



APPENDICES

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

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Appendix A

Questionnaires

Questionnaires for Pig farm

Recorded detail

Recorder name _____

Recorder No. _____ Date _____ Time _____

Place Farm Office other _____

Responder name _____ Tel. _____

E-mail _____

Relation with farm Livestock group leader Farm owner

Employee _____

1. Owner

Farm name		
Owner name		
Owner address		
Telephone No.		
Fax No.		

2. Address

Farm address		
Telephone No.		
Fax No.		
Coordinate (GPS)		

3. Reference Point

	Name	Distance from farm (KM.)	Coordinate (GPS)
Market			
Livestock market			
Slaughter house			
AI station			
Milk collection center			
Feed mills			
Main road			
Water source			
Pasture			
Nearest farm			

4. Animal House

	Number of houses	Size (m ²)	Coordinate (GPS)		Number of houses	Size (m ²)	Coordinate (GPS)
Cow				Sow			
Buffalo				Nursery			
Goat				Finisher			
Sheep				Boar			
Sick animal				Gilt			
Quarantine				Outlet			
Feed mill				Office			
Others				Residence			

5. Number of animal

(From date ____/____/____ to date ____/____/____)

	Number of pig
Nursery pig	
Starter pig	
Finisher pig	
Boar	
Sow	
	Number of animal
Dog	
Cat	
Bird	
Others	

6. Productivity

(From date ____/____/____ to date ____/____/____)

	Number(pig)	Value (Baht)	Duration
Culling			
Finisher pig			
Weaning pig			
Others			

7. Employee

(From date ____/____/____ to date ____/____/____)

Type	Number	Education level	Number
Veterinarian		Primary school	
Care giver		Secondary school	
Office staff		Certificate level	
Worker		Bachelor degree	
Others		Graduate	

8. History of FMD outbreak

(From date ____/____/____ to date ____/____/____)

O Never	O 1 st Time	O 2 nd Time	O 3 rd Time	
Onset (Month)				
Recovery (Month)				
During outbreak				
Sick animal (number)				
Death animal(number)				
Culling animal (number)				
Other diseases 1				
2				
3				
4				
Informed DLD officer	O Yes O No	O Yes O No	O Yes O No	
Called for veterinarian service	O Yes O No	O Yes O No	O Yes O No	
Sold healthy animal	O Yes O No	O Yes O No	O Yes O No	
Sold recovery animal	O Yes O No	O Yes O No	O Yes O No	
Did not move animal	O Yes O No	O Yes O No	O Yes O No	
Management of sick animal				
Sold	O Yes O No	O Yes O No	O Yes O No	
Butcher	O Yes O No	O Yes O No	O Yes O No	
Slaughtered and give away	O Yes O No	O Yes O No	O Yes O No	
Slaughtered and sold	O Yes O No	O Yes O No	O Yes O No	
Bury	O Yes O No	O Yes O No	O Yes O No	
Burn	O Yes O No	O Yes O No	O Yes O No	
Other _____	O Yes O No	O Yes O No	O Yes O No	

9. FMD control and prevention strategies

(From date ____/____/____ to date ____/____/____)

	1 st Time	2 nd Time	Booster
1. Type of vaccine	<input type="radio"/> Monovalent	<input type="radio"/> Monovalent	<input type="radio"/> Monovalent
	<input type="radio"/> Trivalent	<input type="radio"/> Trivalent	<input type="radio"/> Trivalent
	<input type="radio"/> Other _____	<input type="radio"/> Other _____	<input type="radio"/> Other _____
2. Producer	<input type="radio"/> DLD	<input type="radio"/> DLD	<input type="radio"/> DLD
	<input type="radio"/> Company	<input type="radio"/> Company	<input type="radio"/> Company
3. Vaccinated by	<input type="radio"/> DLD officer	<input type="radio"/> DLD officer	<input type="radio"/> DLD officer
	<input type="radio"/> Veterinarian	<input type="radio"/> Veterinarian	<input type="radio"/> Veterinarian
	<input type="radio"/> Owner	<input type="radio"/> Owner	<input type="radio"/> Owner
	<input type="radio"/> Other _____	<input type="radio"/> Other _____	<input type="radio"/> Other _____
4. Shared vaccine with other farm	<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No
5. Vaccine storage	<input type="radio"/> Refrigerator	<input type="radio"/> Refrigerator	<input type="radio"/> Refrigerator
	<input type="radio"/> Ice box	<input type="radio"/> Ice box	<input type="radio"/> Ice box
	<input type="radio"/> Other _____	<input type="radio"/> Other _____	<input type="radio"/> Other _____
6. Non vaccinated animal	<input type="radio"/> Early pregnant	<input type="radio"/> Early pregnant	<input type="radio"/> Early pregnant
	<input type="radio"/> Late pregnant	<input type="radio"/> Late pregnant	<input type="radio"/> Late pregnant
	<input type="radio"/> Suckling pig	<input type="radio"/> Suckling pig	<input type="radio"/> Suckling pig
	<input type="radio"/> Other _____	<input type="radio"/> Other _____	<input type="radio"/> Other _____
7. Nearest farm has outbreak	<input type="radio"/> Yes <input type="radio"/> No		
8. Distance from nearest farm	_____ km.		
9. Time duration from nearest outbreak farm	_____ day(s)		
10. Management when neighboring farm has outbreak	<input type="radio"/> Vaccination		
	<input type="radio"/> Did not add new stock		
	<input type="radio"/> Did not contact with outbreak farm		
	<input type="radio"/> Did not allow visitor		
	<input type="radio"/> No special strategies		
	<input type="radio"/> Other _____		
11. Vaccination Program	FMD	AD	SF
Piglet	<input type="radio"/> Every ____ month	<input type="radio"/> Every ____ month	<input type="radio"/> Every ____ month
	<input type="radio"/> Age ____ week	<input type="radio"/> Age ____ week	<input type="radio"/> Age ____ week
Sow	<input type="radio"/> Every ____ month	<input type="radio"/> Every ____ month	<input type="radio"/> Every ____ month
	<input type="radio"/> Before farrow <input type="radio"/> After farrow Week	<input type="radio"/> Before farrow <input type="radio"/> After farrow Week	<input type="radio"/> Before farrow <input type="radio"/> After farrow Week
Boar	<input type="radio"/> Every ____ month	<input type="radio"/> Every ____ month	<input type="radio"/> Every ____ month
	<input type="radio"/> Week _____	<input type="radio"/> Week _____	<input type="radio"/> Week _____
Gilt	<input type="radio"/> Every ____ month	<input type="radio"/> Every ____ month	<input type="radio"/> Every ____ month
	<input type="radio"/> Age ____ month	<input type="radio"/> Age ____ month	<input type="radio"/> Age ____ month

10. Risk factor of FMD outbreak

(From date ____/____/____ to date ____/____/____)

1. Farm type	<input type="radio"/> Intensive	<input type="radio"/> Breeder	<input type="radio"/> Finisher	
2. Farm pattern	<input type="radio"/> One-site	<input type="radio"/> Two-site	<input type="radio"/> Three-site	<input type="radio"/> Other
3. Management system Between nursery to finishing pig	<input type="radio"/> All in all out	<input type="radio"/> Continuous	<input type="radio"/> Other __	
4. Source of replacing pig in farm	<input type="radio"/> In house	<input type="radio"/> Bought	<input type="radio"/> In house and bought	<input type="radio"/> Other
5. Number of new pig import to herd per month		Pig(s)		
6. Feed	<input type="radio"/> In house	<input type="radio"/> Bought	<input type="radio"/> In house and bought	<input type="radio"/> Other
7. Water source	<input type="radio"/> Tap water	<input type="radio"/> Aquifer	<input type="radio"/> River or canal	<input type="radio"/> Swamp
8. Shared water resource with other farm/villages	<input type="radio"/> Yes <input type="radio"/> No			
9. Number of farm/village which shared water resource		farm(s)/village(s)		
10. Treated water before use	<input type="radio"/> Yes <input type="radio"/> No			
11. Housing type	<input type="radio"/> Closed	<input type="radio"/> Opened	<input type="radio"/> Other	
12. Separate housing by pig type	<input type="radio"/> Yes <input type="radio"/> No			
13. Has fence	<input type="radio"/> Yes <input type="radio"/> No			
14. Carcass management	<input type="radio"/> Bury	<input type="radio"/> Burn	<input type="radio"/> Sold	<input type="radio"/> Other
15. Waste management	<input type="radio"/> Dry by air	<input type="radio"/> Treat pond	<input type="radio"/> Waste	<input type="radio"/> Other
16. Leave 5 days between batch	<input type="radio"/> Yes <input type="radio"/> No			
17. Used disinfectant during empty period	<input type="radio"/> Yes <input type="radio"/> No			
18. Clear job description	<input type="radio"/> Yes <input type="radio"/> No			
19. Number of vehicle used inside farm	Motorcycle			
	Truck			
	Other			

20. Pig truck parks	O In front of farm		O in farm	
21. Number of farm which same merchant bought pigs		farm(s)		
22. Number of slaughter house which merchant sold pigs				
23. Number of vehicle come in and get out of farm	Feed truck			
	Pig truck			
	Other			
24. Method of vehicle disinfectant	O Disinfectant pond	O Spray house	O Spray machine	O Non
25. Method of personal disinfectant	O Bathroom	O Wash basin	O Other	O Non
26. Has wash basin in every house	O Yes O No			
27. Quarantine house separate from other houses more than 25 meters	O Yes O No			
28. Person who treat sick animal	O Veterinarian	O Animal husbandry	O Other	
29. Number of village within 5 kms		village(s)		
30. Has other job except pig farm	O Yes O No			
31. Most income from pig farm	O Yes O No			
32. Proportion of vaccinated pig in farm		%		
33. Number of visitor who came in farm within 1 month	DLD officer			
	Salesman			
	Merchant			
	Other			

Questionnaires for cattle farm**Recorded detail**

Recorder name _____

Recorder No. _____ Date _____ Time _____

Place Farm Office other _____

Responder name _____ Tel. _____

E-mail _____

Relation with farm Livestock group leader Farm owner Employee _____**1. Owner**

Farm name		
Owner name		
Owner address		
Telephone No.		
Fax No.		

