



Factors Influencing the Adoption of Biosecurity Activities on Broiler and Layer Farms in Indonesia

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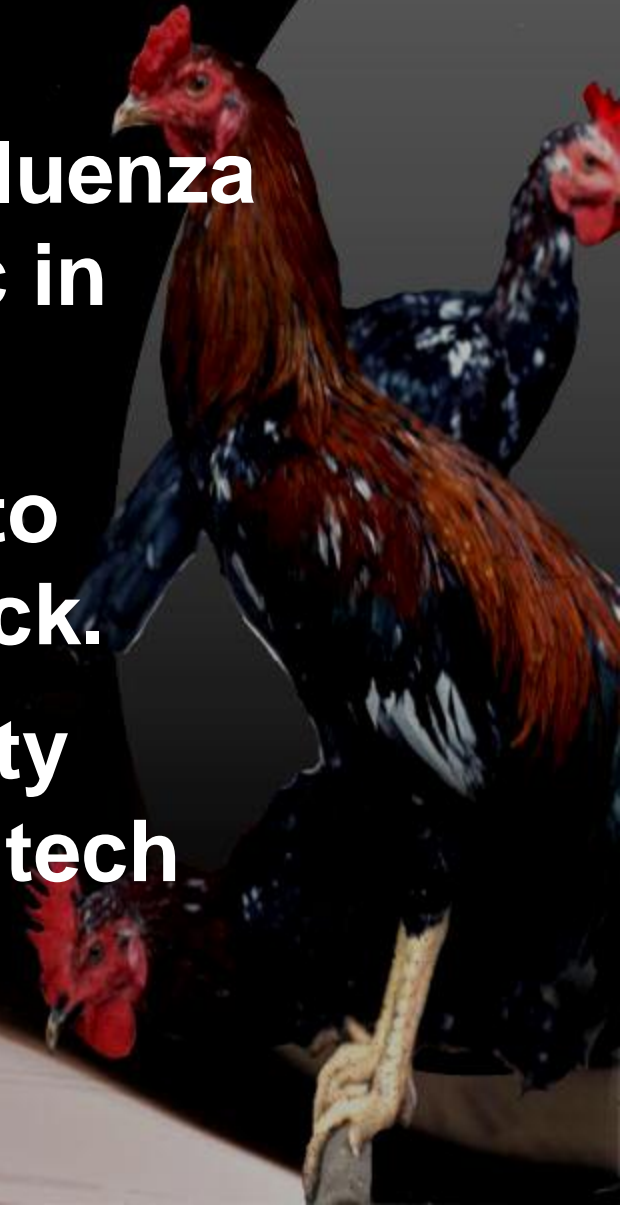
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Background

- ❖ **Highly Pathogenic Avian Influenza (HPAI) has become endemic in Indonesia**
- ❖ **Biosecurity – management to keep diseases out of the flock.**
- ❖ **Poultry farm-level biosecurity varies from simple to high-tech**



Objectives

- 1. Develop a useful method of measuring and comparing biosecurity adoption on NICPS farms**
- 2. Identify factors that influence biosecurity adoption on non-industrial commercial poultry sector (NICPS) broiler and layer farms in Indonesia**



