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Livestock and rural livelihoods: Status and opportunities

Sujit Kumar Paul, Uday Das and Rajat Kr. Roy

Abstract

The livestock sector works as a supporting pillar for rural households and it is an important tool for agricultural diversification. During crop failure, livestock act as a buffer for the farmer. Sustainable livestock intensification acts as a risk reduction strategy and instrument for livelihood diversification. Livestock production plays a variety of roles in our daily life; it is an important source of protein and nutrition. From our breakfast to dinner animal by-products serve us differently. So, it can be considered that livestock is an integral part of our society and has left a great contribution to economic development as well as the GDP of our country. Livestock production remains a subsistence-based activity in rural India. The present study attempts to identify the present livestock production scenario and its economical importance among home-based livestock-keeping farmers of Lohagarh village in Birbhum district, West Bengal. This paper mainly focuses on the issue of the status of livestock and its contribution on rural livelihood development.

Keywords: Animal health, animal husbandry, economic wellbeing, livestock, rural livelihood

Introduction

The origin of livestock started with the domestication of sheep at least 11000 years ago. In the beginning, human beings were heterotrophic; they survived by eating the raw flesh of wild animals. Later, they tried to domesticate animals. With the invention of new technology, the concept of livestock domestication has changed. Agriculture is the backbone of the Indian economy. Agriculture and the livestock sector are intertwined. Livestock provides manure and farm labour to agriculture and agriculture provides food for livestock. Cow dung is also utilized as fuel and as fertilizer in agriculture. In India, the rural population benefited greatly from the work and money provided by agriculture and livestock. Livestock provides essential nutrients like meat, eggs, and milk to underprivileged rural residents and the sector is a significant source of assistance for the rural small farmer to marginal landholders.

The livestock sector is an important means of living and a significant poverty reduction mechanism for landless households. The sector worked as a supporting pillar for the socio-economic development of the village (Herrero, 2013) [3]. Livestock is an important tool for agricultural diversification and the mechanism helps to boost agricultural growth (Birtal & Negi, 2012) [2]. Livestock production is a part of the livelihood system and it acts as a source of people's family well-being (Waters-Bayer & Bayer, 1992) [13]. Some existing studies have analyzed keeping livestock ensures the security of the family. During crop failure, livestock act as a buffer for the farmer. Livestock production is like drought insurance for poor families in the semi-arid region of India (Ranjitha *et al.*, 2004) [9]. Livestock serves different purposes in our daily life. Sometimes it is regarded as a resource. In marginal areas, goats and sheep are reared by women sometimes and it provides economical support to them. From the perspective of gender lens, women have a significant contribution to livestock production; more than half of rural livestock caretakers are poor women.

Livestock is a key asset, which is directly related to the livelihoods of small to marginal farmer families in emergent nations (Thornton, 2010) [11]. Sustainable livestock intensification acts as a risk reduction strategy and instrument for livelihood diversification. The word livestock is a supportive term and it is used to rear animals to produce food, labour, fabric and manure for the owners. Animals like Cattle, Buffalo, Sheep, Goat, Yaks, Camel, Horses, etc are considered livestock.

The animal has been reared as a domestic resource for centuries. Our lifestyle as well as our culture changed when we started using livestock properly. Many studies hypothesized animal contact through livestock rearing boosts human immunity from Zoonotic diseases (Randolph *et al.*, 2007) [8].

Livestock production plays a variety of roles in our daily life; it is an important source of protein for millions of rural poor (Njuki & Sanginga, 2013) [7]. It is providing energy and nutrition for social development (Randolph *et al.*, 2007) [8]. Further, livestock can also be used for various purposes like food, meat, dairy, and egg production. From our breakfast to dinner animal by-products serve us differently. Some animals are reared only for meat e.g. pig. Some animals are reared for fur. Animals like cattle, buffalo, sheep, and goats are reared for various purposes. They provide milk, meat, and fur, and even sometimes they are used for their physical labour. Bulls are used in the agriculture sector for Ploughing and carrying loads. By-products from Slaughterhouses are also used in different places. So, it can be considered that livestock is an integral part of our society and has left a great contribution to economic development as well as the GDP of our country.

Over 95 percent of livestock rearing in India is done by rural people. However, more than 70 percent of the cattle population are indigenous breeds and livestock keepers apply traditional farming systems. As a result of this, livestock production remains a subsistence-based activity in rural India. To develop livestock rearing as a means of sustainable alternative income for the rural poor, region-wise more micro-level research findings are needed for policy intervention. The present study attempts to identify the present livestock production scenario and its economical importance among home-based livestock-keeping farmers of Lohagarh village in Birbhum district, West Bengal. It is a predominantly Muslim village and the majority of the population is engaged in agricultural activities such as farming and cultivation. This sandy clay loamy red soil zone received low to moderate rainfall (100 to 150 cm) and the area witnessed frequent crop failure. So, many people are turning away from agriculture and opting for migration as a means of livelihood. Proper and improved livestock rearing can play an important role in livelihood security and alternative income generation for the farmers of Lohagarh.

