PROJECT INFORMATION

Advancing Bovine TB Control Through Diagnostics and Vaccines

PROJECT OVERVIEW

Funding Agency	Pennsylvania State University from Bill & Melinda Gates Foundation (BMGF), USA
Total Outlay	Rs 1,06,97,250/-
Duration	3 years
Single / Multi-Institutional	Multi-Institutional
Lead Centre if Multi-Institutional	Pennsylvania State University
Cooperating Centre(s)	ICAR-NIVEDI, ICAR-CCARI, Department of AH&VS, Goa
Principal Investigator	Dr Susitha Rajkumar
Co-Investigators	Dr Shirish D Narnaware

RATIONALE

Bovine tuberculosis (bTB), caused primarily by Mycobacterium orygis, in India is a chronic infectious disease of major concern in dairy production systems and a potential zoonotic threat to humans. This project aims to develop field-proven implementation protocols for bovine tuberculosis (bTB) control in intensive dairy systems in India by integrating control protocols, diagnostic validation, and vaccination strategies.

RESEARCH GAPS

Bovine tuberculosis (bTB), caused primarily by M. orygis, in India is a chronic infectious disease of major concern in dairy production systems and a potential zoonotic threat to humans. In India, the rapid intensification of dairy farming, close human–animal interfaces, and limitations in diagnostic and control infrastructure have sustained bTB transmission cycles, contributing to productivity losses and public health risks. Lack of updated information on TB prevalence in the study farm, lack of protocols for elimination of tuberculosis in cattle farms.

OBJECTIVES

- Development of field-proven implementation protocols for bovine tuberculosis (bTB) control in intensive dairy systems in India.
- Diagnostic validation of recombinant proteins/peptide-based antigens for bovine tuberculosis surveillance.
- Development of bTB control strategy through vaccination as a major intervention.

ACTIVITIES

- Confirmation of study herd, animal census, unique animal IDs linked to farm records. Baseline bTB IGRA test for screening animals for bovine TB.
- Baseline Herd Characterization and segregation of herd to preliminary positive Reactor / Negative.
- BCG procurement.
- CFU enumeration for BCG dose determination.
- Pre Vaccination bTB IGRA. BCG Vaccination of bTB IGRA-negative adults.
- Back titration to determine BCG CFU administered in adults after every vaccination and booster Annual adult booster I and II.
- Post Vaccination 4th, 8th week and Quarterly bTB IGRA (including DIVA).

EXPERIMENTAL DETAILS

Treatment:	Nil
Fertilizer Doses	Nil
Variety	Nil
Replications:	Nil
Observations:	Animal details, Igra test results, CFU enumeration for BCG dose determination, Post Vaccination 4th, 8th week and Quarterly bTB IGRA (including DIVA).
GPS Coordinates:	15.562213, 74.138696

EXPECTED OUTPUT

The project will establish validated, context-specific implementation protocols for bTB control suited to India's intensive and semi-intensive dairy systems. These protocols will serve as operational models for national and regional bTB control programs. Validation of recombinant protein and peptide-based antigens will contribute to the development of WOAH compliant diagnostic assays with potential DIVA capability.

EXPECTED OUTCOME

The protocols will serve as operational models for national and regional bTB control programs which will help in the control and prevention of tuberculosis in dairy farms in India.

FIELD INFORMATION

When the field was developed:	Nil
What are crops being cultivated season-wise:	Nil
Soil type:	Nil
Soil pH, EC, OC:	Nil
Soil depth:	Nil
Soil NPK and Micronutrient status:	Nil
Common pests and diseases:	Nil