Brucellosis Reduction Using Co-design Elements (BRUCE-TL)

National Workshop

23rd May 2024

This report summarises the discussions at the BRUCE-TL National Workshop held at JL Villa, Dili, Timor-Leste on 23rd May 2024.

The BRUCE-TL work is co-funded by the Australian Centre for International Agricultural Research (ACIAR) and the International Development Research Centre (IDRC).

Background

The (Brucellosis Reduction Using Codesign Elements – Timor Leste) BRUCE-TL program is implemented by Menzies School of Health Research in collaboration with Ministry of Health (MoH) and Ministry of Agriculture, Livestock, Fisheries and Forestry (MALFF) and funded by IDRC and ACIAR. It aims to identify risk factors for bovine brucellosis transmission and facilitate implementation of evidence-based brucellosis control measures in Timor-Leste using a participatory and One Health approach.

Brucellosis is an important neglected zoonotic disease that affects both humans and animals. In humans, the disease especially affects those in high-risk occupations such as farmers, with the most significant complications being stillbirth and pregnancy loss. In livestock, especially cattle, brucellosis is a trade barrier and a key constraint for production through reduced reproductive performance which negatively affects farmers income and livelihoods.

The National Workshop aimed to provide a platform for stakeholders from both the national and municipal levels to discuss brucellosis management in cattle and humans based on BRUCE-TL Activity 1 findings (i.e. seroprevalence and risk factors for brucellosis in cattle and humans, and the knowledge, attitudes and practices on brucellosis among cattle farmers); and to promote One Health collaboration on brucellosis. The National Workshop of the BRUCE-TL program was held on 23 of May 2024 at JL Villa Fatuhada. The Workshop started at 9:00am and discussions continued till 4:00pm.

Activities

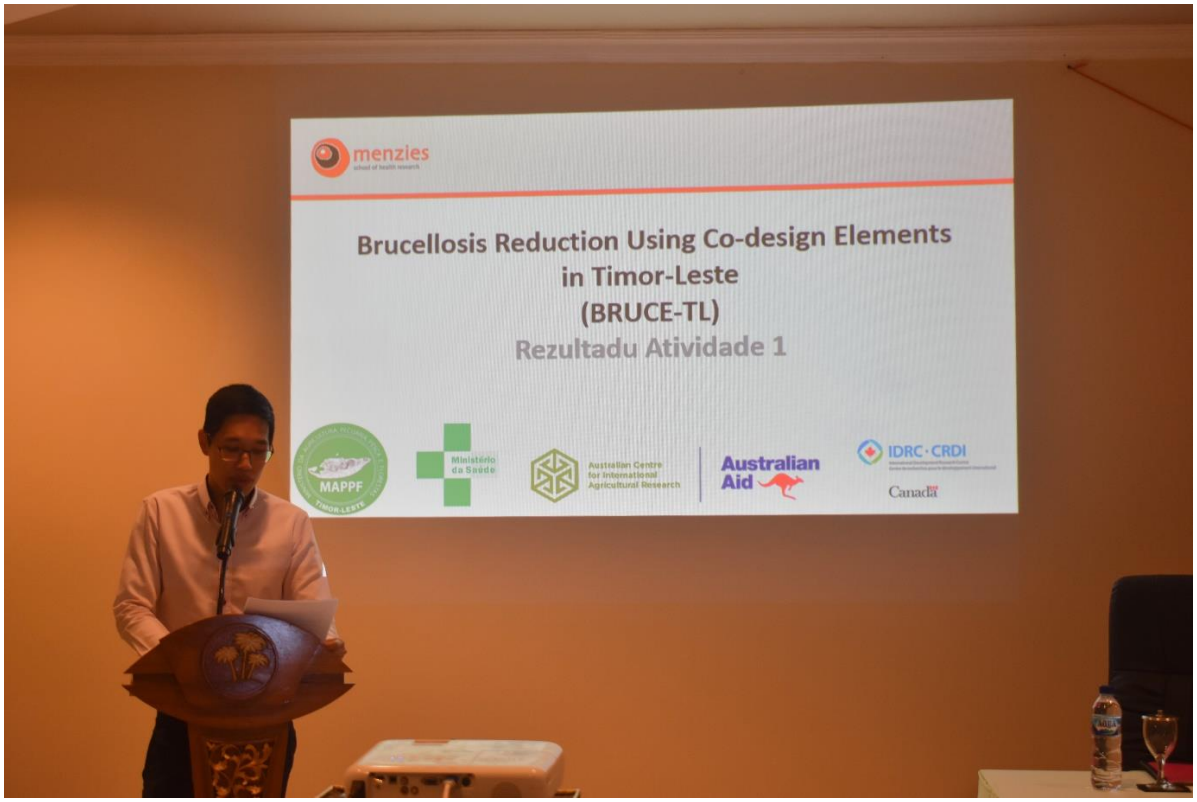
Activities conducted during the National Workshop on BRUCE-TL were as follows:

