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Economic Contribution of Livestock Farming to Rural Development: Evidence from Assam, Northeast India

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Abstract

Rural development in a developing country like india is vital to be a developed Country. In India, approximately 63.64% of the population lives in rural areas. For Assam, the rural population is significantly higher, with 85.9% of the state's population residing in rural areas, according to the Directorate of Economics and Statistics, Govt. of Assam The regions agrarian community mostly rely upon small-scale livestock activities such as goat rearing, duck farming, piggery, and cattle husbandry. This research aims to examine the role of livestock farming in promoting the rural economy and its development. The study adopts a mixed method approach, combining primary data with questionnaire and interview and secondary data from government and institutional sources. This research explores how much the livestock farming is playing a vital role as source of income and livelihood, yet it faces various challenges such as lack of institutional support, limited access to market, insufficient and complexities in credit facilities. The study conclude with policy suggestions to enhance sustainability and profitability and institutional support of livestock farming in the region of Assam. The findings are expected to inform rural development planning and promote the inclusive and holistic growth of the region.

Keywords- Agrarian, Goat rearing, Livestock Farming, Sustainability and Profitability.

1. Introduction

Livestock Farming is an emerging area of business especially in rural areas and assam having the 85.9% people residing in rural areas, the livestock farming is playing vital role in the rural economy of the region. In rural areas in assam there are various means of employment peculiar in nature in comparison to the means of employment in urban areas. In rural areas there are various means of income source as farming, fisheries, handloom weaving, sericulture, daily wage labour, small business, government schemes, self-help group activities. Among all these sources of incomes, Livestock faming is emerging as one of the significant contributors, providing sustainable livelihood opportunities through rearing of cattle, goats, pig, poultry and other animals and playing important role in enhancing rural income, nutrition and employment.

There are various advantages and disadvantages of Livestock farming as-

Advantages of Raising live stock

- **Food and income source**

- Livestock such as cattle, pigs, sheep, and poultry are raised for meat, milk eggs, and other products, providing a vital source of protein and nutrition for human consumption.
- Livestock farming can be significant source of income for farmers, especially in rural areas, allowing them to improve their livelihood.
- Diversification of farming activities with livestock can help farmers spread their risk and overall farm income.

Crop production

- Soil fertility and nutrient cycling: - Livestock manure is a valuable natural fertilizer that improves soil structure, nutrient content, and water retention.
- Livestock grazing can enhance soil health by reducing erosion and boosting biodiversity. – Livestock grazing also helps with carbon storage in the soil, which can mitigate climate change.

Draught Power and manure inputs are by livestock to the crop subsector. Revenue and Jobs.

- Livestock Create jobs and revenue while acting safety net for Underprivileged.

Foreign Exchange

- Livestock Farming Helps to generate foreign Exchanges.

Issues with Livestock Farming-

1. Insufficient Transparency.

The Majority of livestock in the country is undeclared. Also, the markets like cattle products, buffalo products, etc., in india are typically undeveloped, unstable, opaque and controlled by unofficial market middleman.

2. Increasing Illness in Animals

There has been a surge in animal infections that can be spread. The most recent is the cattle outbreak of lumpy Skin Disease in several Disease.

3. Absence Of Extension Service

Although it is commonly acknowledged that extension service can improve agricultural productivity and production, the undervaluation of livestock extension has contributed to the low productivity of india livestock industry.

2. Objectives of the study-

1. To assess the role of livestock farming in enhancing the income levels of rural households in assam.
2. To examine the contribution of livestock farming to employment generation.
3. To evaluate the extent to which livestock farming supports food security and nutrition.
4. To analyse the challenges and constraints faced by rural livestock farmers in assam.
5. To explore the potential livestock farming as a tool for sustainable rural development of northeast india.

6. Review of literature-

Livestock farming has long been recognised as a crucial component of rural livelihoods and development across developing economies, including India, several Studies have highlighted the socio-economic impact of livestock on small and marginal farmers.

