



TECHNICAL BULLETIN

No. 12, 2019

Investigation on Livestock Diseases and Development of Appropriate Control Measures in Hilly Areas

The hill region in southeastern Bangladesh has long remained neglected in terms of health and nutrition of both humans and livestock. Due to inadequate transport facilities, veterinary services do not reach the farmers' doorsteps and livestock disease incidences and mortality remain high. As such, returns from livestock raising and dairy enterprises are still marginal for the impoverished tribal population of the southeastern hill region. Usually women are involved in the management of mini livestock farming in the hilly areas.



Research and technological interventions have an important role to play in optimizing livestock rearing methods, women empowerment and overall incomes and well being of the hill population. Most tribal people in the hilly region are not adequately educated and are not aware of the modern methods and techniques of livestock management issues like cleanliness, waste disposal, etc. This project targeted these issues related to livestock management in the hill region, especially livestock diseases and disease management.



The specific objectives were to sort and list the prime diseases with etiological studies, develop appropriate methods for a safer livestock control system and improve knowledge and skills of the farmers on specific livestock diseases and their management.

The project was implemented jointly by the Department of Anatomy and Histology and Department of Medicine of BAU, Mymensingh, and PROSHIKA, an NGO.

Three upazilas (Sadar, Rowangchari and Lama) of the district of Bandarban were randomly selected with 500 beneficiaries (200 in Sadar, 150 in Rowangchari and 150 in Lama) and 1000 animals (400 in Sadar, 300 in Rowangchari and 300 in Lama), such as, cattle, goat and pig. Various aged animals were included in this study. The 500 beneficiaries were selected for the



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supplementation of vit-mineral and anthelmintics with veterinary facilities. Data were collected regularly from them. One hundred and fifty lead 150 lead farmers were selected from among the 500 beneficiaries farmers for training to increase the number Field Assistant maintained a record for the livestock factors, e.g., weight, health status, sex and age, etc. They also kept records of disease progress and mortality. Upazila Veterinary Surgeons of each project area were linked with the Field Assistants and made available to the farmers whenever necessary (Fig. 1).

In case of morbidity and mortality, Field Assistants urgently contacted the principal investigator (PI) of the project using a cell phone, and the PI gave necessary advice or made necessary arrangements to solve the problem.

Samples were collected by from the sick animals and sent to the directly with duly filled shipment forms, shown as an example in Table 1. The samples were placed in ice boxes sent and sent to the laboratory quickly, but if it was not possible to reach the laboratory within 24 hrs, they were preserved in a fridge at 4oC. Questionnaires were prepared to collect epidemiological data, and animal samples were collected for laboratory analysis.

Every animal owner was given an “Animal Health Card” for each animal to record health related data. Some specific diagnostic techniques were standardized for practicing/field methods for cattle (FMD, Anthrax, BQ, HS and mastitis), goats (PPR, rabies, pox and tetanus) and pig diseases (indigestion, RWI and ectoparasite) and a comparative chart was made with usable recommendations after necessary survey.



Fig. 1. System of intervention to reduce livestock diseases in the project areas

Table 1. Sample collection for bacterial diseases

Disease	Sample	Collection site
Anthrax	Blood	Ear vein
Black Quarter (BQ)	Tissue/Pus	Affected area
Haemorrhagic Septicemia (HS)	Serum/Swab	Serum separated from blood collected from jugular vein
Mastitis	Milk	Udder
Tetanus	Blood	Jugular vein

Results and Outputs

The observed prevalence of livestock diseases in the project areas was: FMD 5.06%, Anthrax 2.23%, BQ 0%, HS 2.03% and mastitis 3.85% in cattle; PPR 10.98%, rabies 0.4%, goat pox 3.25% and tetanus 4.47% in goat; and indigestion 15.92%, RWI 12.65% and ectoparasite 8.98% in pig. The cumulative risk factors analysis revealed that poor ventilation, poor animal health condition and disease treatment by owners themselves were, in that order, the major causative reasons for disease incidence.

The overall treatment rates in the hilly areas were: cattle 15.92%, goat 16.84% and pig 12.56% while the vaccination rates were: FMD 73.6%, BQ 25.2% in cattle, PPR 86.8% in goat and FMD 12.8% in pig. In the same analysis, the recovery rates were found to be 99.6%, 99.46%

and 99.33% and the mortality rates were 0.40%, 0.54% and 0.67% in cattle, goat and pig, respectively.

Confirmatory diagnosis by laboratory tests of samples revealed: in cattle there were 65 test-positive samples (FMD: 25, Anthrax: 11, BQ: 0, HS: 10, mastitis: 19); 47 test positive samples in goat (PPR: 27, rabies: 1, pox: 8 and tetanus: 11) and 93 test-positive samples in pig (indigestion: 39, RWI: 32, and ectoparasite: 22).

The average cattle milk production in hilly areas was 2.92 liter/cow/day and average goat milk production was 0.36 liter/doe/day. The average price of pig meat in hilly areas was Tk 217.33/kg.

Sample collection for viral diseases

Disease name	Samples	Collection site	Preservation	Shipment
FMD	Blood/Tissue	From jugular vein	Store at 4°C if can't reach laboratory in 24h	4-8°C / within cool box with ice
PPR	Blood	From jugular vein		
Rabies	Brain/Saliva	On post-mortem		
Pox	Scrapings	From affected areas		

For confirmatory diagnosis of virus, the above mentioned samples were collected from the hilly livestock.

Sample collection for parasitic diseases

Disease name	Samples	Collection site	Preservation	Shipment
Indigestion	Faeces	Directly from rectum/ soon after defecation	Mix with 10% formalin	4-8°C / within cool box with ice
Round Worm Infection (RWI)	Faeces	Directly from rectum/ soon after defecation		
Ectoparasite	Skin scrapings	From affected areas	Room temperature	

For confirmatory diagnosis of parasite, the above mentioned samples were collected from the hilly livestock.

Benefits and Outcomes

1. Major diseases affecting livestock in the southeastern hill region of the country were ascertained
2. Unveiling the prime risk factors: The risk factors causing diseases were identified
3. Vaccination and treatment protocols were developed and an excellent disease recovery rate was attained
4. Milk production by cattle and goat was increased
5. The greatest problems of livestock rearing in the hilly areas were found to be a lack of suitable grazing land, financial limitations and mosquitoes.

Recommendations

1. In prejudice and misconception tensive vaccination is necessary to control livestock diseases in the hilly areas
2. Removal of prejudice and misconception and motivation of livestock owners for veterinary treatments and hygienic management
3. Regular farmers' training on modern techniques and preventive and remedial care for their livestock
4. The DLS offices should remain vigilant about disease outbreaks and preventive measures and ensure regular veterinary services

Expected Impacts

Minimization of disease incidences with proper care and veterinary services provides opportunities for rearing healthy livestock and substantially increasing production.

This in turn will fetch substantial profits for livestock owners.

Healthy livestock implies better health and nutrition and enhanced food security for people of the hilly areas.

This bulletin has been prepared on the basis of technical information available from a completed CGP project of KGF, the details of which are given below:

Project code and title: TF 12-L: Investigation on livestock diseases and development of appropriate control measures in hilly areas; Principal Investigator: Dr. Shonkor Kumar Das, BAU, Mymensingh, Project duration: September 2013 to September 2016