

TECHNICAL BULLETIN

No. 55, 2023

Good practices in On-Farm Lamb Production Systems

The yearly per capita intake of meat in Bangladesh is only 8.6 kg compared with 42.1 kg and 32.2 kg for world and developing countries, respectively. To enhance the animal protein uptake by Bangladeshi people to the desired level, meat production must be greatly increased. Different non-traditional species including sheep may be used as meat animals. Bangladesh has



Fig.1. A typical aquafarm in Bangladesh

3.34 million sheep securing the 3rd position in number among the ruminant species. About 32% of the sheep are reared in the three ecological zones such as, the Barind region, the Jamuna Basin and coastal areas in Bangladesh. Under traditional feeding systems, the sheep are raised on harvested or fallow lands, roads and canal sides, and the sheep also graze on aquatic weeds and grasses in knee-deep water without any supplementation. This system of production retards ruminant growth and hampers reproduction and is hardly

profitable. On the other hand, native lambs with standard feeding management have been found to achieve live weights of about 15, 20, and 24 kg at 06, 09 and 12 months of age with a 6.82, 8.06 and 8.94 feed conversion rate (FCR), respectively. These statistics indicate that commercial lamb production from native sheep can be an alternative approach to meet the meat requirement in Bangladesh. Major limiting factors for sheep production in Bangladesh are inadequate nutrition, lack of public awareness about sheep farming and misconception about lamb meat. This KGF sponsored project was implemented with the objectives of developing lamb production farming communities in selected areas, popularizing lamb production and optimizing the marketing system.

Methodology

The project was designed to validate good practices technology for on-farm lamb production developed by the Bangladesh Livestock Research Institute (BLRI). The Department of Animal Science, BAU implemented the project with the help of collaborative partners like the Social Progressive Services (an NGO), Rajshahi University (RU) and Bangladesh Livestock Research Institute (BLRI). The project was conducted in areas of the three major lamb growing regions



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including char and upland areas of Sherpur district, Barind tract of Rajshahi district and coastal areas of Companyganj and Subarnachar of Noakhali district. One hundred and eighty farm households were selected including 60 from tribal and char households of Sherpur district, 60 from Rajshahi and 60 from Noakhali. The flock sizes were 5, 10 and 15 sheep having one male in each group. On the basis of vigorous selection and feasibility studies, these three groups of flock size were distributed among the selected households and the beneficiary



Fig. 2. Stall feeding of sheep

farmers were trained on sheep rearing. Sheep houses at farmers' homesteads were constructed. Ewes and rams were distributed to the farmers. Beneficiaries were provided with concentrate feed, management tools, medicines, vaccines, fodder cuttings, seeds, and fertilizers. BLRI developed technologies (feeding and other management like, medication, vaccination, de-worming, record keeping, marking, weighing, shearing, washing, castration, etc.) were disseminated to the farmers. The beneficiary farmers reared sheep adopting a semi-intensive system as suggested by BLRI. All sheep were allowed to graze 6-7 hours daily and kept inside the house at night. Sheep were fed with leaves of trees such as, mango, jackfruit and banana or chopped grass from cultivated land during the rainy season. Farmers used concentrate (crushed maize, soybean meal, DCP, vitamin-mineral premix and iodine salt containing 18% CP and 12 MJME/kg DM) in the morning and again in the afternoon at the rate of 150g/sheep per day. Pure drinking water was supplied ad libitum for sheep. The sheep flocks were de-wormed against internal and external parasites three times in a year. All sheep were vaccinated against PPR.

Three mini slaughter houses were established (one for each location) to improve the market linkages through value addition and supply chain management towards popularizing the lamb meat across regions. Different good practice approaches were performed such as stall (Fig.2) vs grazing, different flock size, feeding regime, slaughter age groups, castrated and uncastrated groups and improved marketing system.

The following research experiments were conducted:

- Effect of supplementary feeding on the production traits, carcass and meat quality of lamb
- Effect of stall and grazing system on production performance, carcass traits and meat quality of lamb
- Effect of slaughter at different ages on carcass traits and meat quality
- Effect of castration on the production traits, carcass and meat quality of lamb
- The impact of lamb production towards livelihood improvement.