Birthal (2008) emphasized that livestock farming becomes significant source of regular income and food security for marginal and underprivileged farmers in india. His study pinned the importance of integration

of market and livestock producers to enhance their earnings.

Delegado et al. (1999) introduced the concept "livestock Revolution" arguing that increasing demand for animal products in developing countries open significant opportunities for rural farmers. The study predicted that livestock could be a pathway to rural economic growth.

Chatterjee and Das (2015), in a study conducted in West Bengal, observed that during uncertainties of agricultural output, the output from livestock farming act as a buffer income source and hence it can be termed as the sustainable alternative livelihood options in rural area.

Sharma (2007) analyzed livestock sector contributed more than 25% to agricultural GDP in India and found that it provides regular income opportunities and stable income to especially rural household especially women.

Singh and Meena (2011) conducted a study in Bihar and Jharkhand, found that livestock farming significantly enhance the nutrition security and food security. The researcher also found that there is a relationship between the economic stability of households and livestock production.

Rathod et al. (2013) studied small ruminant farming in Karnataka and highlighted that goat and sheep rearing is a low-risk and high return venture for rural women promoting savings and economic inclusion.

Government Of India (2013), through National Livestock Policy, acknowledged that over 70% of livestock farmers are smallholders and emphasized livestock's critical role in ensuring inclusive growth, especially in tribal and backward rural regions.

Nath, B.K (2018) conducted a survey on livestock farming in Barpeta district of Assam, found that marginal farmers are significantly benefitted from dairy, piggery and backyard poultry farms in financial terms.

Deka, R.P et al (2020), in their study o livestock-based livelihood in the North east, observed that integrated livestock farming systems are well suited to the agro-climatic conditions of the region, they highlighted that animal husbandry in Assam helps diversify income and reduce dependence on seasonal agriculture.

7. Research Methodology

Research Design

The experimenter follows logical and descriptive exploration design, using a mixed-method approach to investigate the role of livestock farming in rural development of Assam.

Sources of Data

The researcher conducts the research using both primary and Secondary data.

Primary Data was collected through structured schedules and interviews with livestock farmers. Secondary Data was attained from government reports, livestock census data and academic publications.

Sampling Method and Sample Size

The researcher uses non-probability sampling using purposive sampling technique to select livestock-practising districts. Random Sampling selected from 1200 respondents from Kokrajhar, Barpeta, Dhubri, Kamrup Rural, Goalpara randomly.

Tools used for Data Collection

Data was collected using Structured questionnaires, personal interviews, and focus Group Discussion.

Techniques of Data Analysis-

Descriptive statistics, chi-square test, and correlation analysis will be used to examine the role of livestock in income, food security, and employment. Microsoft Excel and SPSS were used for data Processing.

8. Hypotheses of the study

Following the objectives of the research, hypotheses have been formulated as-
H1: livestock farming has significant positive impact on the income of rural household in Assam.
H2: livestock farming contributes significantly to employment generation in rural areas
H3: there is a strong relationship between livestock ownership and food security in rural households
H4: Rural Livestock farmers face significant challenges in accessing institutional and market support
H5: livestock farming can serve as a sustainable tool for rural development in North-east India

9. Sampling Design and Data Collection Methods-

Sampling design

The researcher adopts a non-probability sampling method to select districts with a high concentration of livestock farming. The districts chosen were Kokrajhar, Barpeta, Dhubri, Kamrup Rural and Goalpara in Assam. These Districts were selected based on their significant rural population and dependence on livestock-based livelihoods. Within each district, random sampling was used to select households engaged in livestock farming to ensure broad representation of different types of livestock activities engaged in.

