

# Smallholder Farmer Biosecurity in Cambodia FMD Control Implications

**Presented by**

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# The challenge of FMD in Cambodia

- Livestock production dominated by smallholder farmers... traditional methods... with some shift to improved technology incl. forage feeding.
- Well reported that biosecurity is poor or even non-existent, yet data on exact issues has been absent.
- FMD outbreaks occurring all the time - estimated 5-10% outbreaks officially reported.
- Needed to clarify baseline biosecurity to support community knowledge needs.
- Vaccination programs need to be supported by public awareness campaigns to be effective and sustainable.

# Hypothesis and Aim

## Aim:

- To understand current biosecurity threats to smallholder cattle farming livelihoods.

## Hypothesis:

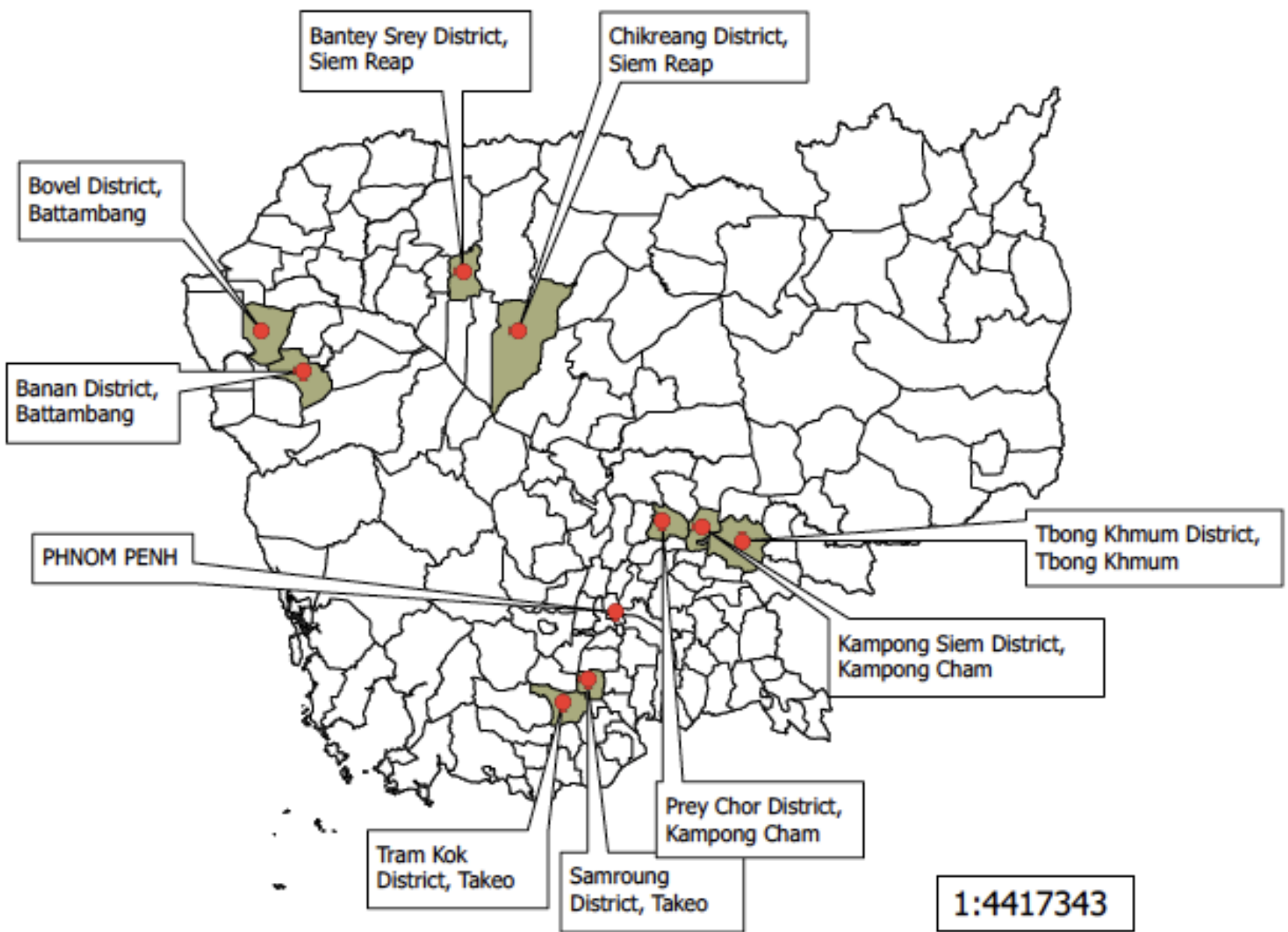
- That smallholder farmers practising FMD risk management will be associated with higher incomes from cattle.
- Study a part of the University of Sydney (USYD), Australia and General Directorate of Animal Health and Production (GDAHP), Cambodia
- Funded by the Australian Centre of International Agricultural Research (ACIAR) – AH/2011/014