2. Address

Farm address		
Telephone No.		
Fax No.		
Coordinate (GPS)		

3. Reference Point

	Name	Distance from farm (KM.)	Coordinate (GPS)
Market			
Livestock market			
Slaughter house			
AI station			
Milk collection center			
Feed mills			
Main road			
Water source			
Pasture			
Nearest farm			

4. Houses

	Number of houses	Size (m ²)	Coordinate (GPS)		Number of houses	Size (m ²)	Coordinate (GPS)
Cow				Sow			
Buffalo				Nursery			
Goat				Finisher			
Sheep				Boar			
Sick animal				Gilt			
Quarantine				Outlet			
Feed mill				Office			
Others				Residence			

5. Number of animal

	Cow	Buffalo	Goat	Sheep		
Pregnant milk						
Pregnant dry						
Open milk						
Open dry						
Pregnant heifer						
Open heifer						
Bull						Number of animal
Offspring					Dog	
Fattaning					Cat	
Working					Bird	
Total					Others	

6. Productivity

	Number	Value (Baht)	Duration	
Milk (kg)			day	
Culled animal			year	
other				

7. Employee

Type	Number	Education level	Number	
Veterinarian		Primary school		
Care giver		Secondary school		
Office staff		Certificate level		
Worker		Bachelor degree		
Others		Graduate		

8. History of FMD outbreak

(From date ____/____/____ to date ____/____/____)

O Never	O 1 st Time	O 2 nd Time	O 3 rd Time	
Onset (Month)				
Recovery (Month)				
During outbreak				
Number of sick animal (number)				
Number of death animal(number)				
Amount of milk reduction (kg)				
Number of culled animal (head)				
Other diseases during outbreak 1				
2				
3				
Informed DLD officer	O Yes O No	O Yes O No	O Yes O No	
Called veterinary service	O Yes O No	O Yes O No	O Yes O No	
Sold healthy animal	O Yes O No	O Yes O No	O Yes O No	
Sold recovered animal	O Yes O No	O Yes O No	O Yes O No	
Did not move animal	O Yes O No	O Yes O No	O Yes O No	
Management of sick animal				
Sold	O Yes O No	O Yes O No	O Yes O No	
Butcher	O Yes O No	O Yes O No	O Yes O No	
Slaughtered and give away	O Yes O No	O Yes O No	O Yes O No	
Slaughtered and sold	O Yes O No	O Yes O No	O Yes O No	
Bury	O Yes O No	O Yes O No	O Yes O No	
Burn	O Yes O No	O Yes O No	O Yes O No	
Other _____	O Yes O No	O Yes O No	O Yes O No	

9. FMD control and prevention strategies

(From date ____/____/____ to date ____/____/____)

	1 st Time	2 nd Time	Booster	
12. Age that 1 st vaccination				
13. Type of vaccine	<input type="radio"/> monovalent	<input type="radio"/> monovalent	<input type="radio"/> monovalent	
	<input type="radio"/> Trivalent	<input type="radio"/> Trivalent	<input type="radio"/> Trivalent	
	<input type="radio"/> Other _____	<input type="radio"/> Other _____	<input type="radio"/> Other _____	
14. Producer	<input type="radio"/> DLD	<input type="radio"/> DLD	<input type="radio"/> DLD	
	<input type="radio"/> Company	<input type="radio"/> Company	<input type="radio"/> Company	
15. Vaccinated by	<input type="radio"/> DLD officer	<input type="radio"/> DLD officer	<input type="radio"/> DLD officer	
	<input type="radio"/> Veterinarian	<input type="radio"/> Veterinarian	<input type="radio"/> Veterinarian	
	<input type="radio"/> Owner	<input type="radio"/> Owner	<input type="radio"/> Owner	
	<input type="radio"/> Other _____	<input type="radio"/> Other _____	<input type="radio"/> Other _____	
16. Shared vaccine with other farm	<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No	
17. Vaccine storage	<input type="radio"/> Refrigerator	<input type="radio"/> Refrigerator	<input type="radio"/> Refrigerator	
	<input type="radio"/> Ice box	<input type="radio"/> Ice box	<input type="radio"/> Ice box	
	<input type="radio"/> Other _____	<input type="radio"/> Other _____	<input type="radio"/> Other _____	
18. Non vaccinated animal	<input type="radio"/> Early pregnant	<input type="radio"/> Early pregnant	<input type="radio"/> Early pregnant	
	<input type="radio"/> Late pregnant	<input type="radio"/> Late pregnant	<input type="radio"/> Late pregnant	
	<input type="radio"/> Suckling pig	<input type="radio"/> Suckling pig	<input type="radio"/> Suckling pig	
	<input type="radio"/> Other _____	<input type="radio"/> Other _____	<input type="radio"/> Other _____	

19. Nearest farm has outbreak	<input type="radio"/> Yes <input type="radio"/> No
20. Distance from nearest outbreak farm	_____ km.
21. Time duration from nearest outbreak farm	_____ day(s)
22. Management when neighboring farm has outbreak	<input type="radio"/> Vaccination
	<input type="radio"/> Did not add new stock
	<input type="radio"/> Did not contact with outbreak farm
	<input type="radio"/> Did not allow visitor entering
	<input type="radio"/> No special strategies
	<input type="radio"/> Other _____

10. Risk factor of FMD outbreak

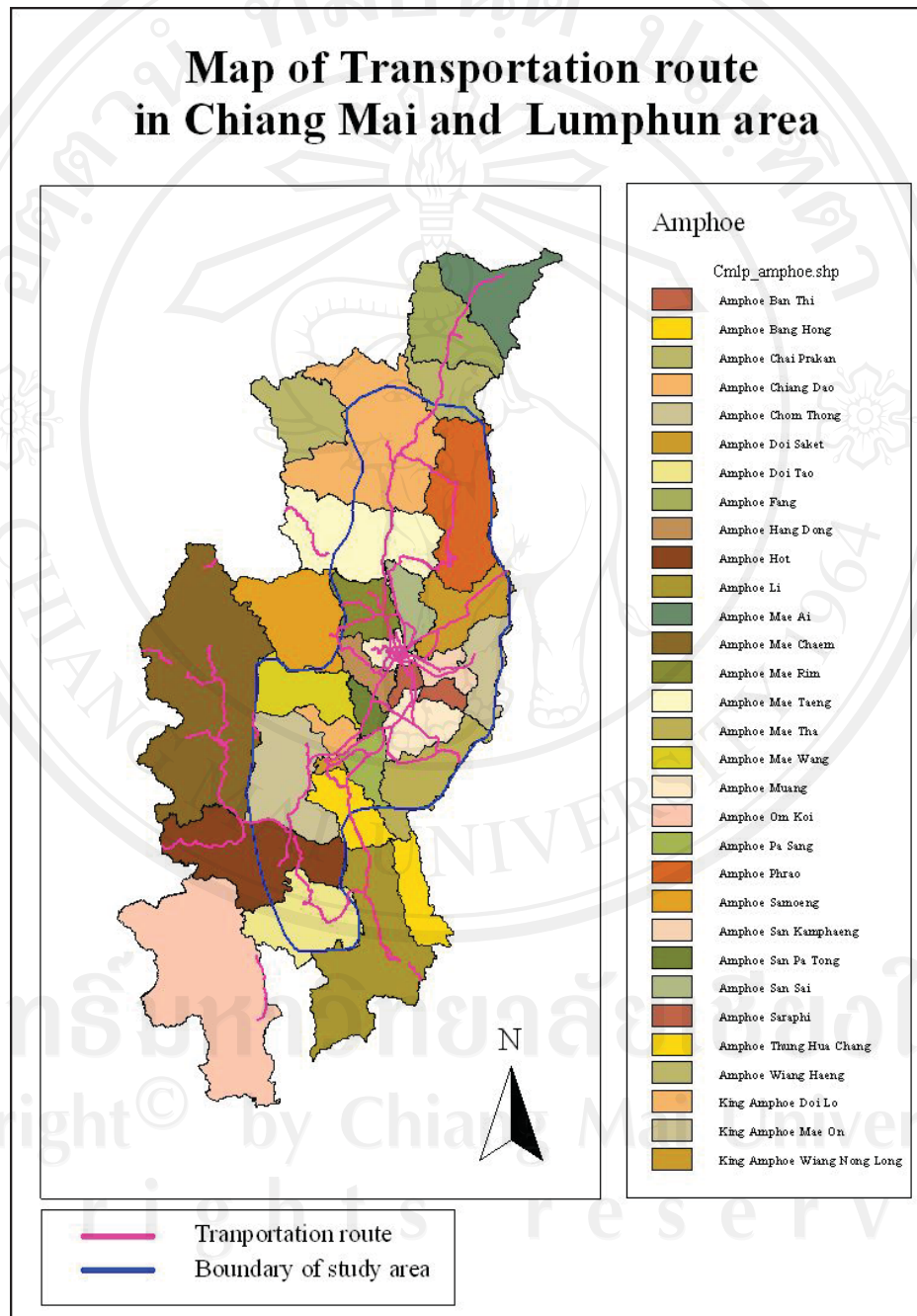
(From date ____/____/____ to date ____/____/____)

1. Shared water source with other farm/villages	O Yes O No	
2. Number of farm/village which shared water resource	Farm(s)/village(s)	
3. Shared pasture with other farm/villages	O Yes O No	
4. Number of farm/village sharing pasture	Farm(s)/village(s)	
5. Number of month in a year that share pasture with other farm/villages	month	
6. Add new stock	O Yes O No	
7. Number of new animal that add into the herd in 1 month		
8. Has other job except cattle farm	O Yes O No	
9. Most income from cattle farm	O Yes O No	
10. Proportion of vaccinated cattle in farm	%	
11. Farm's animal contact with other animal	O Yes O No	
12. Import waste into farm	O Yes O No	
13. How often DLD officer visit farm within 1 month	time	
14. How often salesman came to visit farm within 1 month	time	
15. Number of village within 5 kms	village(s)	
16. Artificial inseminator	O DLD officer O Veterinarian O Owner O Other _____	
17. Pasture	O Own O Another O Public	
23. Feed concentrate	O Yes O No	