Sample size

A total of 1200 rural respondents were surveyed across the five selected districts. These individuals were primarily engaged in livestock-related occupations, including cattle rearing, goat farming, piggery, and duck farming,

Sources Of Data

Primary Data: Data collected through structured questionnaire, personal interviews, and focus group discussion with livestock farmers. The questionnaire was designed to gather data on income, employment, food security, types of livestock and challenges faced.
Secondary Data: Obtained from Official and academic sources as

- National Livestock Policy (2013)- Government of India
- Directorate of Animal Husbandry and Veterinary, Assam
- Livestock Census Report- Department of Animal Husbandry and dairying, Ministry of Fisheries, Animal Husbandry & Dairying, Government of India
- Statistical Handbook of Assam- Directorate of Economies and Statistics, Government OF Assam
- Economic Survey of Assam- Government of assam- Government of Assam
- NITI Aayog reports on agriculture and rural development
- Census Of India Demographic and Occupational Data

10. Data Analysis and Interpretation-

The data collected from 1200 livestock-farming households across the district of Kokrajhar, Barpeta, Dhubri and Goalpara was analysed using Microsoft Excel and SPSS. The Goal was to assess how livestock farming contributes to income, employment, food security, and rural development.

Descriptive Statistics

Basic Characteristics of the respondents and their livestock practices were analysed. These statistics help us to understand who are the respondents are and what they do.

Table 1: Demographic Profile Of respondents (N=1200)

Variable	Categories	Frequency	Percentage (%)
Gender	Male	780	65.0
	Female	420	35.0
Age Group (Years)	Below 30	310	25.8
	30-50	550	45.8
	Above 50	340	28.4
Education Level	**Illiterate**	150	12.5
	Primary	430	35.8
	Secondary and above	620	51.7

(Sources: Primary Data)

Table 2: Types of Livestock owned By Respondents

Livestock Type	No. of Respondents Owning	Percentage (%)
Cattle	920	76.7
Goats	740	61.7
Poultry (Chicken/Duck)	980	81.7
Pigs	460	32.3
Multiple Types	580	48.3

(Sources: Primary Data)

Note- Since Many respondents own more than one type of livestock, percentage can exceed 100%.

Table 3 – Livestock Ownership and Monthly Income contribution

Monthly Income	Number Of Respondents	Percentage
Below 5000	250	20.8
5000-10000	460	38.3
10000-15000	310	25.8
Above 15000	180	15.0

(Sources: Primary Data)

Chi-Square Test

To test Hypotheses about relationships between livestock ownership and socio-economic variables.

Table 4: Chi-square test- Livestock Ownership and household income

Variables compared	χ^2 value	Degree of freedom	p-value	Result
Livestock ownership X income level	18.23	3	.001	significant

Interpretation- A Significant relationship exist between livestock ownership and income level. (Supports H1)

Correlational Analysis

To determine if more livestock leads to more income and better food security.

Table 5: correlation Between Number of Livestock and Monthly income

Variable 1	Variable 2	Person's r	p-value	Strength
Number Of livestock	Monthly Income	0.72	0.0000	Significant

Interpretation- Strong positive Correlation ---- Supports H1

Table 6: Chi-Square Test – Livestock and Food Security

Variables Compared	χ^2 Value	Degree of freedom (df)	P-value	Result
Livestock Ownership X food security	21.67	2	0.0000	Significant

Interpretation – significant relationships Between livestock and food security (Supports H3)

Challenges faced by the Livestock Owners

Survey Responses and Interviews Helped identify major Barriers.

Table 7: Challenges Faced by Livestock Owners

Challenges faced	Frequency	Percentage (%)
Lack of Veterinary Services	740	61.7
Market Accessibility	690	57.5
High feed Cost	530	44.2
Inadequate Credit facilities	480	40.0
Disease Outbreak	350	29.2

Interpretations: Rural Livestock farmers face Multiple Serious Challenges (Supports H4)

11. Findings and Discussion:

This section presents and interprets the major findings derived from both descriptive and inferential analysis of the primary data collected from 1200 respondents engaged in livestock farming across the 5 selected districts of Assam. The findings are discussed in line with the stated objectives and hypotheses to provide a comprehensive understanding of the role of livestock farming in in rural development.