# Materials and Method

- As FMD causes deleterious impacts on rural livelihoods, known FMD risk factors and biosecurity were reviewed and investigated, using knowledge, attitudes and practice (KAP) surveys of smallholders (n = 240) from four regions.
- Risk factor review in context
- 15 q's general
- 11 q's knowledge
- 11 q's attitudes
- 13 q's practices
- Multivariable regression with income as outcome



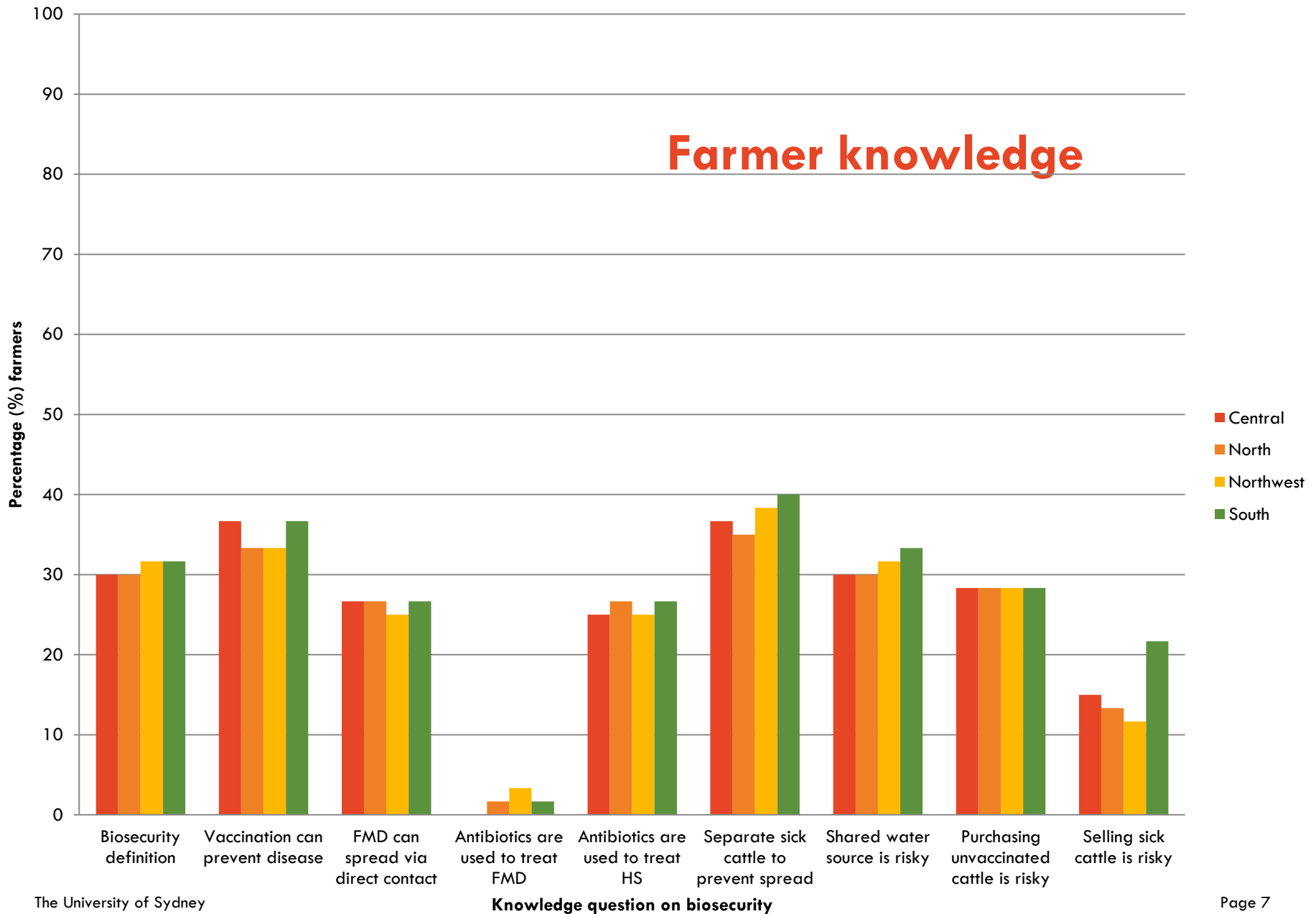


# Results – Review of risk factors in Cambodian context

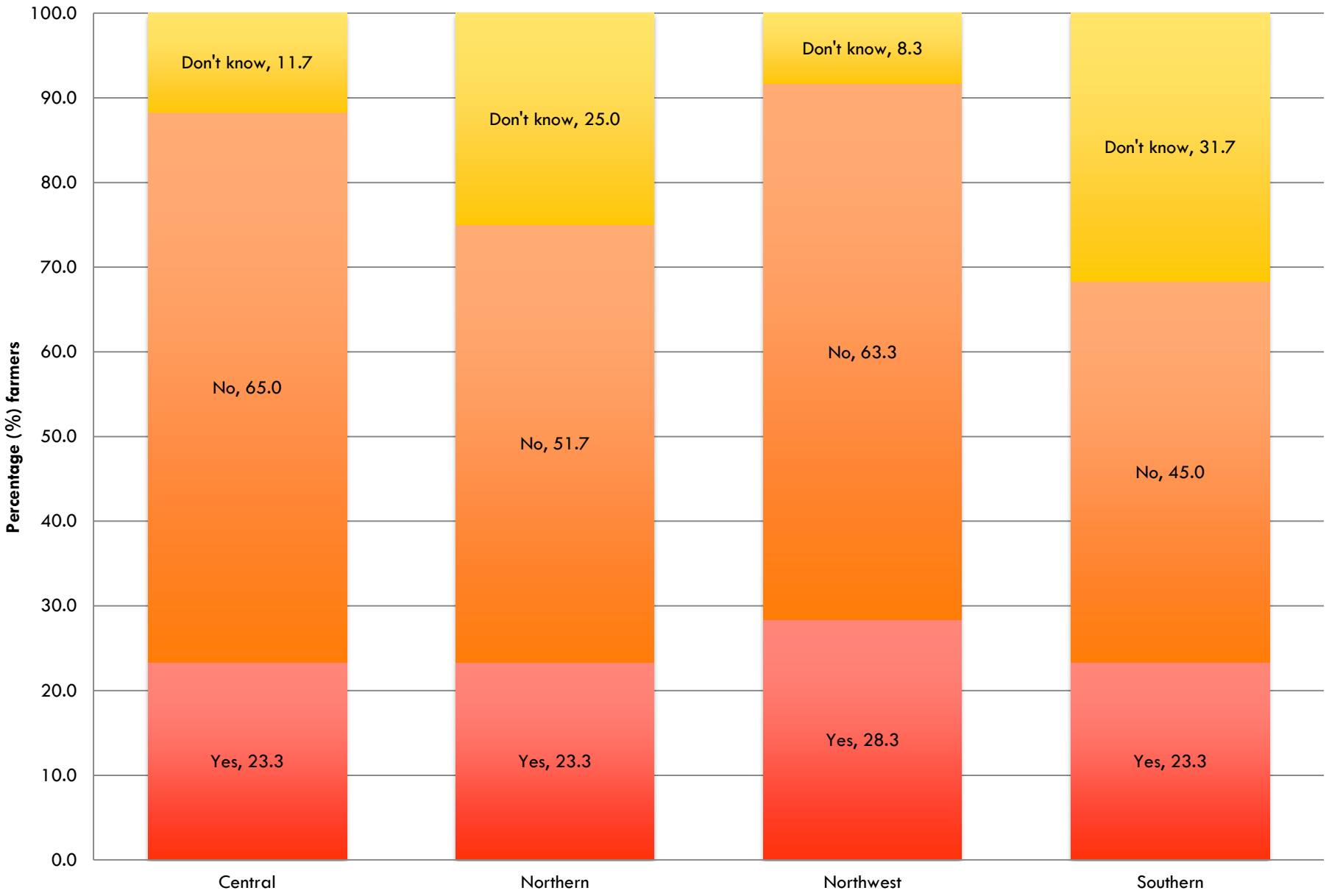
**TABLE 1** Risk factor or practices for FMDV entry into smallholder cattle farm scenarios and proposed biosecurity measures to mitigate these risks