1. **Opening remarks** by Dr Shawn Ting (Senior Research Fellow, Menzies), Dr. Florindo (Director, Directorate for Disease Prevention and Control, Ministry of Health) and Ex Sr. José Vieira de Araujo (Secretary of State for Livestock, MALFF)
2. **Presentations**
    - Dr. Joanita Jong (Brucellosis in cattle)
    - Dr. Felipe de Neri Machado (Brucellosis in humans)
    - Dr. Merlinde Freitas (BRUCE-TL Activity 1 results)
3. **Discussion** on brucellosis and BRUCE TL Activity 2.

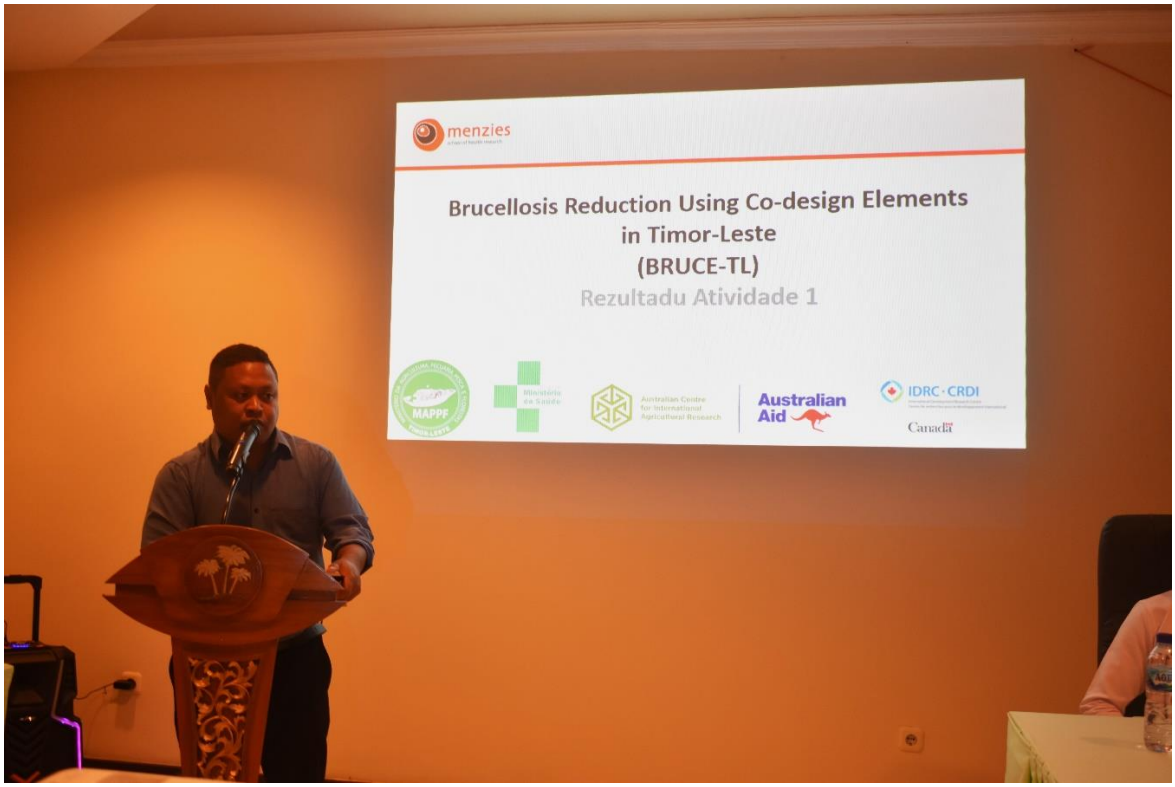
The National Workshop was attended by:

- Menzies School of Health Research (Menzies)
- Australian Centre for International Agriculture Research (ACIAR)
- Instituto Nacional de Saude Publica de Timor-Leste (INSPTL) and Ministry of Health (MoH).
- National Department of Veterinary (NDV), and Sua Ex. Secretary of State of Livestock, Ministry of Agriculture Livestock, Fisheries and Forestry (MALFF)
- Hospital Nacional Guido Valadares (HNGV)
- Bobonaro Municipal Authority
- Bobonaro Municipal Agriculture Services
- Bobonaro Municipal Health Services
- Bobonaro Department of Non-Governmental Organization (NGO)
- East Timor National University (UNTL)
- To'os ba Moris Diak (TOMAK)
- World Health Organsiation (WHO)

Opening Remarks



Dr. Shawn Ting (Project Lead/Senior Research Fellow, BRUCE-TL, Menzies School of Health Research) welcome everyone to the national workshop and expressed his gratitude to the collaboration. He was positive that study results could be presented less than a year after the BRUCE-TL Launch in June 2023. He commented on the strong participation from the human health and animal health sector at both national and municipal levels. He expressed gratitude to the community for participation in the BRUCE-TL study. He looked forward to sharing study findings and said it could be used to facilitate useful discussions.



Dr. Florindo Pinto Gonzaga (Director, Directorate of Disease Prevention and Control, Ministry of Health) said that brucellosis is one of the public health problems in Timor-Leste. He was grateful that Menzies has held an activity that provides an opportunity for discussions to control the disease as it affects human health and the economy. He highlighted a need to collaborate.

Sua Ex Sr. José Vieira de Araujo (Secretary of State for Livestock, MALFF) expressed thanks to Menzies and to all the participants from the municipality, and to all the agencies national or municipal which were present. He expressed thanks to the work that Menzies did in the past as well. He was positive about having a workshop to discuss brucellosis from a One Health perspective. He encouraged Menzies to continue to work with Timorese people to investigate the disease through research.

Presentations

Dr Joanita Jong (National Director of Veterinary, MALFF) presented on brucellosis in animals, with a focus on brucellosis in cattle. It was highlighted that brucellosis was a barrier to international trade and among the top five animal diseases for priority action in Timor-Leste. A 2023 serological survey in border municipalities by MALFF including over 1000 cattle in 98 sucos (villages) found that brucella seroprevalence was around 48%. Transmission pathways for brucellosis spread between cattle were explained, and it was highlighted that there was no effective treatment for cattle after infection. Disease control options for brucellosis in cattle include (1) public education on good hygiene and animal management practices, (2) vaccination and (3) ongoing surveillance, and (4) slaughter of cattle with poor reproduction. Brucellosis vaccination using Strain19 is planned in four villages in Maliana Administrative Post for female calves between 3 to 6 months old in 2024. Vaccinated cattle need to be identified via ear tag or ear notching.