Objectives & Research Methodology

This paper mainly focuses on the issue of rural livestock, which is an important asset for rural people. The main objective of the study is to gain some knowledge about the village livestock population and the breeds of that livestock. Through which the role of animal resources in their livelihood can be estimated. Another objective of the study is to know the health status and farmers' consciousness about the breeding of animals, deworming, and vaccination of the animals. The study also investigates the housing quality and the nutritional status (feed & fodder, caring for newborn and pregnant animals) of the livestock. The final aim and objective of the study is to identify the economic contribution of the livestock assets to the owners and suggest some recommendations for prosperous livestock

rearing, through which sustainable earnings are possible. Livestock information was collected from 50 households in Lohagarh village and these households are selected based on having livestock in the houses. Primary information was collected from randomly selected households through face-to-face interviews by using a semi-structured interview scheduled with both open and close-ended questions. Qualitative information was collected through focus group discussion of the target group. Some important qualitative information was collected indirectly by personal observation of the researchers.

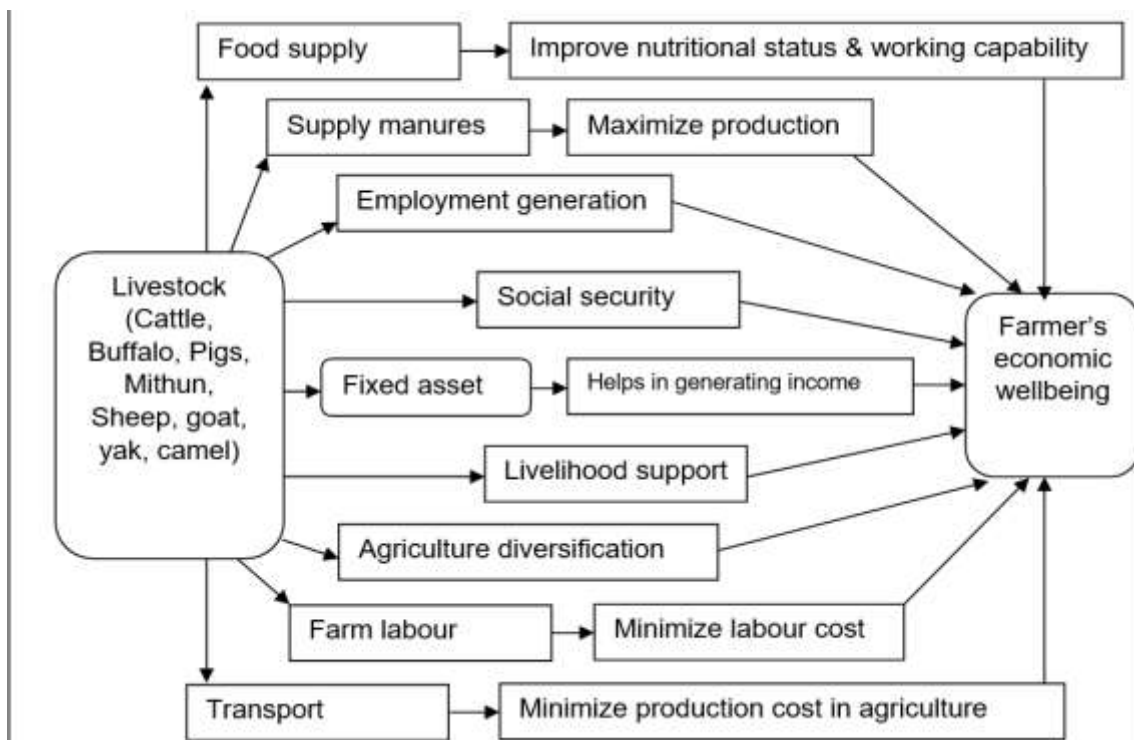
Rural Livestock and Economic Wellbeing

India has the largest livestock sector in the world. Due to changes in agriculture and consumption patterns, the country witnessed a steady transformation in livestock production. The importance of the food value of livestock has increased as it provides more nutritional value with rich protein content. Excessive urbanization, expansion of middle-class income and changing lifestyles are the reason behind the high demand for livestock. This emerging agriculture sub-sector has huge market potential. The sector plays a vital role in the economic growth of the village. Smallholders practise mixed farming as a risk reduction strategy, where agriculture is performed with animal husbandry. The livestock serves the people in different ways. In India, many people are dependent on their livestock as a secondary source of income, particularly those with limited resources who keep a small number of animals. The sale of milk from cows and buffaloes will give livestock farmers a stable income. Sheep and goats are useful sources of revenue in times of need to pay for things like marriages, medical care for sick people, child care, home repairs, etc. The animals also act as moving banks and assets that assure owners' financial security.