Risk factor or practice	Example scenario(s)	Proposed biosecurity measure(s) to mitigate risk <sup>a</sup>
Susceptible cow or herd has direct contact with an infected animal	A farmer purchases an infected cow <sup>b</sup> and mixes it with his/her existing susceptible cow/herd	<ul style="list-style-type: none"> <li>• Purchase cattle with known health history</li> <li>• Purchase cattle with up-to-date and appropriate vaccination<sup>c</sup></li> <li>• Quarantine (keep separate) newly purchased cattle for 2 weeks before herd introduction</li> <li>• Appropriately vaccinate newly purchased cattle</li> <li>• Develop widescale herd immunity through coordinated vaccination campaigns (i.e., SEACFMD)</li> </ul>
	An infected animal <sup>b</sup> (buffalo, pig, goat) has direct contact with susceptible cow or herd	<ul style="list-style-type: none"> <li>• Purchase animals with known health history</li> <li>• Appropriately vaccinate all livestock</li> <li>• Do not feed swill to pigs</li> </ul>

# Farmers (%) who correctly answered knowledge questions in each region



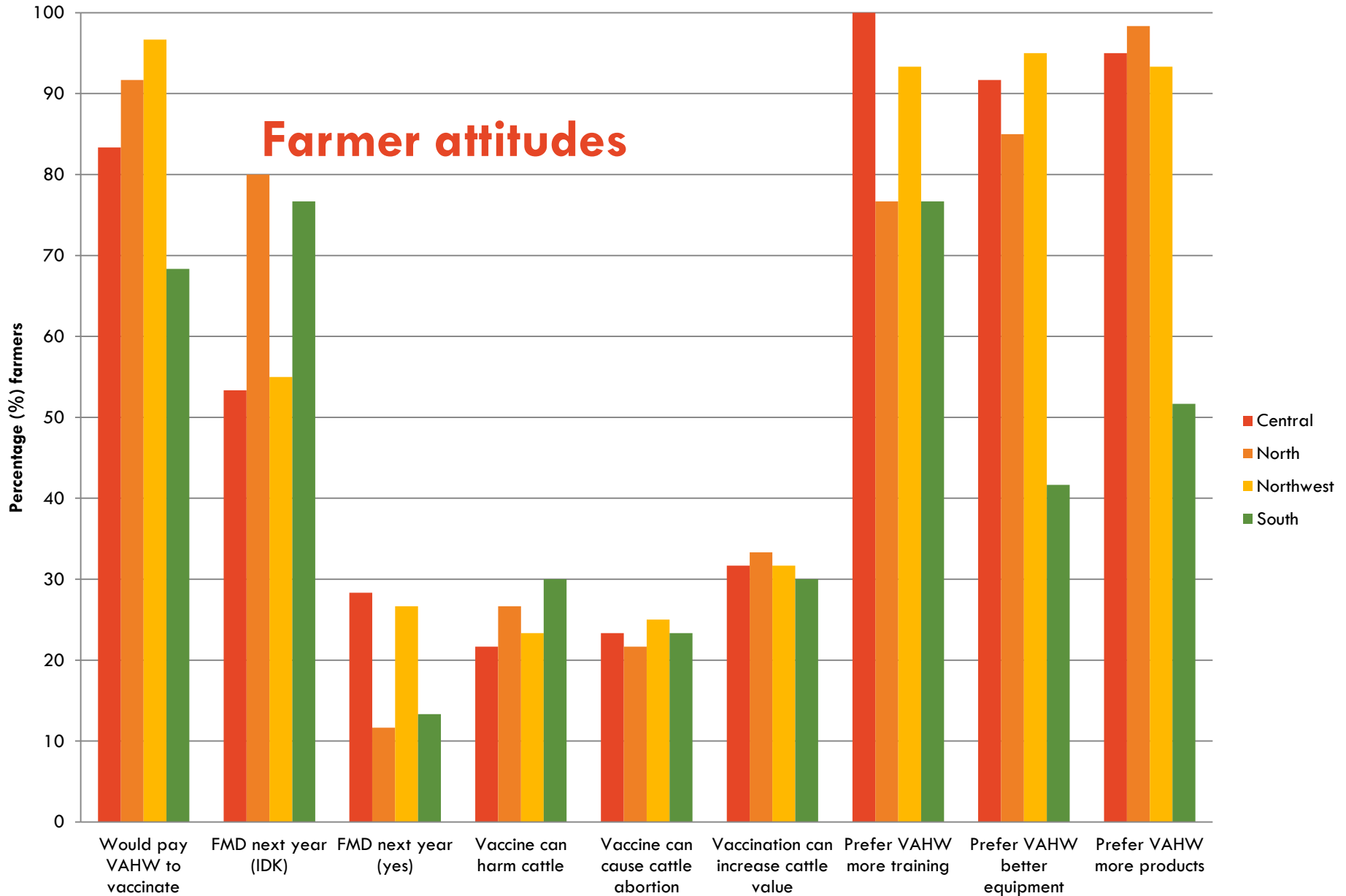
# FMD? Farmers (%) with cattle affected by FMD in last 12 months in each region