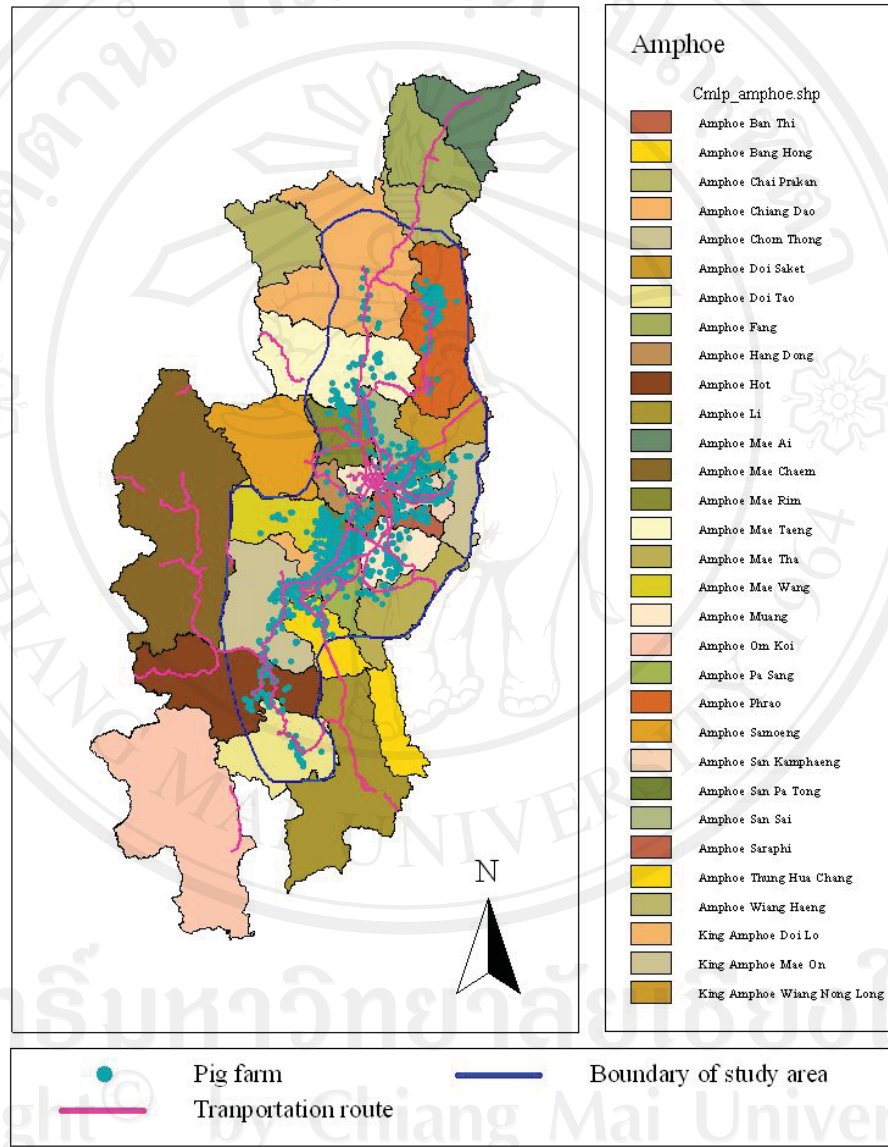
18. Mineral supplement	<input type="radio"/> Yes <input type="radio"/> No	
19. Share mineral with other farm	<input type="radio"/> Yes <input type="radio"/> No	
20. Main water source	<input type="radio"/> Underground water	
	<input type="radio"/> Tap water	
	<input type="radio"/> River or canal	
	<input type="radio"/> Swamp	
21. Number of vehicle used inside farm	Motorcycle	
	Car	
	Truck	
	Other	
22. Number of visitor within 1 month	DLD officer _____	
	Company salesman _____	
	Merchant _____	
	Other _____	
23. Method of vehicle decontamination	<input type="radio"/> Disinfectant pond	
	<input type="radio"/> Spray house	
	<input type="radio"/> Spray machine	
	<input type="radio"/> Non	
25. Method of personal decontamination	<input type="radio"/> Bathroom	
	<input type="radio"/> Wash basin	
	<input type="radio"/> Other	
	<input type="radio"/> Non	
26. Has disinfectant pool in every house	<input type="radio"/> Yes <input type="radio"/> No	

Appendix B

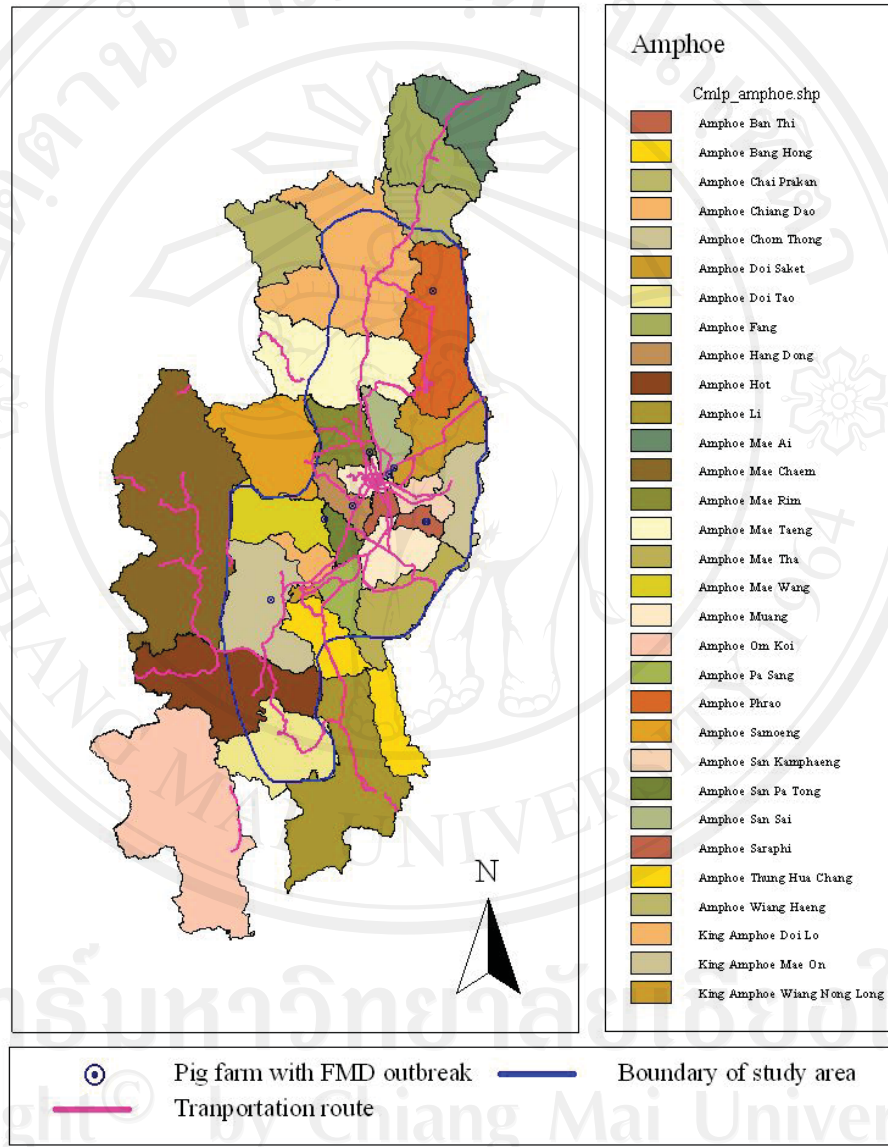
Map from Geographic Information System (GIS) data



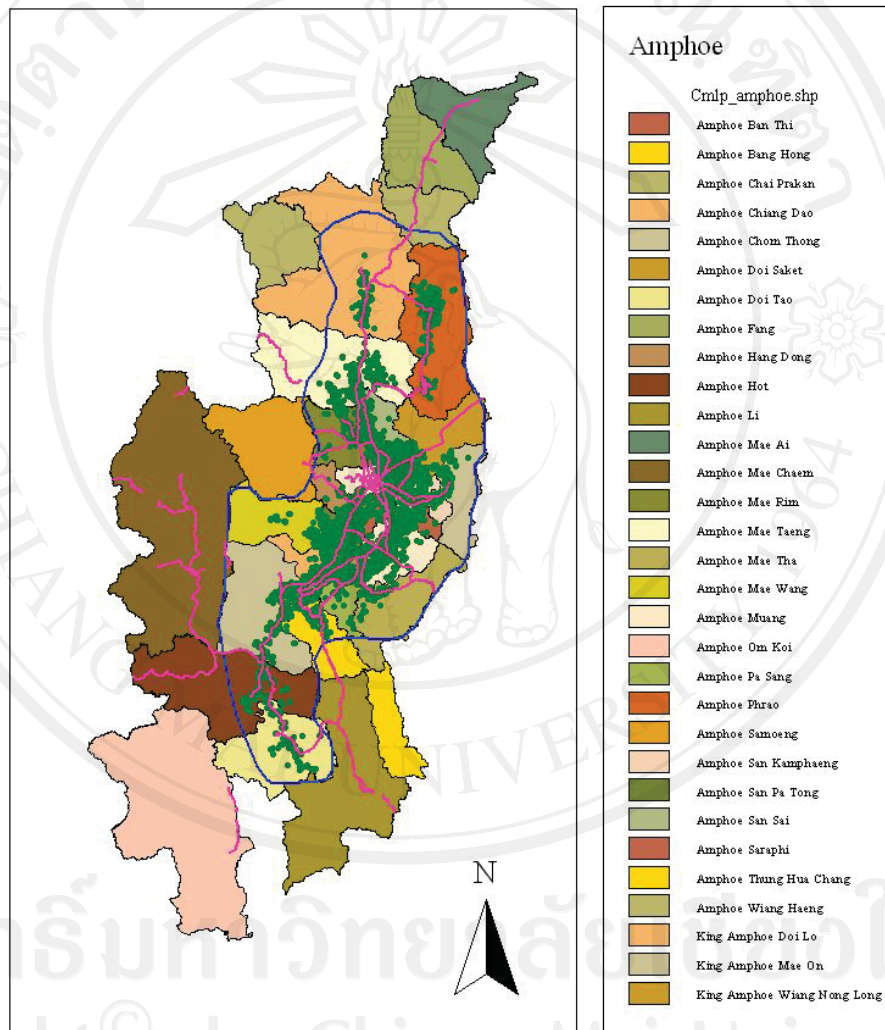
Map of Pig farms and Transportation route in Chiang Mai and Lumphun area



Map of Pig farms with FMD outbreak and Transportation route in Chiang Mai and Lumphun area

