter and skinning of pigs)6 pigs(Maurice and support staff
28 November	am	Dissection training on the 6 slaughtered pigs *	Maurice and Vannaphone
	pm	Slaughter and skinning of pigs)3 pigs	Maurice and support staff
29 November	am	Dissection training on the 3 slaughtered pigs *	Maurice and Vannaphone
	pm	Reflections and wrap up	Vannaphone and Maurice

Training material

Totally 18 pigs over six months of age were procured and allowed all participants to do dissection during this training. Those pigs were from various areas of Laos including Xiengkhuang, Vientiane, and Xepon provinces. Required equipment and necessary consumables for dissection was arranged to facilitate the training smoothly as the lists below.

Item	Comment
PPE	
Tyvek suits	Overalls may be a substitute
Gumboots	For each participant
Gloves	
Hand disinfectant	
PM toolkit	
Straight knives	
Curved knives	
Scalpel blades	Swann-Morton PM40 And heavy duty screw fitting handle PM40H
Butchers claver	To help cut bones
Screw driver	To screw the scalpel to the handle
Cyst counter	To enumerate the cysts- important in heavily infested carcass
Weighing machine	Useful in heavily infested carcass where it's not possible to dissect and enumerate all the cysts
Bins & Biohazard bags	
Refrigerator	To chill the carcass before fine dissection)anything above zero to 4 degrees should be fine(
Hacksaws	To open the skull
Chisel	To open the skull
Files- sharpener	To sharpen the knives
Chopping boards	preferably plastic board
Blood collection toolkit	
Ethanol	For cyst preservation
Carcass disposal	Incineration is ideal

List of participants

Serial No.	Name	Email contact	Sex (M/F)	Country of origin	Country Classification (Developing/Developed)
1.	Phoutsady Sivongthong		M	Laos	Developing
2.	Bouadam Chanthavilay		F	Laos	Developing
3.	Manivong Nonthilath		F	Laos	Developing
4.	Phandavanh Outhaithani		F	Laos	Developing
5.	Bounlerth Sivilay		M	Laos	Developing
6.	Khonsavanh Phomvixay		M	Laos	Developing
7.	Ekaphod Chanda		M	Laos	Developing
8.	Nittakone Soulinthine		F	Laos	Developing
9.	Thippakone Lacksivy		F	Laos	Developing
10.	Amphone Keosengthong		M	Laos	Developing
11.	Khompasong Ninnasopha		M	Laos	Developing
12.	Lay Hort		M	Cambodia	Developing
13.	Tran Thi Thu Hang		F	Vietnam	Developing