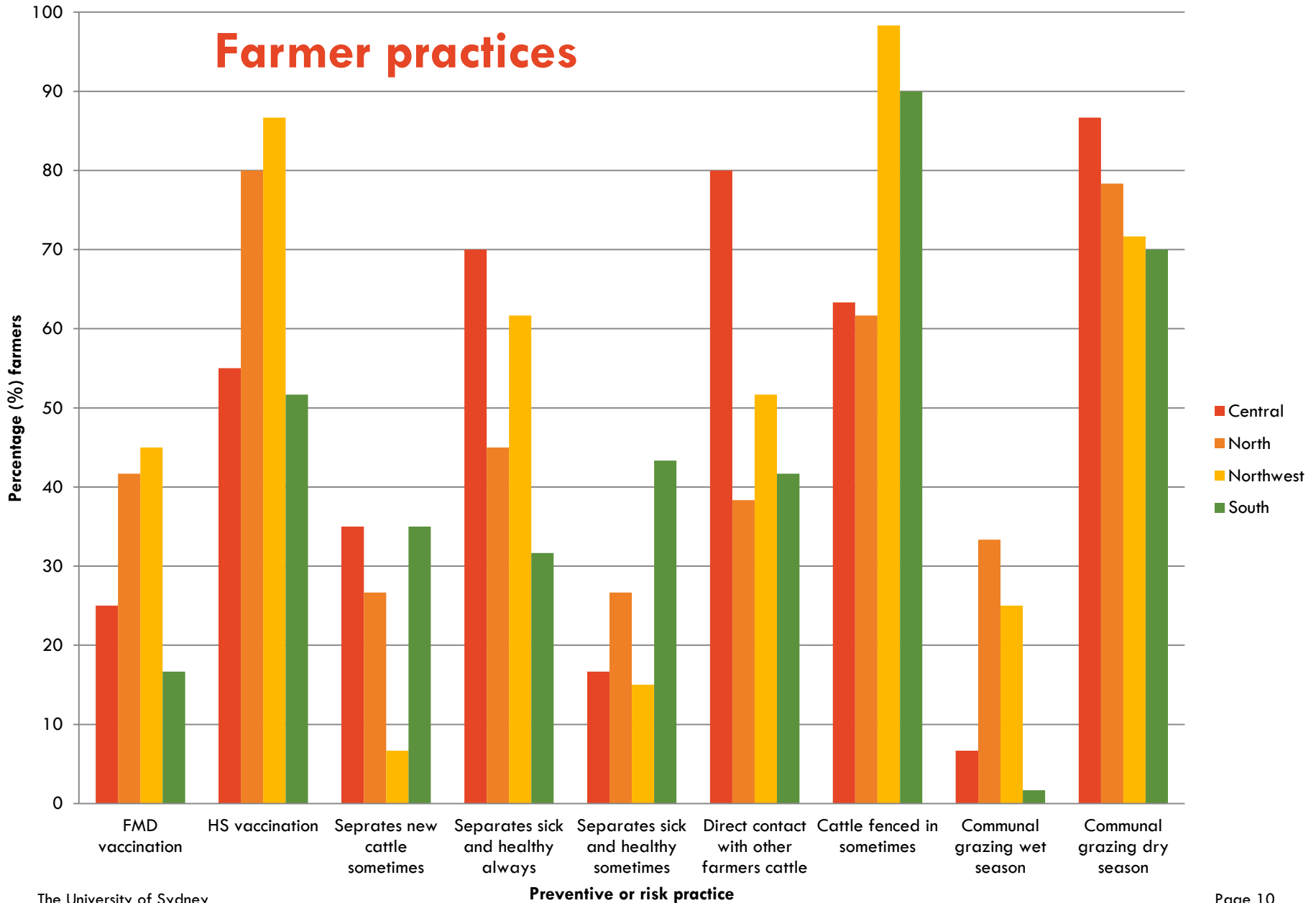


# Farmers (%) attitudes towards cattle biosecurity in each region

## Farmer attitudes



# Farmers (%) undertaking preventive or risk practice in each region



# Results and Conclusions

- Baseline mean knowledge scores were low at 28.4%
- Basic biosecurity practices, including quarantine of new cattle, isolation of sick cattle and FMD vaccination, were lacking.
- Farmers purchase and sell cattle at various administration levels (including export) = high risk
- Significant explanatory parameters for annual cattle income: **region, number of calves born, forage plot size (ha), vaccination of cattle and the number of cattle purchased** (F pr. < 0.001, R<sup>2</sup> = 29.9).
- **Individual biosecurity practices including FMD vaccination were not significant predictors of income.**
  - WHY? Levels probably too low to have impact, will retest at end of project

# Recommendations

- Focus of farmers on treatment of FMD with antibiotics
- AMR part of FMD conversation?
- Need for a coordinated national biosecurity and FMD management public awareness campaign.
- Livestock development programs should implement a **systems approach** to enhance farmer KAP in biosecurity, nutrition, reproduction and marketing of cattle = **improving livelihood outcomes.**