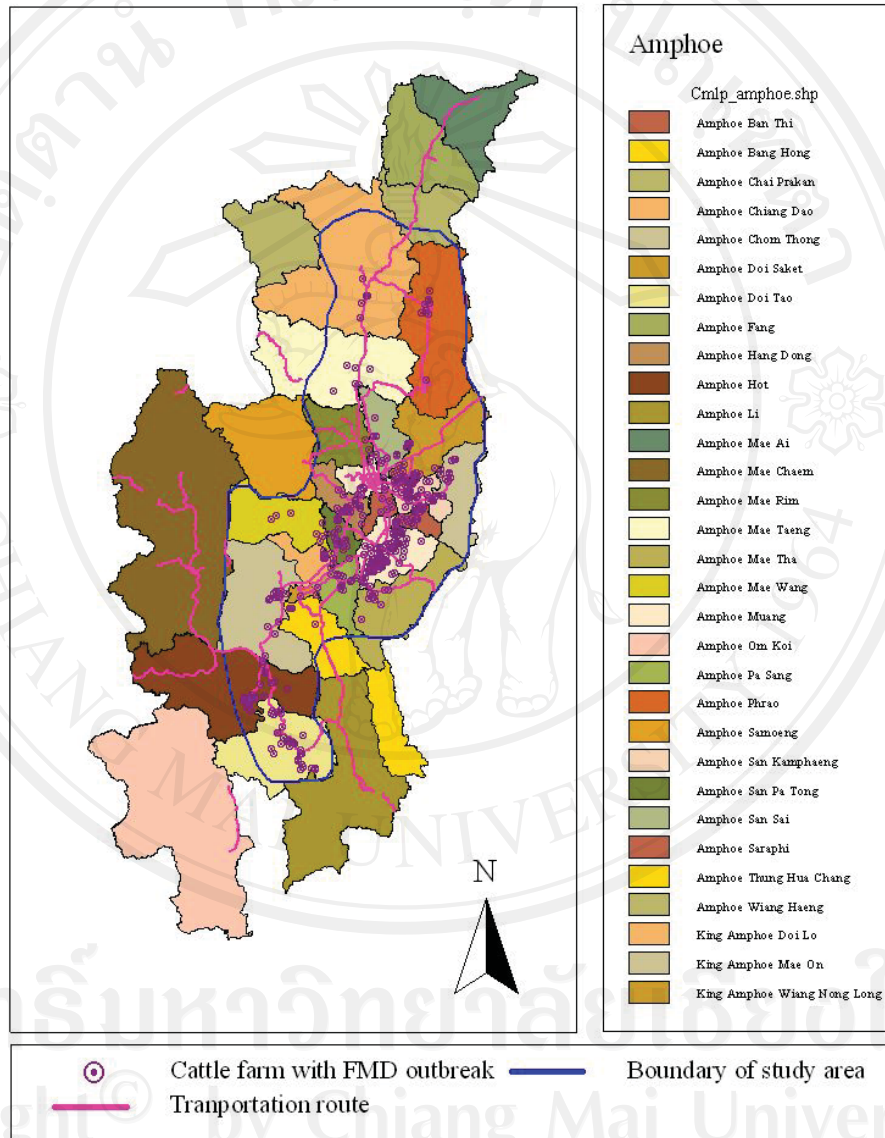


Map of Cattle farms and Transportation route in Chiang Mai and Lumphun area

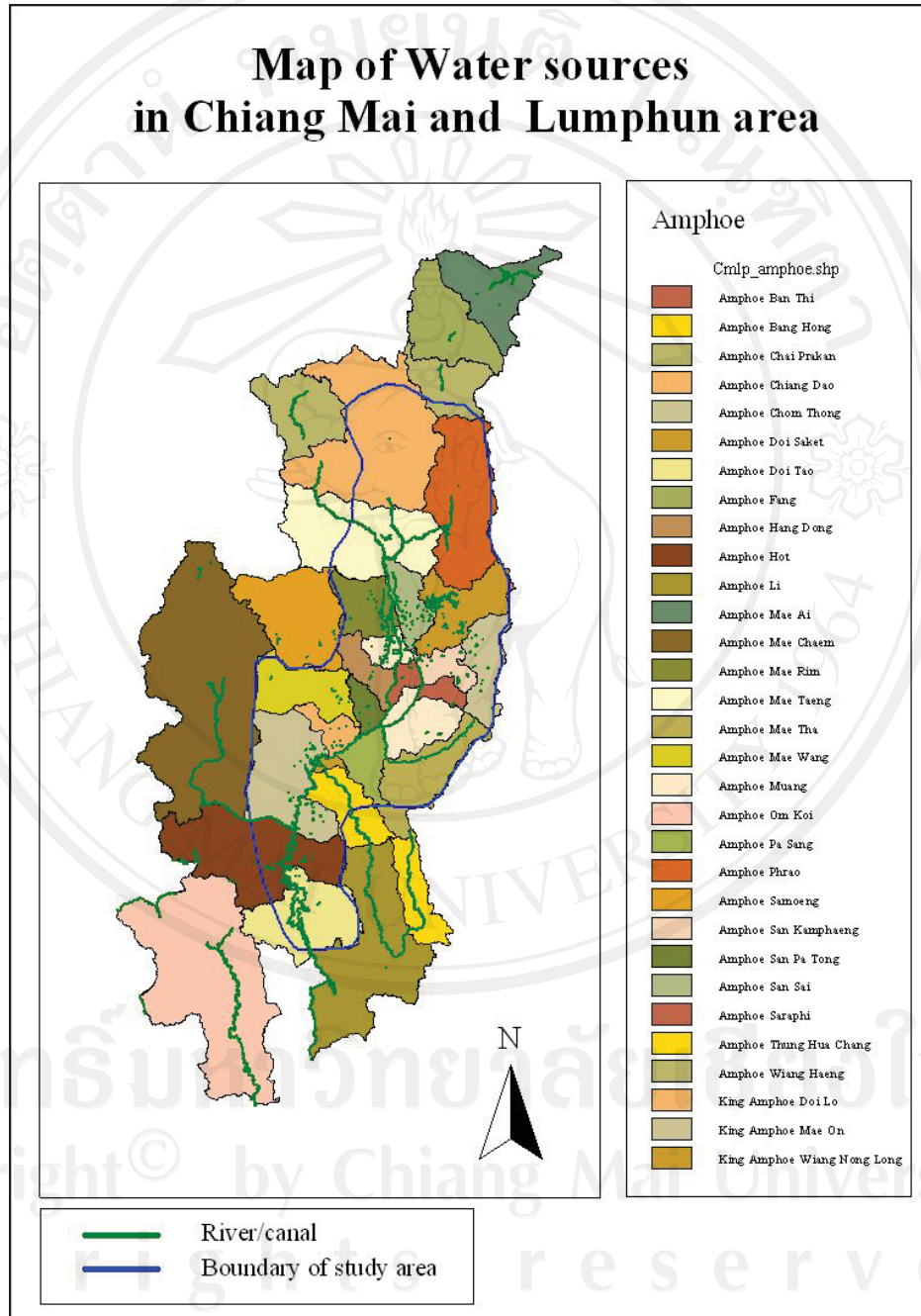


● Cattle Farm
 — Transportation route
 — Boundary of study area

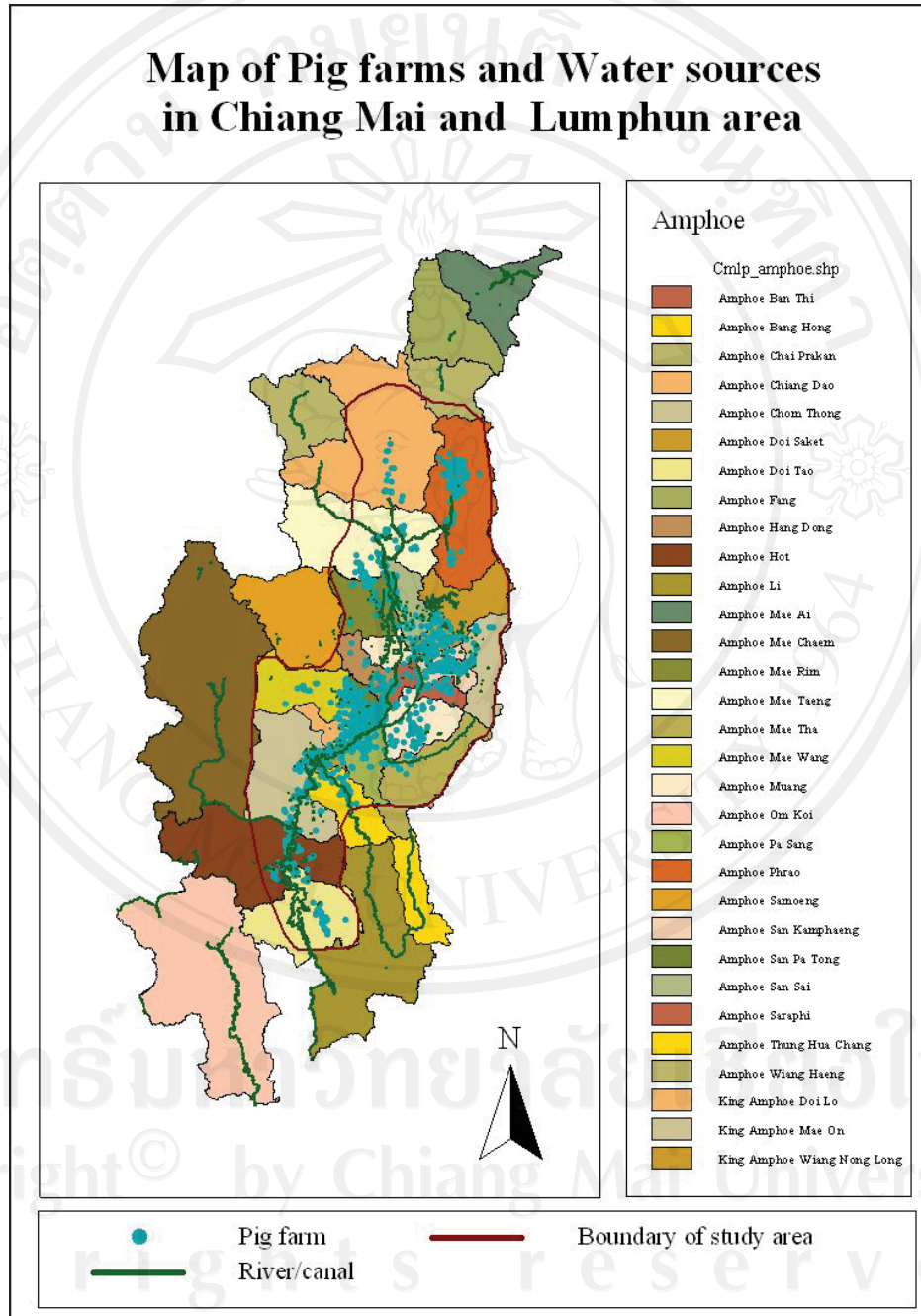
Map of Cattle farms with FMD outbreak and Transportation route in Chiang Mai and Lumphun area



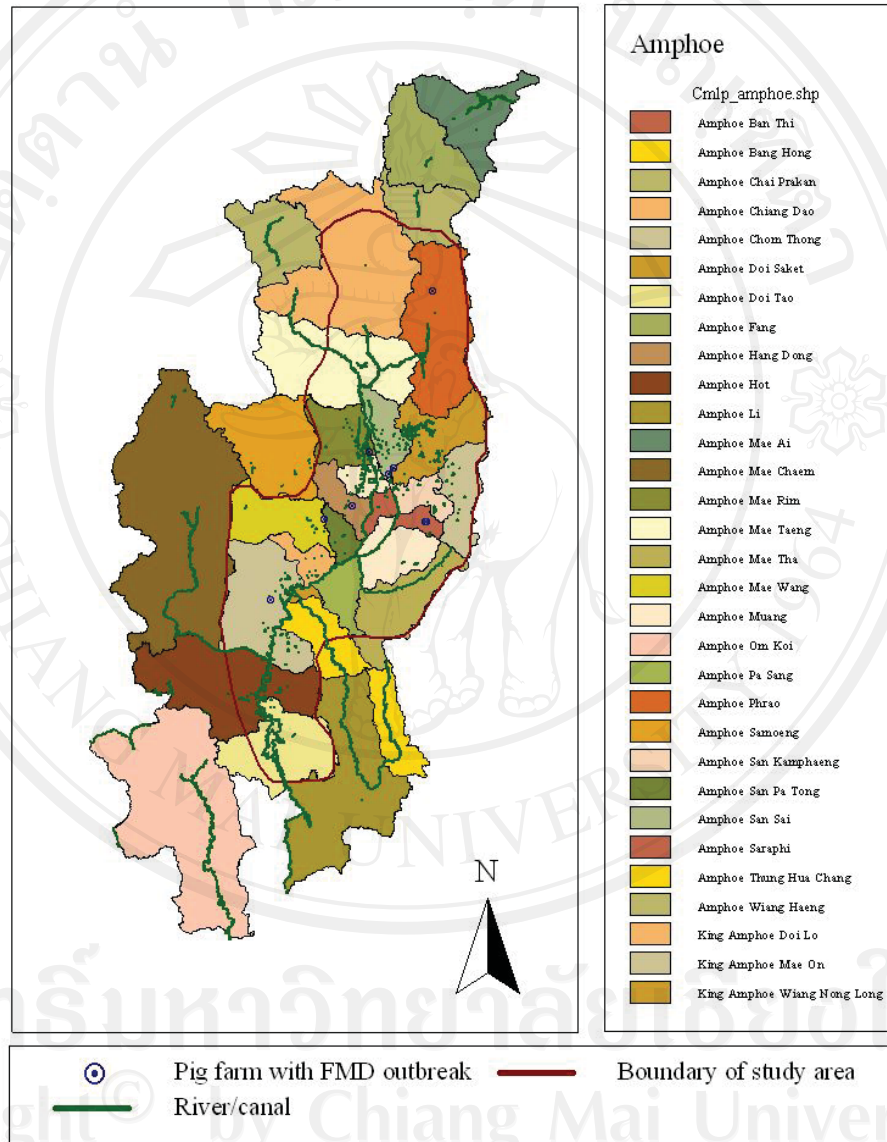
Map of Water sources in Chiang Mai and Lumphun area