Scope of Paper

1. Data collection
2. Dependent variable
3. Independent variables
4. Factors affecting biosecurity

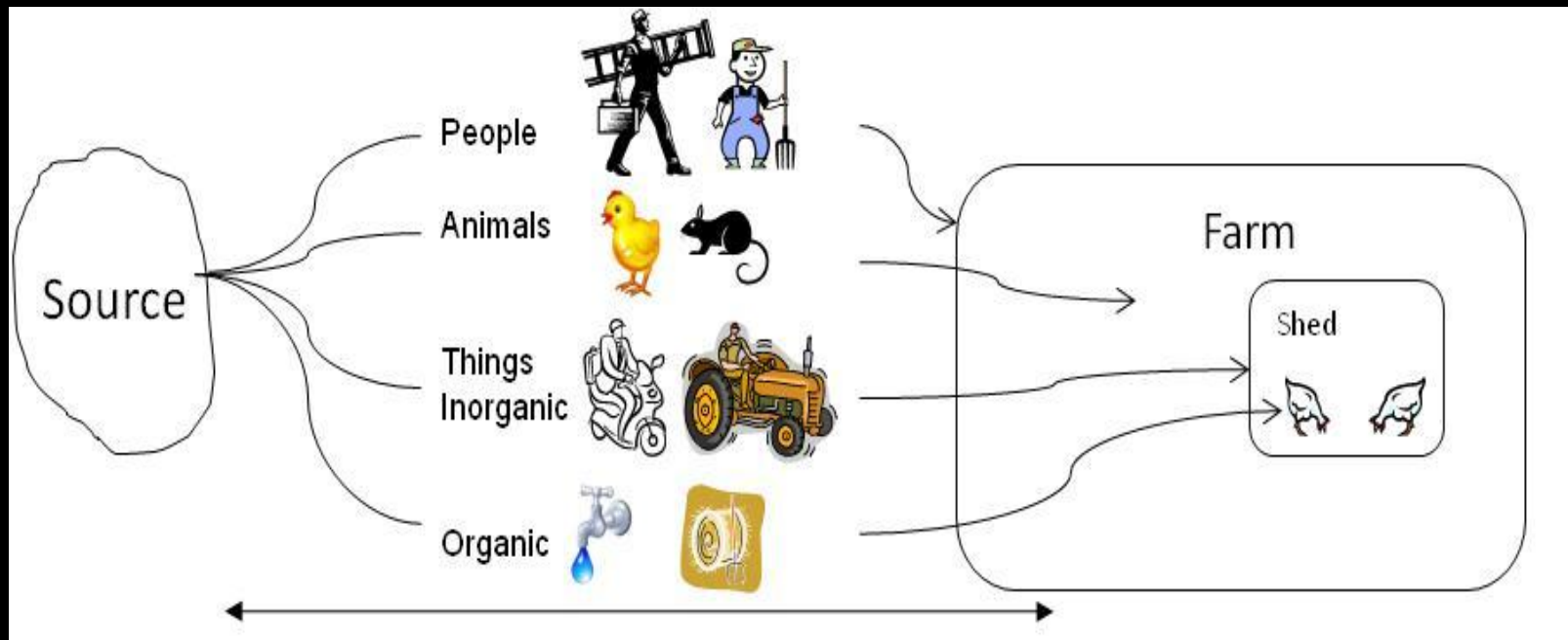


Data collection

1. Location : West Java and Bali
2. Respondent : NICPS Layer and Broiler farmer
 - Bali : 60 layer, 60 broiler
 - West Java : 41 layer, 67 broiler
 - Randomly selected from FAO and Provincial Department of Agriculture census data of NICPS
3. The survey was undertaken by ICASEPS and Udayana University (Bali)



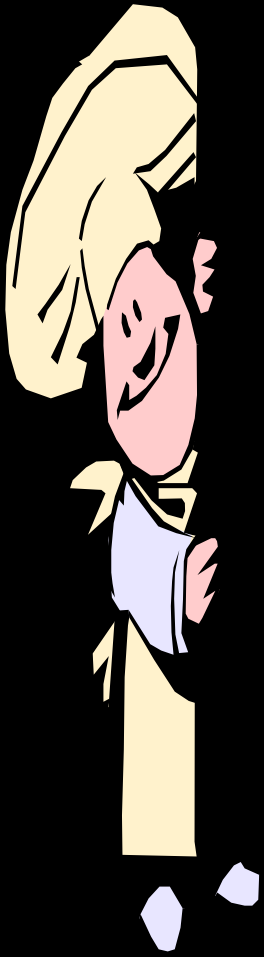
Biosecurity 'stages'



1. Vector/fomite status of farm inputs
2. Traffic on to farm
3. Biosecurity at farm boundary

4. Biosecurity between farm boundary and shed
5. Biosecurity at the shed door
6. Traffic into shed
7. Susceptibility of flock

Dependent Variable



Farm biosecurity control score (BCS)

BCS1 - aggregation of 44 risk indicators

BCS2 – aggregation of 7 stages

BCS1 used as the dependent variable

Biosecurity status in Bali

Farm level (Table 5)

- Broiler smallholders higher BCS than layers
- Surprising?
 - Contract farmers - better technical and biosecurity advice
 - Layer farmers more likely to be independent producers.