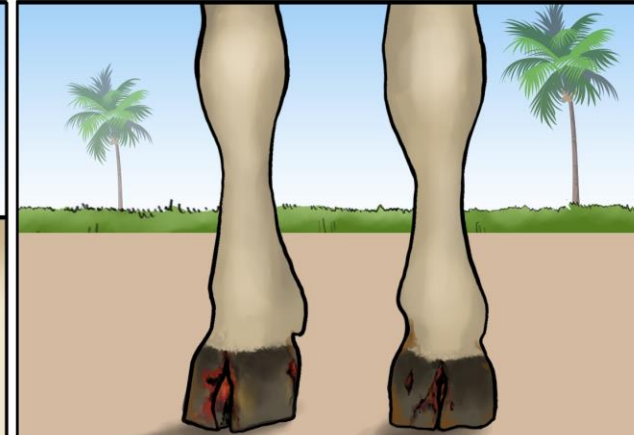
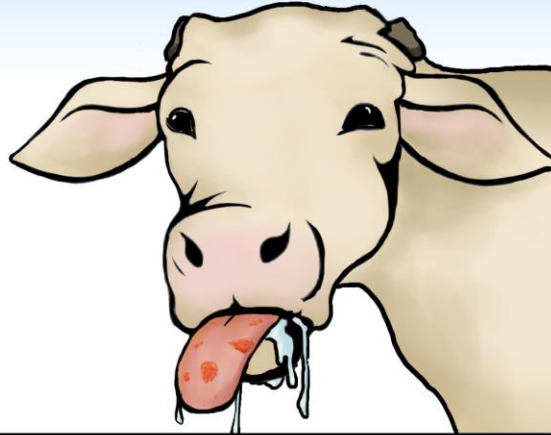


# Trialing innovative communication tools

How do I know if my cow has foot-and-mouth disease?

Usually the first sign is they have a fever and may stop eating and look ill.

They can get ulcers on the tongue and in the mouth and this makes them drool excessively.

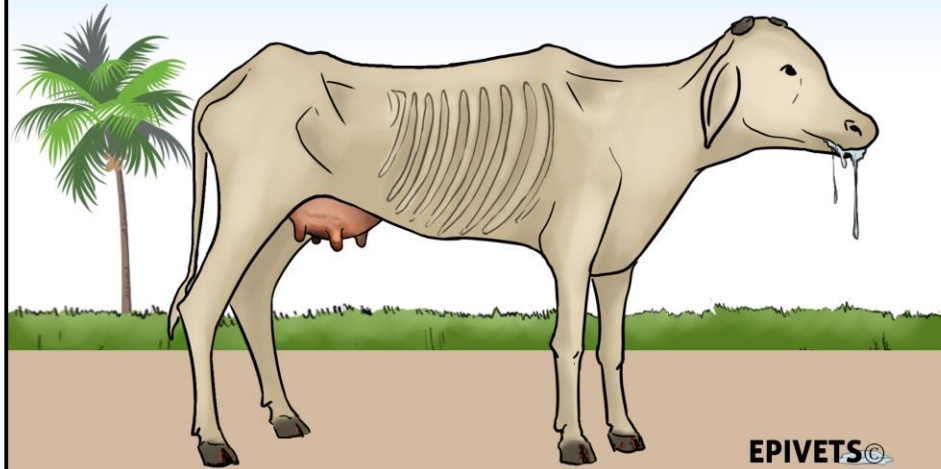


They can get ulcers around or between their feet and this makes it painful to walk.

[www.epivets.com](http://www.epivets.com)

Often they are sick for 1-2 weeks and will lose a lot of weight. A small amount of cattle may die, but most will survive.

They can get ulcers on their teats on their udder, which can make it hard for calves to suckle milk.



# Acknowledgements

ORIGINAL ARTICLE

WILEY Transboundary and Emerging Diseases



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## Investigation of smallholder farmer biosecurity and implications for sustainable foot-and-mouth disease control in Cambodia

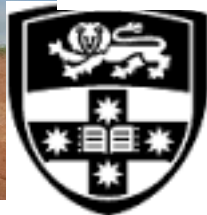
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### Summary

In Cambodia, the majority of the population is rural and reliant on subsistence agriculture, with cattle raised by smallholder farmers using traditional practices, resulting in low productivity and vulnerability to foot-and-mouth disease (FMD). As FMD



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