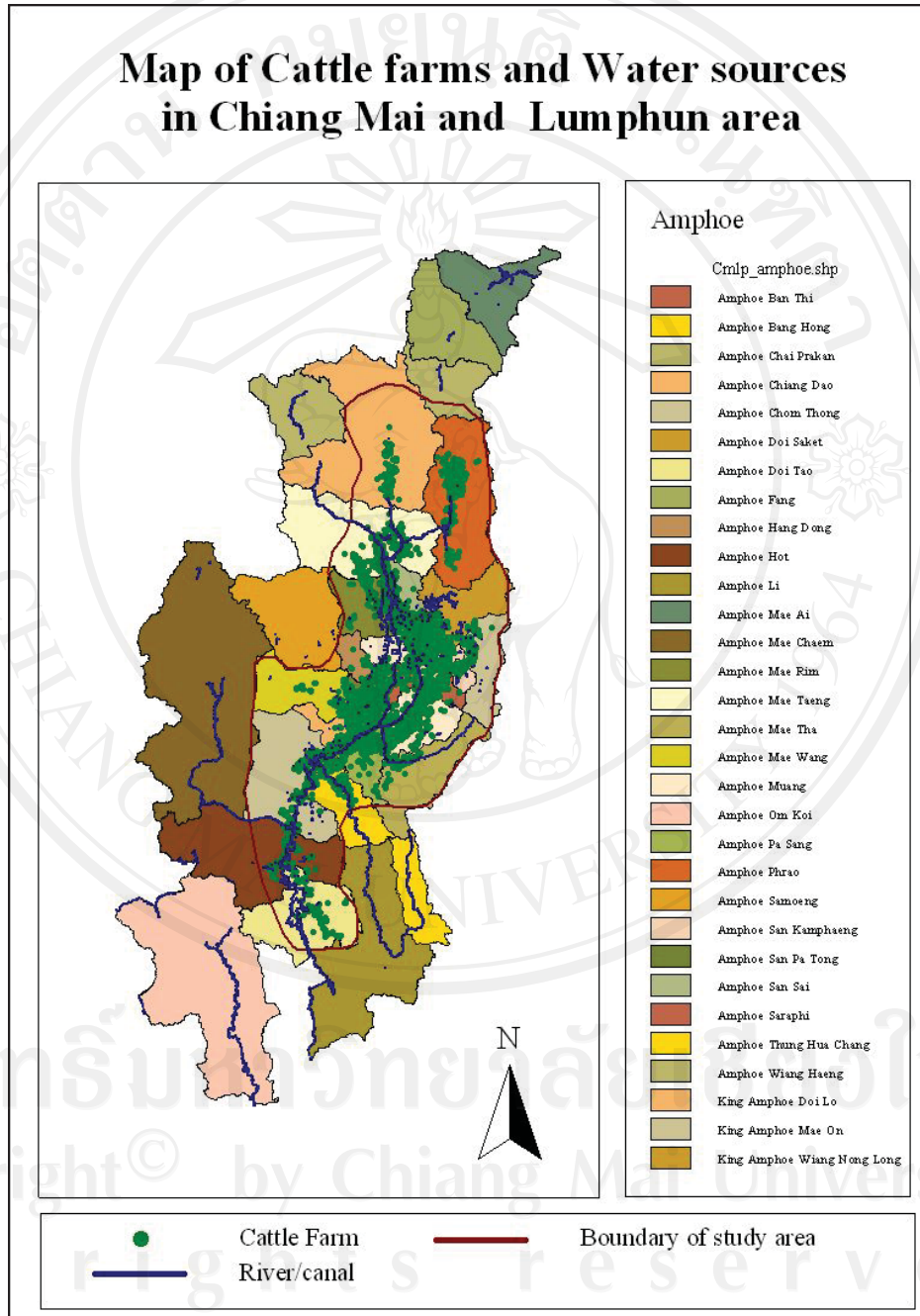
Map of Pig farms and Water sources in Chiang Mai and Lumphun area



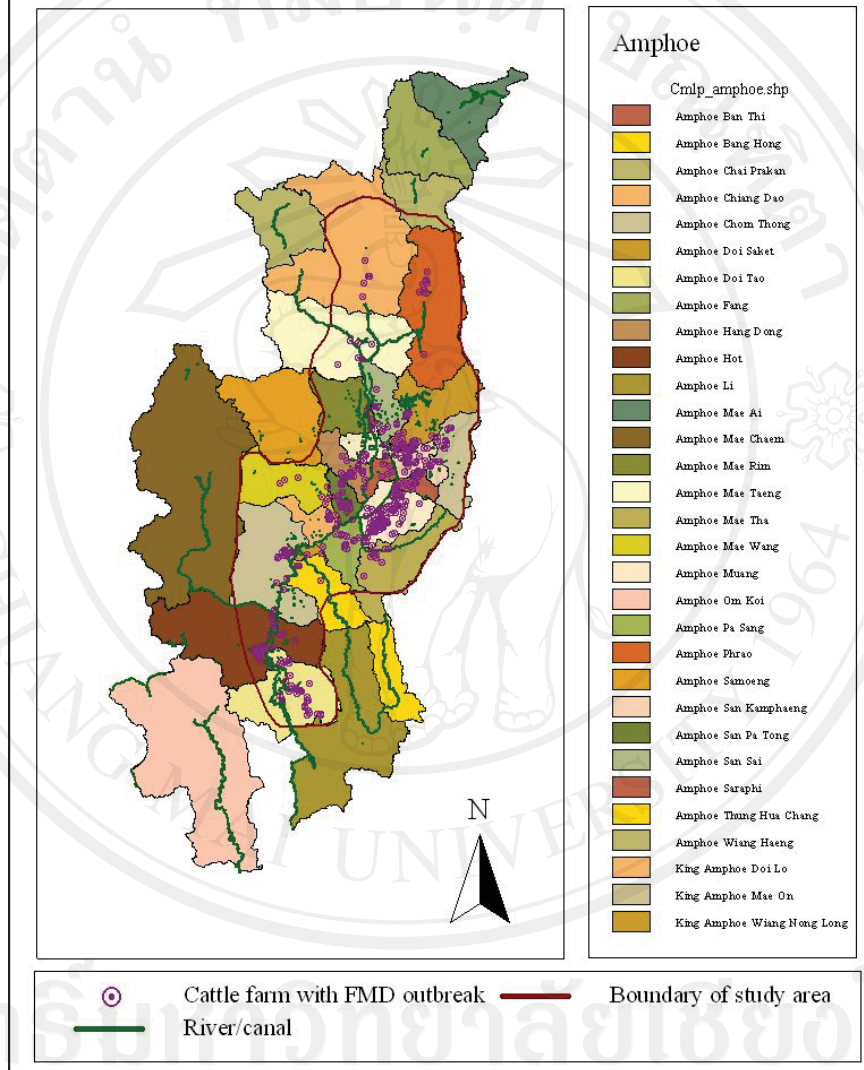
Map of Pig farms with FMD outbreak and Water sources in Chiang Mai and Lumphun area



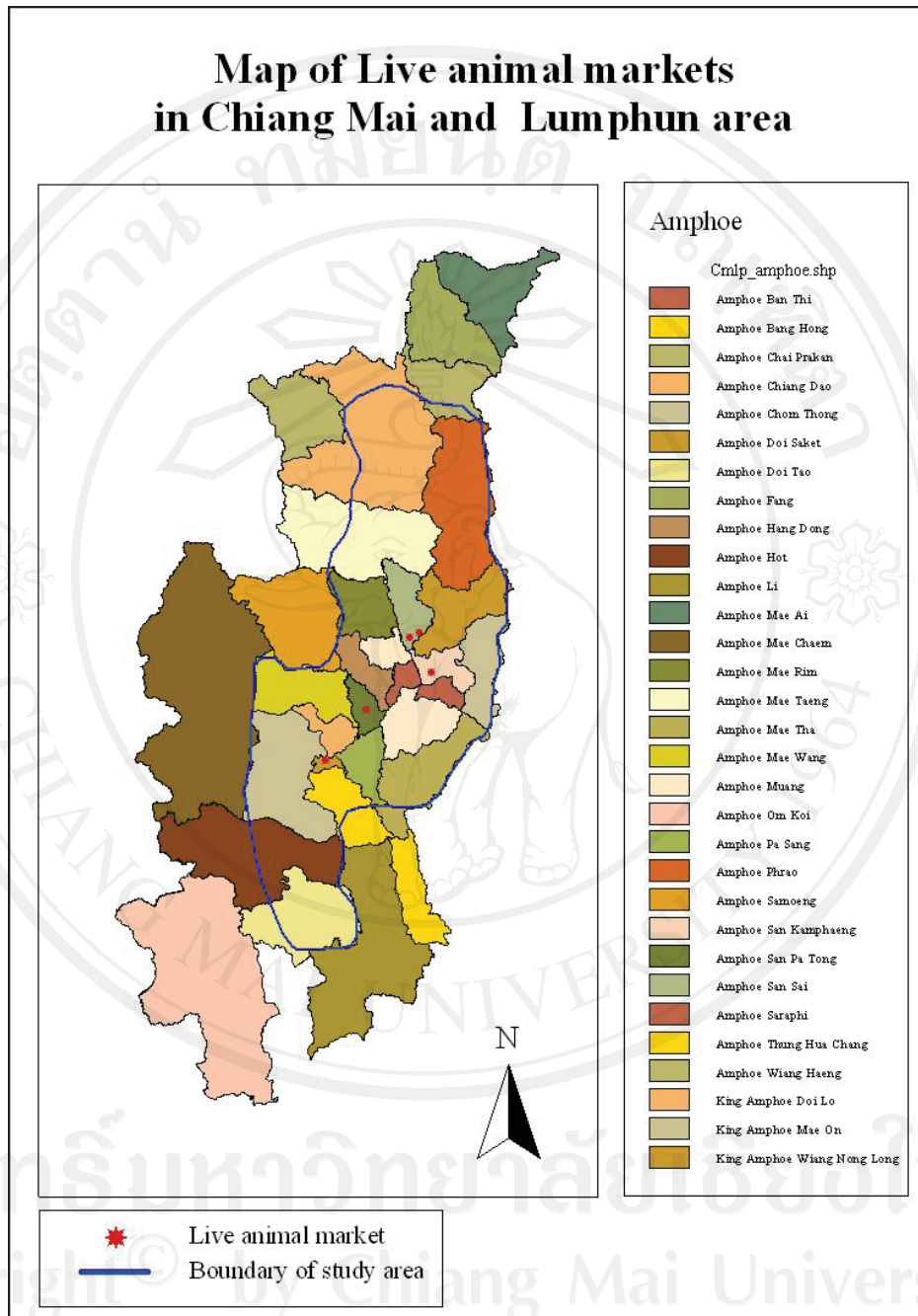
Map of Cattle farms and Water sources in Chiang Mai and Lumphun area