Dr Felipe de Neri Machado (National Director of Public Health, INSPTL) presented on brucellosis in humans, focusing on the epidemiology. It was highlighted that symptoms for brucellosis were non-specific, with many other differential diagnosis such as tuberculosis, HIV and malaria. Laboratory diagnosis is difficult in humans. Prevention strategies against brucellosis were presented which includes (1) wearing gloves when handling aborted/birth material (2) avoiding consumption of aborted material (3) avoiding raw milk consumption and (4) covering wounds. Treatment for brucellosis is possible with humans but should be based on a doctor's diagnosis.

Dr Merlinde Freitas (Veterinarian, Menzies) presented on the BRUCE-TL Activity 1 findings. It showed that cattle herds exposed to brucellosis are more likely to have abortions, providing evidence that reducing brucellosis can benefit the community through less abortions.

Key findings:

- 16 of human participants were exposed to brucellosis. This is the study demonstrating evidence of brucellosis exposure in humans in Timor-Leste
- Important risk factors for brucellosis in cattle/cattle herds were (1) old cattle (2) female cattle (3) free-roaming cattle (4) larger cattle herds and (5) improper disposal of placenta
- Important risk factors for brucellosis in humans were (1) years spent cattle farming and (2) handling/eating aborted material
- Limited knowledge of brucellosis among farmers

Suggested strategies to reduce brucellosis in cattle based on Activity 1 were (1) safe disposal of aborted material (2) removal of old cattle with poor reproduction (3) reduction of free-roaming cattle and (4) vaccination focusing on female cattle and larger herds.

Suggested strategies to reduce brucellosis spread to humans based on Activity 1 were (1) wearing gloves when handling aborted/birth material and (2) avoiding consumption of aborted/birth material.

These strategies will be discussed with cattle farmers in Activity 2 of the BRUCE-TL project, which involves working with the community to co-design ways to address brucellosis in cattle and humans.

Key discussion points

Based on the BRUCE-TL study, brucellosis is likely a major contributor to abortion in cattle in Timor-Leste.

Existing evidence shows that *Brucella abortus* is likely the cause of brucellosis in cattle in Timor-Leste, rather than other brucella species. This is based on past research done in Timor-Leste, which includes research by Maria Geong.

It was acknowledged that brucellosis is one of the top priority animal health diseases due to the impact on livestock productivity. Due to the lower prevalence and lower mortality compared to many other human diseases, it is not a top priority human health disease. Brucellosis is difficult to diagnose in humans, even in resource abundant countries.

A cost benefit analysis is useful for communicating and influencing policy makers to invest resources into controlling brucellosis in Timor-Leste in animals and humans.

Socialisation and education of brucellosis is crucial for changing risky practices and reducing the spread of brucellosis among cattle and to humans. Suggestions include:

- MoH and MALFF could work together on a regular radio broadcast in the community.
- Socialisation on brucellosis can initially target the areas covered by BRUCE-TL study. Messages can include proper methods for cooking of meat and avoiding consumption of aborted material from cattle. There can be specific messages to cattle farmers to wear proper personal protective equipment when handling risky material from cattle.

Monitoring of brucellosis in humans

- There should be socialisation and education targeting healthcare workers to improve their familiarity with brucellosis. INSPTL recommends including brucellosis along with other zoonotic diseases when training healthcare workers in the future, particularly with respect to people with exposure to animals, in particular cattle.

- INSPTL recommends the inclusion of brucellosis as a suspected diagnosis in the health information system. Suspect cases of brucellosis should be reported so that number of cases can be monitored over time.

- Brucellosis is not recommended for inclusion as a human notifiable disease in the Timor-Leste Integrated Disease Surveillance and Response Guidelines (IDSR).

Managing brucellosis in humans

- INSPTL recommends having brucellosis diagnosis and treatment management guidelines which should be based on medical specialist input. Thereafter, INSPTL recommends brucellosis management training to healthcare workers based on the guidelines.