Stage level (Table 6)

- Broilers higher for stages 1,4,5,6, 7
- No difference for stage 3 (at farm gate)
- Layers higher for stages 2 (traffic onto farm)



Biosecurity status in West Java

Farm level (Table 5)

- Layer smallholders higher BSC than broilers, BCS2 no difference
- Why? Maybe look at stages

Stage level (Table 6)

- Broilers higher for stage 1
- No difference for stages 2,4,5, 6
- Layers higher for stages 3,7
- Biosecurity at the farm gate (3) is very different



Biosecurity status in broiler farms

Farm level

- No difference
- All under the same contract

Stage level

- Bali broilers higher for stage 4
- No difference for stages 1,2,3,5
- West Java broilers higher for stages 6,7



Biosecurity status in layer farms

Farm level

- West Java much higher status than Bali

Stage level

- Bali layers higher for no stages
- No difference for stages 4,6
- West Java layers higher for all other stages



Potential farmer characteristics affecting biosecurity adoption

Variable
Age
Education
Farming experience
Household size
Household head and family labour
Other labour
Contract poultry management system (independent or contract)
Asset ownership (motor bike, television, land (dry and irrigated), native chicken, and ducks)
Non-poultry income
On-farm decision-making
Experience in HPAI

Characteristics of poultry farmers

- ❖ The average age of HH heads 43 years, ranged from 19-65 years
- ❖ Education: Senior high school
- ❖ Farming experience: 9 years, ranged from 1- 30 years
- ❖ Working on farm 74% full-time
- ❖ Experience in HPAI at own farm
 - broiler : 0 – 3 %
 - layer : 17 – 27 %



Potential farm characteristics affecting biosecurity adoption

Variable
Number of farms and sheds
Total land area of farm/s
Capacity of farm/shed (average and total)
Distance from sources of risk
Birds in staff houses
Social capital and agency

Number of farms and sheds

Total land area of farm/s

Capacity of farm/shed (average and total)

Distance from sources of risk

Birds in staff houses

Social capital and agency

Farm Characteristics

Item	West Java		Bali	
	Layer	Broiler	Layer	Broiler
Number of farms (unit)	1.3	1.7	1.9	1.2
Number of sheds (unit)	17.0	6.8	9.6	1.6
Land area of farm (m ²)	19,778	2,600	1,600	1,298
Capacity of farm (bird)	49,203	8,765	8,930	4,875
Total capacity of all farms (bird)	59,996	20,640	21,982	5,767
Average capacity of all sheds (bird)	2,925	2,226	2,402	4,294
Number of farm entrances	1.3	1.9	1.3	1.2

Factors affecting biosecurity adoption on layer and broiler farms

Variable	Layer (R ² = 0.9670)	Broiler (R ² = 0.9581)
Characteristics of farmers :		
Age	0.97336 ***	0.79781 ***
Education	1.73117 ***	0.84161 ***
Non-poultry income	-0.000017 *	0.0000923
Household size	0.40936	2.85157 ***
Characteristics of farm :		
Land area of farm	0.000225 **	0.000618 **
Distance to neighbour poultry	0.0107 **	0.00665 **
Distance to road	0.00537	0.00911 **
Dummy farm management	12.52574	2.46004
Number of farm	1.74017	3.78263 **
Average capacity	0.000374	0.00172 ***

Summary

- ❖ **Developed a useful method of measuring the adoption of biosecurity on poultry farms in Indonesia**
- ❖ **In Bali broiler farms had a higher level of adoption than layer farms.**
- ❖ **In West Java the biosecurity adoption in layer farms was higher than in broiler farms.**
- ❖ **Older more educated farmers with larger families are more likely to adopt better biosecurity in layer and broiler farms.**
- ❖ **On layer farms, farmers with fewer non-poultry sources of income will have better biosecurity**
- ❖ **Farm size (area and capacity) - bigger the better on broiler farms**
- ❖ **Distance of layer and broiler farms from neighbour's poultry and nearest road – further the better**

Conclusions

- ❖ The BCS allows us to logically differentiate and discuss biosecurity differences in NICPS farms
- ❖ The unique characteristics of farmers and farms should be considered during the process of encouraging the improvement of poultry farm biosecurity.

There is no 1 size fits all

- ❖ Increasing the adoption of biosecurity in NICPS farms requires an understanding of :
 - ❖ the level of farmer adoption of biosecurity,
 - ❖ identification of the significant factors that influence biosecurity adoption,
 - ❖ identification of cost effective activities that minimize the risk of disease spread and benefit all stakeholders in the market chain

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