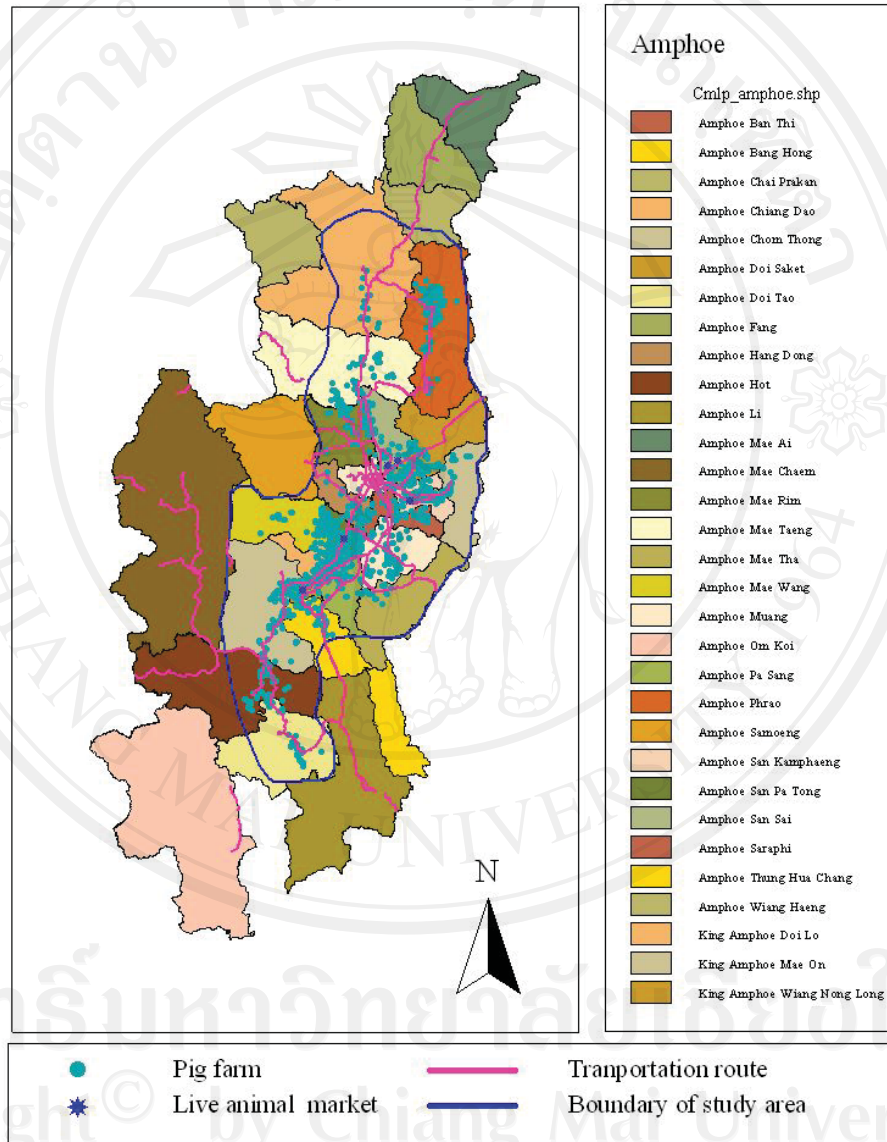
Map of Cattle farms with FMD outbreak and Water sources in Chiang Mai and Lumphun area



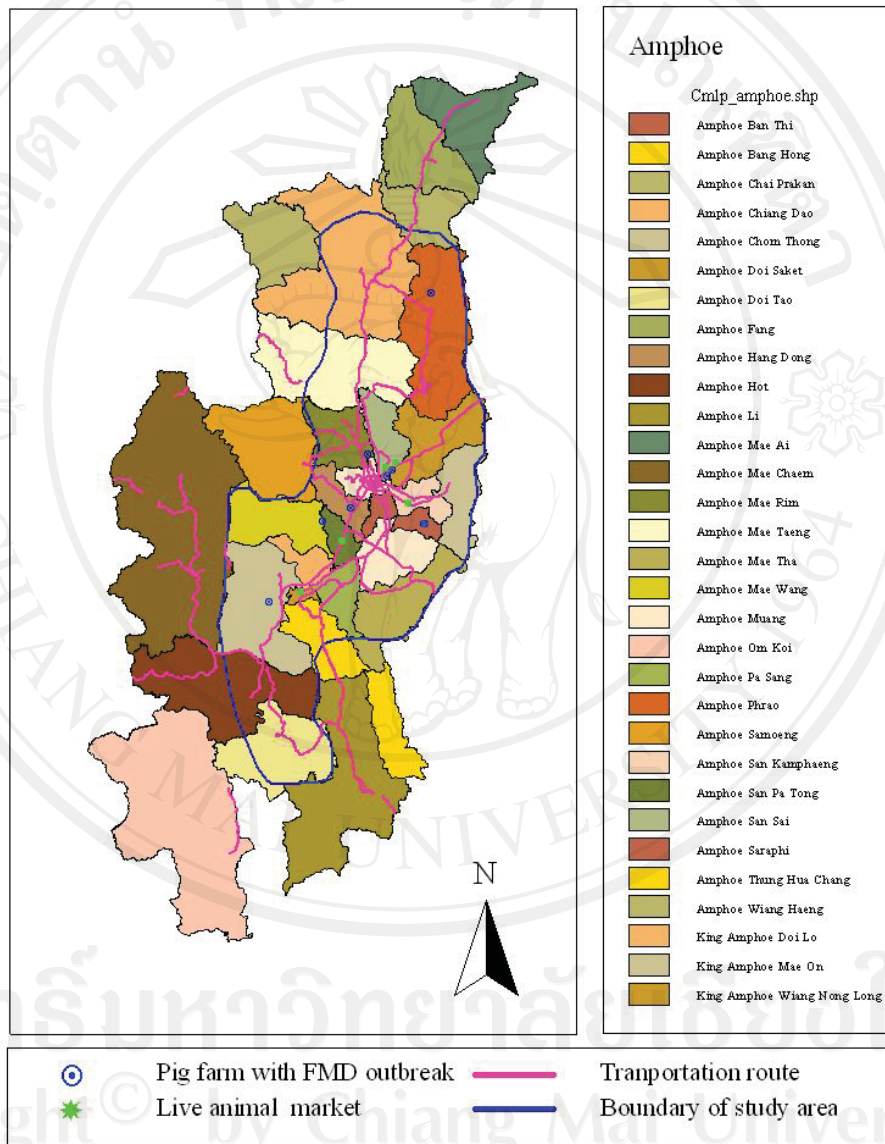
Map of Live animal markets in Chiang Mai and Lumphun area



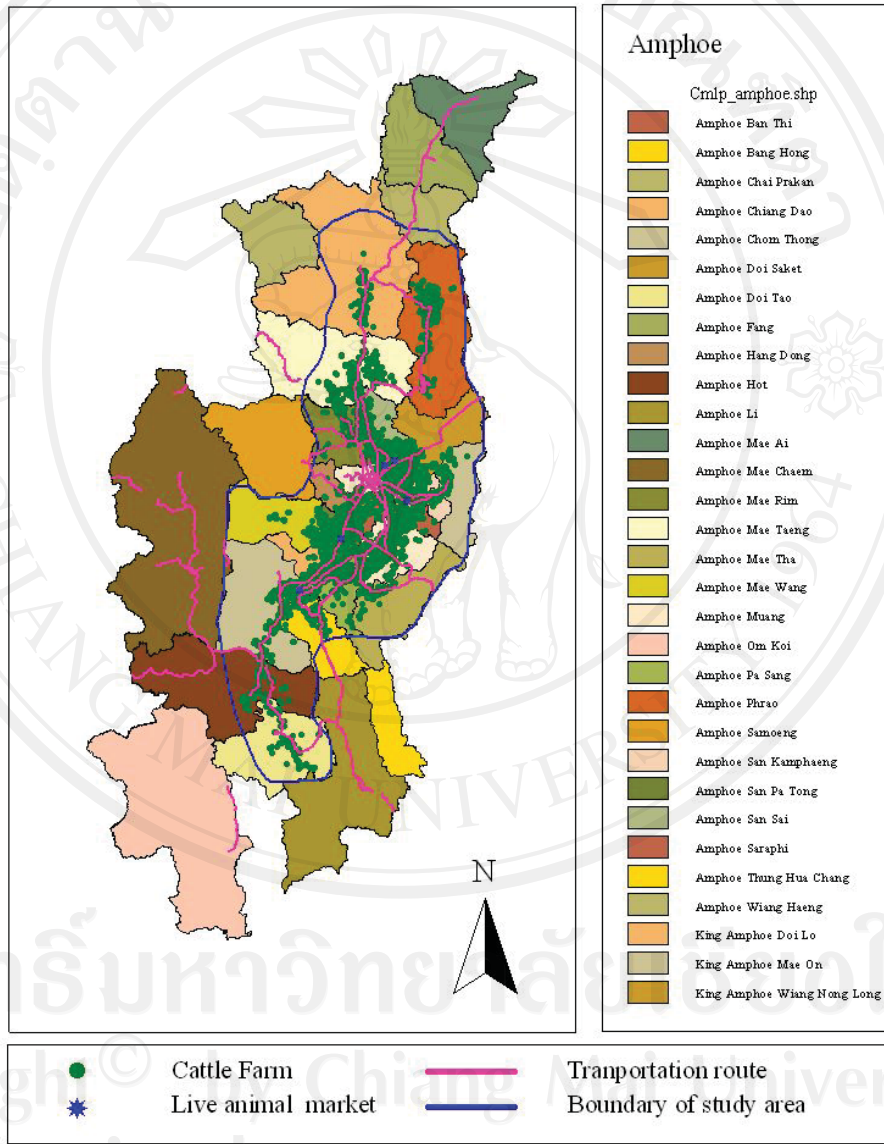
Map of Pig farms and Live animal markets in Chiang Mai and Lumphun area