Income enhancement Through livestock Farming

The study found a significant positive relationship between livestock ownership and household income, as indicated by both Chi-Square and correlation analyses. Most respondents reported earning between Rs. 5000 and Rs. 15000 monthly from livestock. This Supports H1 and affirms that livestock farming contributes substantially to rural income generation in line with previous studies such as Birthal (2008) and Nath (2018).

Employment Opportunities

Livestock farming as identified as a key employment source, particularly for smallholders and women.

Respondents engaged in cattle, goat and poultry farming reported livestock as either a primary or supplementary occupation. These findings valid H2, reflecting livestock's role in rural job creation as noted by Rathod et al.

Food Security and Nutrition

Households involve in livestock farming demonstrated higher levels of food security. Access to animal-based food products improved dietary diversity and nutritional Stability. The Chi-Square test Supported Significant Association between livestock and food security, thus confirming H3.

Challenges in the Livestock Sector

Respondents reported constraints including limited veterinary services, market access issues, high feed costs, and inadequate credit. These factors, supported by table 7, confirming H4 and point to the need for stronger institutional support and infrastructure.

Livestock for sustainable Rural Development

Overall, the evidence support H5—that livestock farming is viable tool for sustainable rural development. It offers income, employment, and food security benefits, but requires policy-level intervention for improved support services and market integration

12. Suggestions and policy Recommendation:

The study highlights the considerable potential of livestock farming in promoting rural development in assam through its contribution's income generation, employment, and food security. However, various challenges such as lack of veterinary care, market inaccessibility and insufficient institutional support limit its effectiveness. The following suggestions and policy recommendations are proposed to address these challenges and enhance the overall contribution of the livestock Sector:

Strengthening Veterinary and extension Service:

To improve livestock health and productivity, it is essential to expand veterinary infrastructure and outreach in rural areas. The government should establish more veterinary clinics and deploy mobile veterinary units. Training and recruitment of livestock extension officers can enhance awareness among farmers about animal health, feeding practices and disease prevention. Periodic workshops and awareness programmes at the village levels are also recommended.

Enhancing Market Access and Infrastructure

Livestock farmers inn Assam face significant barriers in accessing fair and efficient markets. Establishing rural livestock market with equipped cold storage and transportation facilities can improve value realisation. The formation of cooperative marketing units or farmer producer organisation will reduce dependence on middleman and improve price transparency, public private partnerships can be leveraged for investment in market infrastructure and logistics,

Expanding access to credit and insurance

Institutional credit remains largely inaccessible to small livestock farmers. Simplifying loan procedure and offering livestock-specific financial schemes through rural banks and cooperatives can increase uptake. Additionally, the promotion of livestock insurance schemes will help mitigate risks related to disease, theft and climatic hazards. Awareness campaigns on credit and insurance services are needed to improve participation.

Promoting capacity building and skill development.

Regular training should be organised for livestock farmers on modern practices such as scientific breeding, disease management and value addition. Emphasis should be given to youth and women, encouraging

them to take up livestock-based entrepreneurship. Collaboration with Krishi Vigyan Kendras (KVKs), Agricultural universities and NGOs can facilitate effective delivery of these training programmes.

Integrating Livestock into Rural development Policies

Livestock farming should be integrated into broader rural development schemes such As Mahatma Gandhi National Rural Employment Guarantee Act, National Rural Livelihood Mission and PM-KISAN. District level livestock development must be tailored to local agro-climatic conditions. Monitoring Mechanisms should be strengthened to track the implementation and impact of government livestock programmes.

Promoting integrated and sustainable livestock system

To ensure long-term sustainability, farmers should encourage to adopt integrated farming system that combine livestock with agriculture, fisheries, or horticulture. Climate-resilient breeds, organic feed, and environment friendly practices should be promoted. Government Incentives for organic certification and marketing can further boost farmer participation

Ensuring Inclusivity for women and Marginalised groups

Women and tribal communities play a crucial role in livestock management. dedicated programs should be designed to empower them through access to credit, training and ownership rights. Special Schemes targeting backward and tribal regions should account for their socio-economic and cultural context.

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