- Specialists based at HNGV mentioned the following:

    - It is important to have availability of brucellosis serology tests at the National Health Laboratory.

    - More common potential differential diagnosis should be excluded before commencing brucellosis treatment in humans. For example, due to the overlap between brucellosis and tuberculosis symptoms and the high incidence of tuberculosis in Timor-Leste, every patient presenting clinical symptoms compatible with brucellosis should be also screened for tuberculosis. This is because there are concerns about potential increase of resistance to tuberculosis drugs such as rifampicin if this was used as monotherapy in a patient affected by underdiagnosed active tuberculosis.

    - There is lack of evidence in the efficacy of post-exposure prophylaxis for brucellosis as well as potential toxicity, risk of antimicrobial resistance and competing use of limited antimicrobials in Timor-Leste. Preventative measures such as proper training, and mandatory use of personal protective equipment should be implemented to avoid live vaccine-related accidents in veterinary technicians.

Consumption of meat from cattle

- Instead of testing cattle meat for brucellosis, consider other risk management measures such as (1) reducing the number of infected cattle through brucellosis vaccination (2) reducing spread of brucellosis between cattle through improved cattle management and (3) post-mortem examination of cattle which also addresses other zoonotic disease.

- Consumption of reproductive organs from cattle should be avoided as brucella bacteria could be found in higher concentration there during pregnancy. Instead, these organs should be handled using gloves and buried.

Brucellosis vaccination in cattle

- NDV plans to implement brucellosis vaccination in cattle in 2024 with initial funding support from Australia's Department of Agriculture of Fisheries and Forestry (DAFF).

- Veterinary technicians should have good knowledge about the vaccine before starting the vaccination campaign.

- Administrator of Maliana Post proposed to have vaccination for all cattle in Maliana and households could build cattle chutes in preparation of vaccination. In response, NDV clarified that vaccination will target larger herds, and female cattle between 3 to 6 months old due to limited time and human resource. Vaccination will initially target areas covered in the BRUCE-TL study, but will expand to more areas at a later stage.

- Targeted areas for brucellosis vaccination needs to be carefully considered because there is mixing of cattle between different aldeias.

- Brucellosis cattle vaccination can be expensive. Vaccination was initiated in the past through USAID but did not continue due to competing government priorities. Expenses for a vaccination campaign includes the cost of vaccine and the cold chain distribution to municipalities.

Control of brucellosis in cattle

- Farmers are encouraged to slaughter adult female cattle that have had a prior abortion. There is no mechanism for compensation, and this would be done at a farmer's discretion.

- Buffalo should be included in a brucellosis control or eradication program.

Future research

- More information is needed on bovine tuberculosis in Timor-Leste, especially if there is an expansion in the production and consumption buffalo milk production.

- There was strong support for Activity 2 of BRUCE-TL which involves co-designing solutions with the community, at which point the Activity 1 study results can be communicated to cattle farmers before or during this activity. After the completion of Activity 2, the findings will be presented at another national workshop.

Closing remarks

Dr. Shawn Ting (Project Lead, BRUCE-TL, Menzies School of Health Research) expressed that there was depth in discussion during the workshop, resulting in better understanding of each other's perspective on brucellosis. The follow-up actions from the workshop can lead to the strengthening of the health system in Timor-Leste. He said there will be future opportunities for meeting again when results from the next BRUCE-TL activity are available.

Dr Joanita Jong (National Director of Veterinary, MALFF) expressed gratitude for the participation, and expressed desire that all the discussed items will be implemented. She reaffirmed that brucellosis vaccination in cattle will be implemented. She thanked Menzies for data collection, MoH for One Health collaboration and local authorities. She highlighted that information that from the workshop should be shared to others, especially in the municipality. She closed the meeting.

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With inputs from: Dr Joanita Jong (NDV) and Dr Felipe de Neri Machado (INSPTL)

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