

Animal disease control and Food security in Timor-Leste

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Abstract

Most (>80%) people in Timor - Leste rely on Agriculture include animal husbandry as their livelihood. According to Census 2010, 86% of total household keep livestock. If this animals are infected and died due to endemic diseases, it can affect food security of the livestock farmers. Most common endemic diseases in Timor - Leste include Newcastle Disease (ND) in poultry, Classical Swine Fever (CSF) in pigs and Septicemia Epizootic (SE) and Brucellosis in both buffalos and Bali cattle. Controlling and prevention of these endemic animal diseases play an important role and have implications for food security. To control these diseases every year government via Ministry of Agriculture and Fisheries (MAF) spend >US\$100,000 to purchase vaccine for the three major livestock diseases (ND, CSF and SE). However no research has been done to investigate the vaccination coverage of these three major diseases. Therefore the objective of this research was to know the vaccination coverage of ND in village chickens, CSF in pigs and SE in both buffaloes and Bali cattle and their implication to food security in the country. The finding of this research is that the vaccination coverage is low (<50%), which is not sufficient to provide herd immunity to our livestock. In order for the vaccination to provide herd immunity it has to have at least 75% coverage. The highest vaccination coverage was in buffalo (47.1%) and the lowest one is in village chicken (17.6%). This study has indicated that 53.3% of village chickens, 19.0% Bali cattle, 19.6% of buffalo, 29.8% of pigs died every year. Although it cannot be specified in this study, which diseases have caused the death of animals, but it is most likely to be due to existing endemic disease because the vaccination coverage is low. If the death of these animals can be prevented, the animals could have been sold and the money can be used to buy food and provide more food security to livestock farmers.

Introduction

According to census 2010, majority (86%) of Timorese households (HH) keep livestock. Of the 86% household that keep livestock, 67.5% HH keep the total of 702,474 chickens, 67.1% HH keep 330,435 pigs, 24.8% keep 152,360 goats, 23.3% HH keep 161,654 cattle, 15% HH keep 57,819 horses, 10.4% HH keep 94,664 buffalos and 4.0% HH keep 41,854 sheep. However, there are many diseases that affect livestock in this country. These diseases are Newcastle Disease (ND), Classical Swine Fever (CSF) and Septicaemia Epizootic (SE). These diseases can be prevented through vaccination program. However in order for the vaccination to have impact, it has to have high vaccination coverage (at least 75% of total animals has to be vaccinated). If the vaccination coverage is high, the dead of animals can be prevented and this in turn can provide more food security to livestock farmers. The vaccination program for animals has been done for many years after independent and cost over \$100,000/year, however the investigation on the vaccination coverage has never been done. The objective of this study is to know the vaccination coverage of the main diseases (ND, CSF and SE).

Materials and method

Site selection

Sites selection were done randomly for municipalities, administration posts and villages. From the selected Municipalities, 3 villages were selected randomly to represent each region as shown in the following table. Of the selected villages, at least 10% of households who raised chickens, pigs, Bali cattle or buffalo were interviewed using structured questionnaires.

Region	Municipality	Administration post	Suco/village
West	Covalima	Fohorem	Fohorem, Lactos, Dato Rua
Central	Manatuto	Laleia	Lifau, Uma Clalan, Cairui
Oeste	Lautem	Iliomar	Iliomar I, Fuat and Cainliu

Results and discussions

Based on the criterias determined, the total of 254 households who keep four main livestock (Village chickens, pigs, buffalos and Bali cattle) were interviewed. Of the 254 households interviewed they keep the total of 9326 heads of animals. Of these animals 41.3% are village chickens, 26.4% are Bali cattle, 19.7% are pigs, 12.4% are buffalo and 0.2% are ducks as shown in the following table.

Species	Total	Average	S.E. Mean	Total vaccinated	Vaccination rate	Total Sick	Morbidity rate	Total died	Mortality rate
Village chicken	3850	15.2	0.9318	678	17.6%	2064	53.6%	2053	53.3%
Bali cattle	2460	9.7	0.7618	745	30.3%	545	22.2%	467	19.0%
Buffalo	1156	4.6	0.7595	545	47.1%	249	21.5%	226	19.6%
Pigs	1839	7.2	0.4202	522	28.4%	651	35.4%	548	29.8%

Every year, the vaccinations against the three major diseases of livestock are done by government. However in reality many animals are still dying. When vaccinated animals still suffer from diseases or dying from the diseases, it indicates that the vaccination coverage is too low or that vaccination does not provide perfect immunity, allowing the virus to spread in partially vaccinated population (van Boven et al. , 2008). This study has shown that the vaccination coverage was below 50%. The highest vaccination coverage was in buffalo (47.1%), followed by 30.3% in Bali cattle, 28.4% in pigs and the lowest one is in village chicken (17.6%) These vaccination coverage do not provide herd immunity because it can only provide herd immunity when the vaccination coverage at least 75% of total population. The low vaccination coverage has resulted in 53.3% of village chickens, 19.0% Bali cattle, 19.6% of buffalo, 29.8% of pigs died every year. Although it cannot be specified in this study, which diseases have caused the death of animals, but it is most likely to be due to existing endemic disease because the vaccination coverage is low.

Disease occurrences can cause economic losses and have impact of food security. For example if we apply the mortality rate as reported in this survey, the total selected animals died per year (based on total animal population registered in Census 2010) in the entire nation would be: 3744 chicken, 985 pigs, 307 Bali cattle and 186 buffaloes and the total lost would be at least US\$422,280.00 annually (assuming the average price of a chicken at \$7.5, a pig \$200, and Bali cattle & buffalo each at the price of \$400). If a 25 Kg sac of rice cost \$12, this much money could have been used to purchase 35,190 sacs of rice and provide more food security for poor families in rural areas.

Conclusion

The vaccination coverage for the three major diseases (17.6 for village chickens, 30.3 for Bali cattle, 47.1% for buffalos, 28.4% for pigs) are still inadequate to provide herd immunity to our livestock in Timor - Leste. It is recommended that Government of Timor - Leste through Ministry of Agriculture and Fisheries (MAF) need to increase the vaccination coverage rate to reduce mortality rate due to local endemic diseases to promote food security in the country.

Reference

Van Boven, M., Bouma, A., Fabri, T.H.F., Katsma, E., Hartog, L. (2008). Herd immunity to Newcastle Disease virus in poultry by vaccination. Avian Pathology (February 2008), 37(1), 1-5

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