Data collection (pedigree record, birth, monthly body weight, etc.) and monitoring were done. The impact of lamb production in the farming community was assessed at the end of the project period.

Results and Outputs

Average daily gain (ADG), dressing percentage, and a* value were higher (58.85g/d, 51.35% and 18.05, respectively) with the 1.5% concentrate feeding level (Fig. 3). Ceruloplasmin (CP) and ether extractable fat (EE) were higher with the 2% concentrate feed. Drip loss (DL) and cooking loss (CL) were the lowest for the 1.5% and water holding capacity (WHC) was higher with the 1.5% concentrate feed. ADG, hot carcass and dressing% were higher for grazing group than stall feeding. In a comparison between free grazing and stall feeding it was found that CP and EE were higher for the free grazing group. Flavor and overall acceptability were higher for the stall feeding group, DL and CL were lower and WHC higher for the grazing group. Comparing pups and aged lambs (9 and 12 months of age) it was found that ADG (59.80, 58.15g/d), hot carcass (6.00, 7.6), dressing% (45.29, 48.15), CP (18.12, 24.05), EE (1.77, 3.51), DL (3.16, 3.09), CL loss (33.64, 34.33) and WHC (91.50, 89.23) were higher for the 9 and 12 month old lambs.

In respect of the sheep farmers' livelihood, certain positive changes occurred as follows (Fig. 4):

- Fodder land increased
- Income from sheep and homestead gardening increased (Tk 54,832 and 20,946, respectively). Income from service and business significantly increased (Tk. 15,000 to 21,684 Tk.)
- Expenditure for meat, vegetable, onion/garlic, oil, and spices significantly ($p < 0.001$) increased (10764, 6063, 2728, 1408, and 1612 Tk.)
- Sheep population increased (11.65 number/HH)
- Value of household asset and borrowing amount increased (Tk 84839, 19,000)
- Increased meat production in the project areas
- Total 1,013 lambs were sold in the project areas
- Lamb farms expanded horizontally from 60 to 105 in selected areas
- Market access and bargaining capacity of the primary producers increased in the project areas
- Savings and livelihood assets increased
- Self-employment opportunity was created in the project areas.

Expected Impact

- Popularization of lamb meat in wider areas of Bangladesh
- Advanced management system/production system for sheep will spread throughout the country
- Employment opportunities in sheep farming will increase and sheep rearing will contribute to improvement of livelihood in rural farming communities.

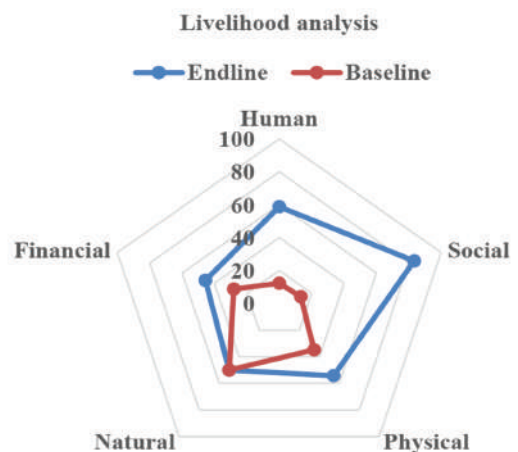


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Recommendations

- Similar projects need to be implemented in other areas of the country to raise awareness about the benefits of sheep farming
- Good practice developed by BLRI should be scaled up
- Suitable interventions are needed to reduce the early mortality of lamb
- Scientific methods to convert muscle to meat in sheep need to be developed and disseminated
- Extension and dissemination should be enhanced through the establishment of model villages for lamb production.

This technical bulletin has been prepared on the basis of technical information available from a completed BKGET-KGF Funded CGP Project the details of which are given below:

Project Code and Title: TF62-L/17. Validation of Good Practice of on-farm Lamb Production Systems

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Published by:

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