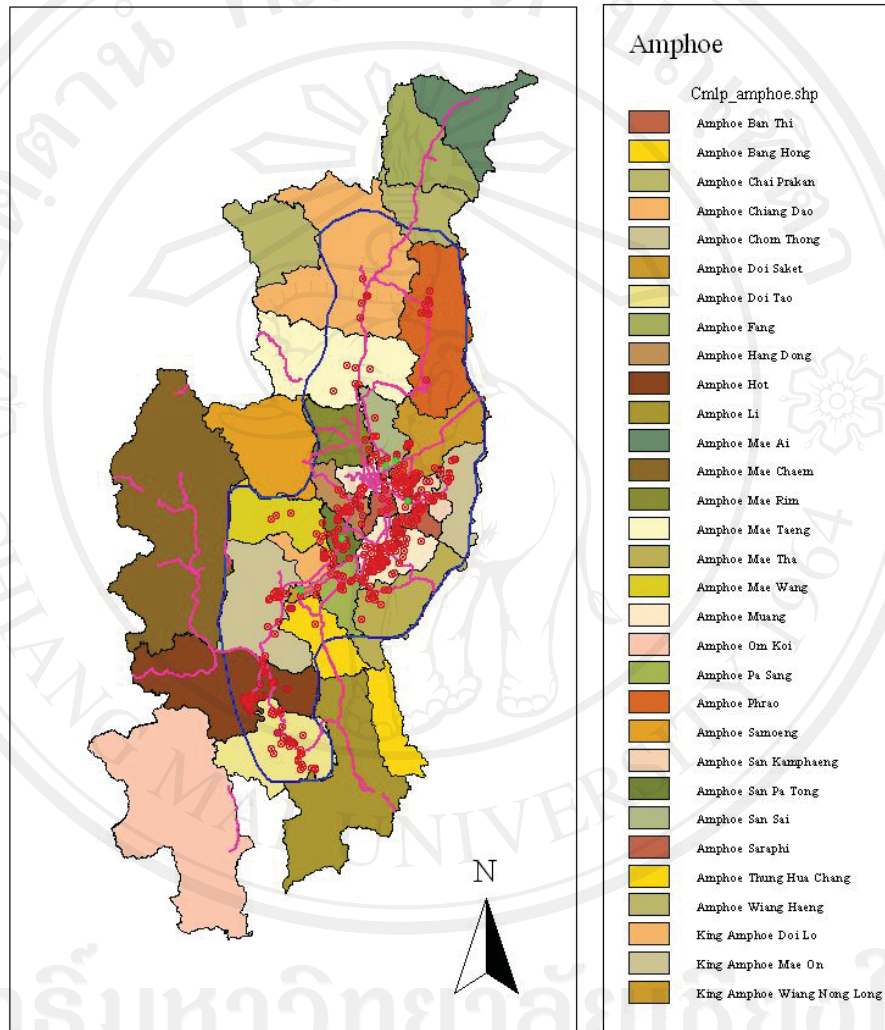
Map of Pig farms with FMD outbreak and Live animal markets in Chiang Mai and Lumphun area



Map of Cattle farms and Live animal markets in Chiang Mai and Lumphun area

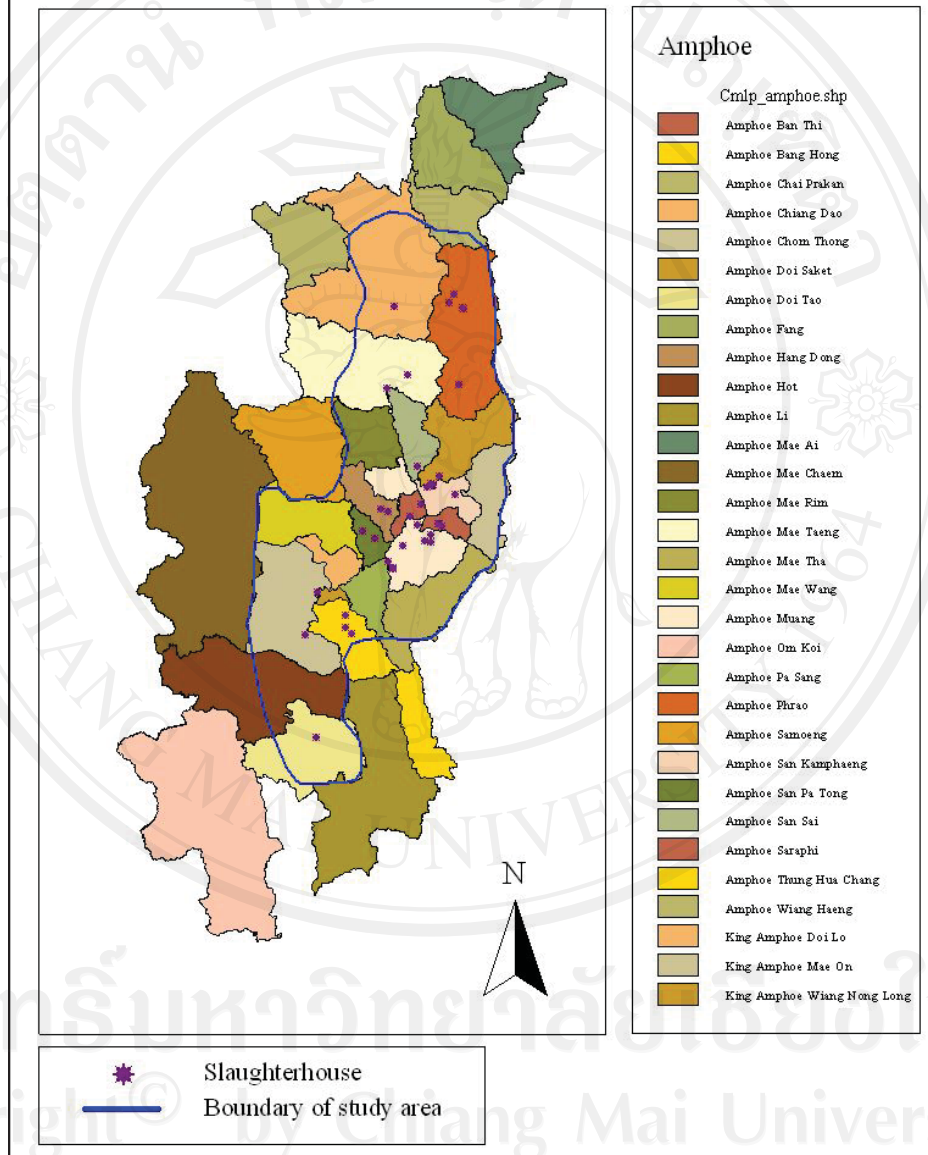


Map of Cattle farms with FMD outbreak and Live animal markets in Chiang Mai and Lumphun area

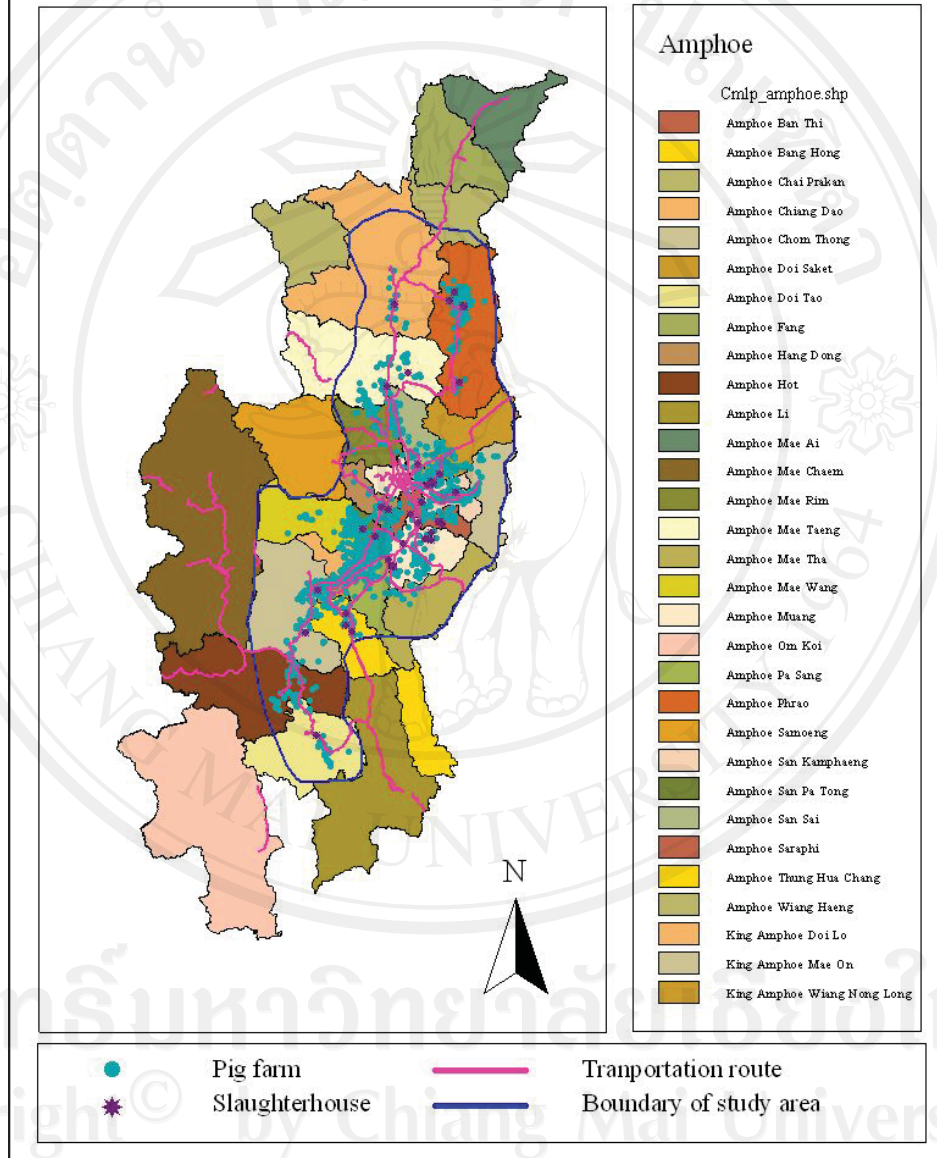


● Cattle farm with FMD outbreak — Transportation route
★ Live animal market — Boundary of study area

