Australian Government
Australian Centre for International Agricultural Research

Our challenge is to deliver effective biosecurity in FMD endemic countries in South East Asia

THE UNIVERSITY OF SYDNEY

Presented by

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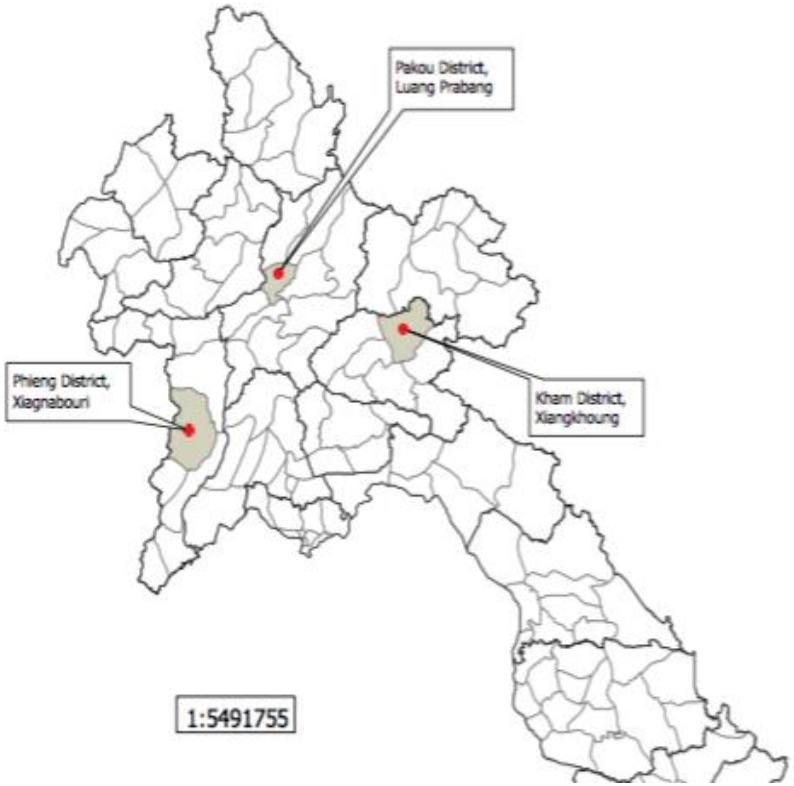
Why is biosecurity important in FMD Control?

- Vaccination alone does not prevent FMDV transmission and circulation
- Effective biosecurity can prevent direct-contact transmission and reduce indirect-contact transmission
- Can improve the long-term sustainability of vaccination programmes

Study Background

"Enhancing transboundary livestock disease risk management in Load PDR"

- Collaboration between USyd and DLF; funded by ACIAR
- Aimed to improve smallholder large ruminant production through reduced disease incidence
- Biosecurity and Vaccination (FMD + HS) key components



Study design

- Animals sampled intermittently over 3 years
  - Villages designated "Biosecurity Only", "Vaccination Only" and "Biosecurity with Vaccination" per province
  - Approximately 20 large ruminants per village sampled
  - Serum collected for FMDV NSP and SP antibodies
  - Body weights and estimated values
- Knowledge, Attitude and Practice surveys and focus group discussions