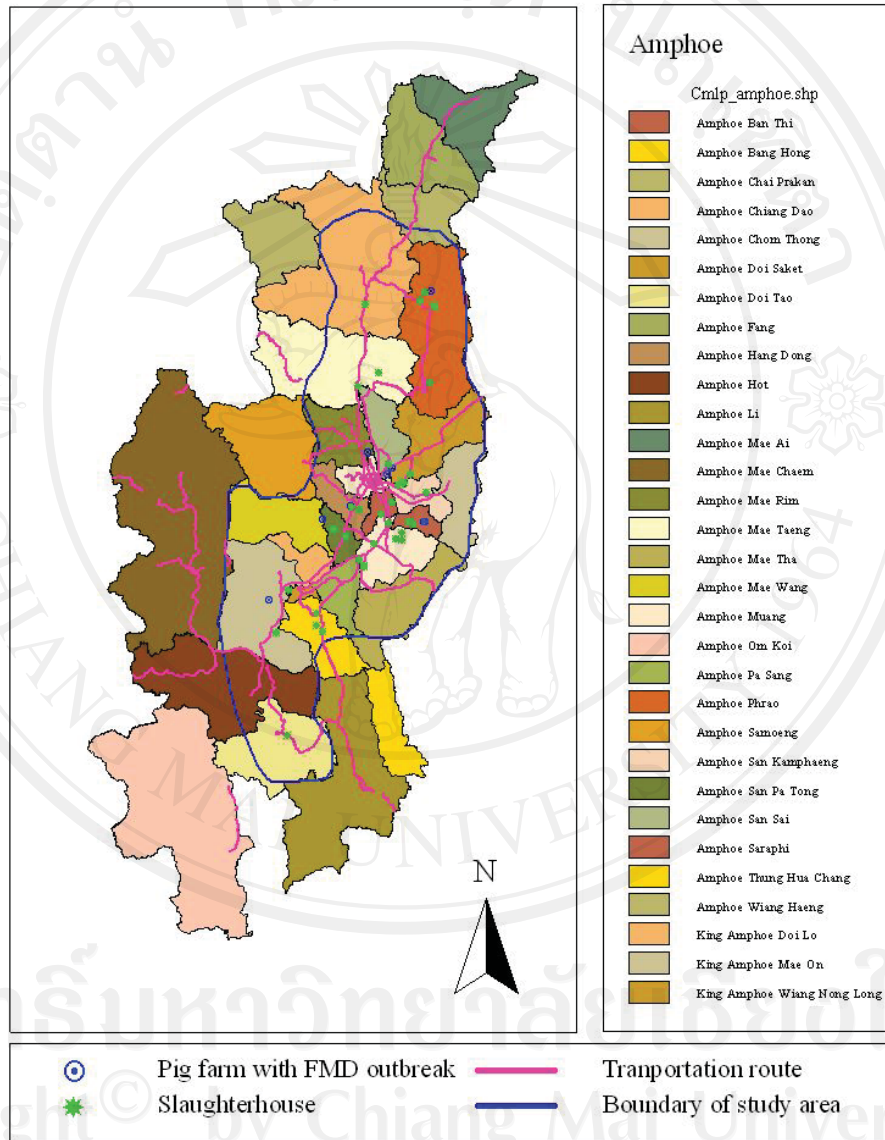
Map of Slaughterhouses in Chiang Mai and Lumphun area

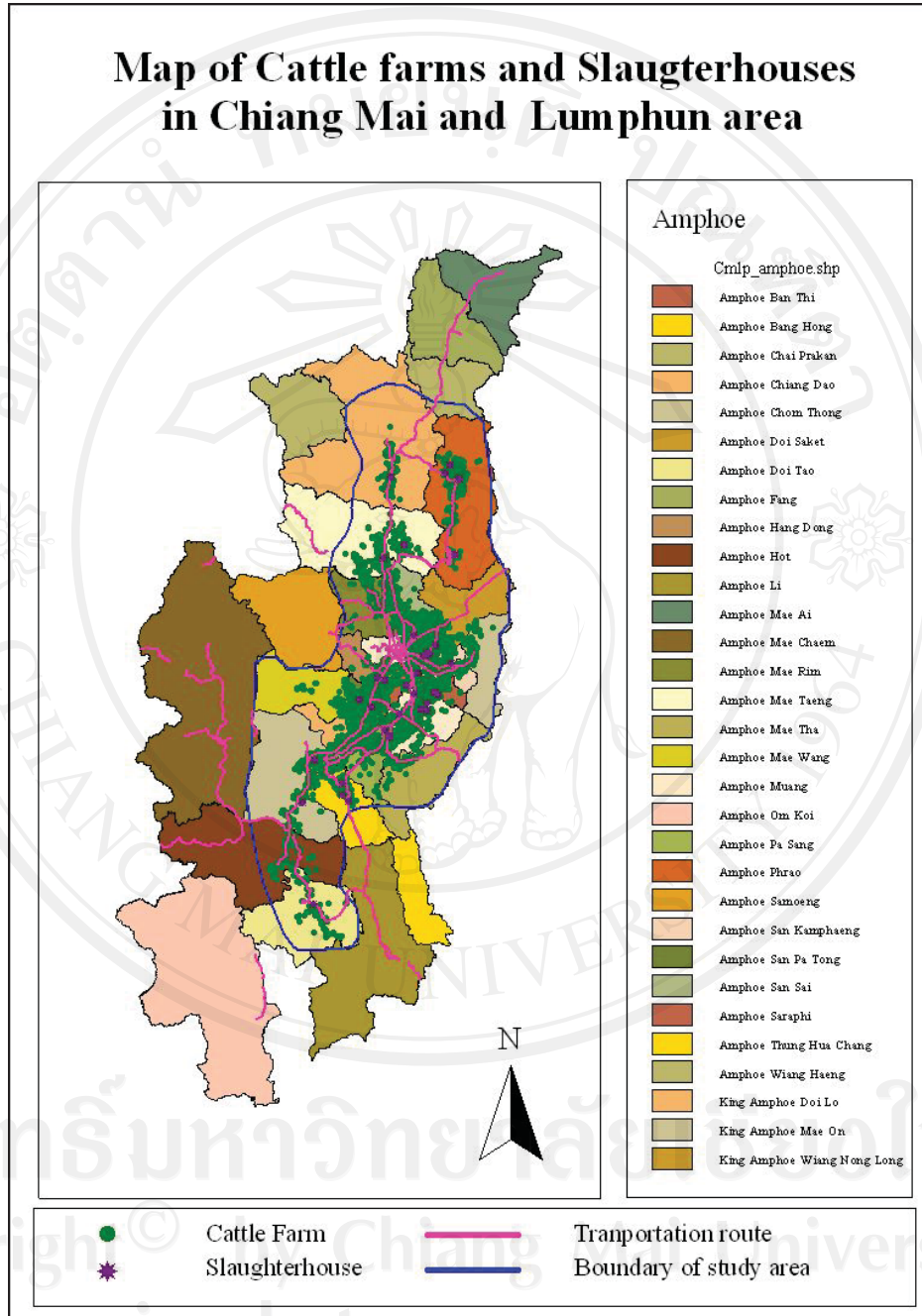


Map of Pig farms and Slaughthouses in Chiang Mai and Lumphun area



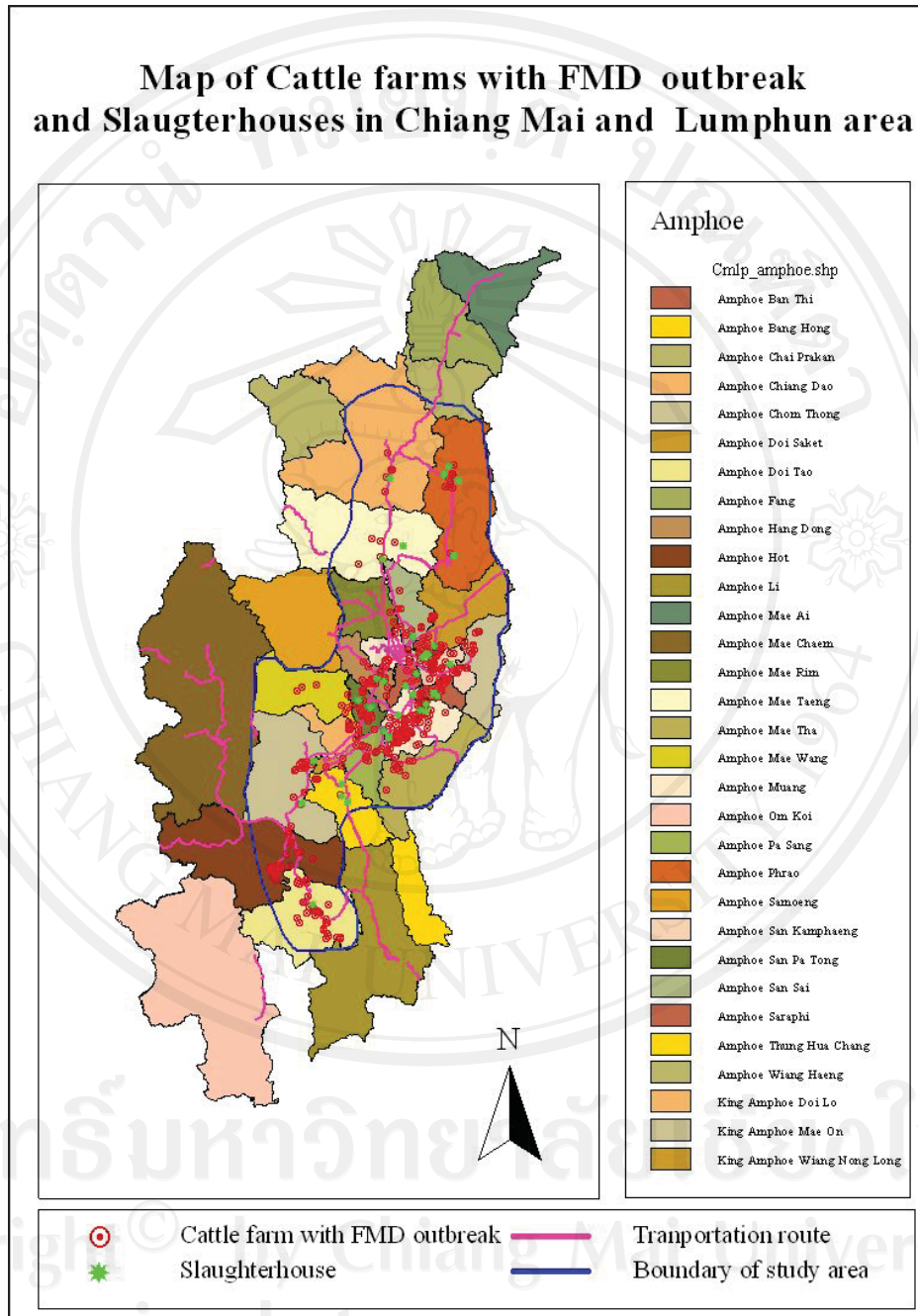
Map of Pig farms with FMD outbreak and Slaughterhouses in Chiang Mai and Lumphun area





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Map of Cattle farms with FMD outbreak and Slaughterhouses in Chiang Mai and Lumphun area



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CURRICULUM VITAE

Name Mr. Terdsak Yano

Birthday 16 February 1980

Academic history 2004 Doctor of Veterinary Medicine
Chiang Mai University, Chiang Mai, Thailand

Scholarship 2005-2007 Scholarship from the Ministry of University Affairs

Work Position Instructor, Swine Clinic, Department of Food Animal,
Faculty of Veterinary Medicine,
Chiang Mai University

Work Address Faculty of Veterinary Medicine, Chiang Mai University,
Mae Hia, Muang, Chiang Mai, Thailand, 50100
Phone: 66-53-948023
Fax: 66-53-274710