Results

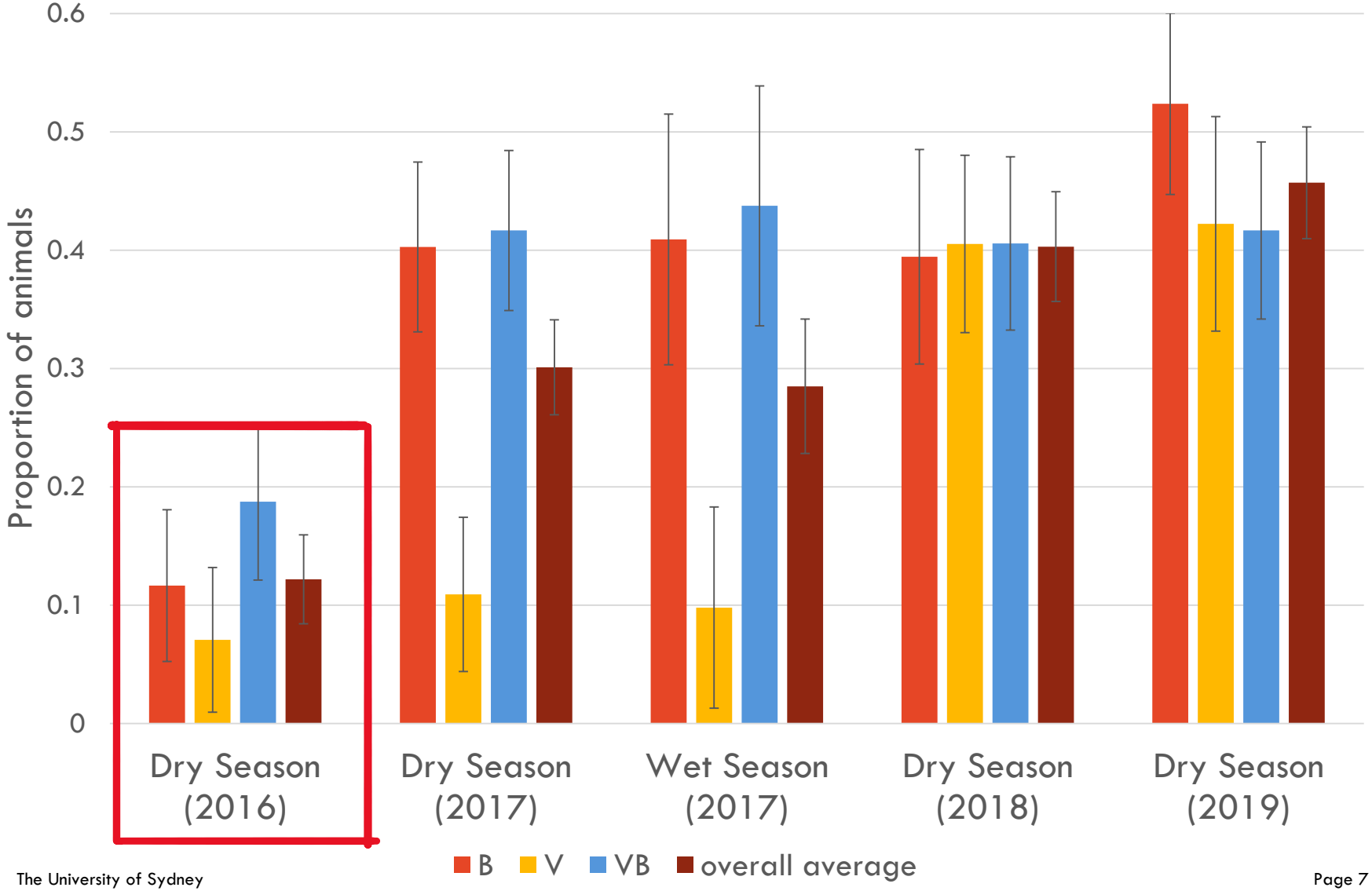
Summary	Total
Serum Samples	640
Biosecurity Only	201
Vaccination with Biosecurity	224
Vaccination Only	215
Animals	180
Farmers	101
Mean age of large ruminants (months)	37.9 (±20.0)
Mean weight (kg)	201.97 (±81.61)
Mean BCS	3.5 (±1)
Mean Estimated Value (Kip)	4.45M (±1.55M)
Samples with no history of Vaccination in previous 6 months	274 (28% NSP+)

Serology – Where were the NSP +ves?

Serology	Total (%)
NSP+ samples (total samples = 640)	178 (27.8)
Type A SP+ samples	146 (82.0)
Type A SP+ Only samples	1 (0.6)
Type O SP+ samples	162 (91.0)
Type O SP+ Only samples	17 (9.6)
Type O & A SP+ samples	145 (81.5)
Samples with no SP results	11 (6.2)

Village Class	NSP + (%)	Type O SP+ only (%)	Type A + Type O SP+ (%)
Vaccination	40 (22.5)	3 (1.7)	35 (19.7)
Biosecurity	60 (33.7)	7 (3.9)	48 (26.7)
Vaccination with biosecurity	78 (43.8)	7 (3.9)	62 (34.8)
Total NSP +ves	**178**	**17**	**145**

Average Proportion of NSP Positive Animals Per Farmer



Generalised linear mixed model

Variable	Odds Ratio	95%CI	P-value
Collection period			<0.0001
2016 (Early) Dry Season	-		
2017 (Late) Dry Season	3.6	2.0-6.56	
2017 Wet Season	5.0	2.4-10.3	
2018 Dry Season	5.4	2.9-10.0	
2019 Dry Season	6.0	3.1-11.4	
Location			0.0008
Pakou, Luang Prabang	-		
Phieng, Xayabouly	2.5	1.5-4.3	
Phoukhood, Xieng Khouang	0.9	0.5-1.6	
Village Classification			0.0009
Vaccination Only	-		
Biosecurity and Vaccination	2.3	1.4-3.7	

Understanding biosecurity

- Quarantine challenges
  - Limited land available
  - Labour intensive – who should be responsible?
  - Too difficult to control livestock interactions
  - Helplessness "*We can't stop disease spreading so what is the point in separating animals*"
- Current quarantine methods
  - Tie an animal up or separate via distance – not successful
- Understanding the value
  - Some farmers understood good biosecurity lead to healthy animals and higher sale prices

Understanding biosecurity

- Project participants had poor understanding of biosecurity
  - Discrepancies in understanding between males and females
  - Poor understanding of the role biosecurity plays in reducing FMD transmission
- Low attendance at biosecurity training sessions
- Evidence of females not attending Biosecurity training

	Females	Males
Explanation of Biosecurity	Vaccination of animals Hand Washing	Treatment of sick animals Cleaning boots Hand washing Washing clothes Vaccination of animals Regularly cleaning animal housing

What does this mean for future FMD control

- Current biosecurity training programmes need review
- Community discussion to identify key challenges to biosecurity
- Effort needs to be made to ensure training activities are inclusive
  - Females
  - Ethnic minorities
- Training programmes need to be able to be tailored to each community
  - Farmers need to be able to see the application to all farmed species
  - Tangible incentives

Acknowledgements

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