Being illiterate and uneducated, a substantial portion of India's population depends on agriculture to support them. But, due to its seasonal nature, agriculture could only offer work 180 days out of the year. To employ their labour during the lean agricultural season, the landless and those with little land depend on livestock. The animals offer social security to the livestock keepers during the crisis of the family. The bullock is thought to be the foundation of Indian agriculture. Farmers, particularly marginal and small farmers, employ bullocks for ploughs, carts, and transport of both inputs and outputs. In rural areas, dung is used as a plastering material (poor man's cement), as fertiliser (farm yard manure), and as fuel (dung cakes).

Distribution of Livestock

Most of the people of Lohagarh village are engaged in farming and more than 50 percent of them are marginal farmers. Landless families earn their livelihood by working as farm labour on other people's land or engaging in other secondary or daily wage-based unorganised activities. But more or less every family has some kind of livestock. Landless households are rearing livestock on small plots of the land back yard or in front of their houses especially to meet their own needs. Cattle, goats, poultry, and buffaloes are the main domesticated animal.



Source: by researchers

Fig 1: Showing, multiple roles of livestock for farmer’s economic wellbeing

Cattle Population

Table 1: Showing, distribution of the cattle population

Total no of Cattle	Cow	%	Calf	%	Bull	%	Bullock	%	Heifer	%	Average
146	62	42.5	46	31.5	6	4.1	0	-	32	21.92	2.92

Source: Primary survey

In the sample households, the total number of Cattle population is 146. Out of them, the number of cows is 42.5%, no of the calf is 31.5%, no of the bull is only 4.1% and the number of heifers is 21.92%. There is not a single Bullock in a single house of the Sample households. From the above picture, it is clear that the people do not prefer the Bullock workforce for ploughing. They are preferring tractors or other machinery for cultivation purposes. During the field survey, the villagers said that after a certain age, the bull calf is sold as beef cattle. The above table shows an interesting picture of the cattle population; more than 64 percent of the cattle belong to the female category (cow and

heifer), the remaining 31.5 percent are calves (both male and female cattle) and only 4.1 percent of cattle are bull. The above distributions of the cattle explain that the cattle are rearing for milch purposes and also for reproduction. The number of bullocks is low because they are not depending upon bullocks too much for ploughing. So they do not show their interest in the Castration of bulls. They always prefer to sell the bulls instead of rearing them in the house.

Goat Distribution

Table 2: Showing, goat population in village

Total no. of Goat	Doe	%	Buck	%	Kid	%	Castrated Goat	%
98	40	40.81	6	6.1	38	38.8	14	14.3

Source: Primary survey

A goat is referred to as a poor's Cow. Goats are used in various purposes, like milk, fibre, hides and meat production. Landless households and small farmers, especially those with less capital are more interested in goat rearing. In Lohagarh village, the total no of the goat is lower than the Cattle population among Sample households. The total no of the goat is 98 in the surveyed households. Out of 98, the number of doe (adult female goat) is 40, the number of bucks (an adult male goat) is 6, the number of kids (including both male and female baby goats) is 38 and the number of castrated goats is 14.

It is found from the above data that the number of bucks is low because they all prefer to castrate bucks as after castration the growth of them speedily increases as there is a huge demand for chevon and the prices of chevon are also high, so the household is rearing goat only for meat purpose. Even they are not thinking of the needs of the buck for the natural breeding of goats. That's why when it is required to breed them; they have to search for the buck even throughout the long distance area.

Distribution of Sheep

Table 3: Showing, sheep population in the village

Ewe	%	Ram	%	Lamb	%	Wether	Total
15	45.5	12	36.4	6	18.2	0	33

Source: Primary survey

Like goats, sheep have multiple uses. Sheep are mainly reared in hot and semi-arid regions. However, many households in Lohagarh village keep sheep. The total number of sheep in the studied households is 33, the

majority of them are ewe (45.5 percent) followed by ram (36.4 percent) and lamb (18.2 percent). From the above data, it is also clear that the households prefer rearing goats instead of sheep. The reason behind it is that the goat has more market demand rather than sheep as the people of this area always prefer chevon to mutton. Sheep rearing is very low due to a lack of knowledge on how to collect and use wool and inadequate demand in the market for meat.

Poultry and Duck Distribution

Table 4: Showing, poultry and duck population

Hen	%	Cock	%	Chick	%	Total	Duck
56	27.2	24	11.7	126	61.2	206	38

Source: Primary survey

Villagers mainly rear poultry for meat and eggs. Chicken meat and eggs are important protein food sources for the village people. The total number of poultry in the sampled households is 206. Total numbers of the Hen, Cock, and Chicks are 56 (27.2 percent), 24 (11.7), and 126 (61.2 percent) respectively. Here it is seen that Hen and Chick occupied more than 88 percent. The number of cock is low in respect of Hens and chicks because of the high demand for its meat. The number of chicks is high at present, but it is a concern that not all of them can be saved to adulthood

because the households do not follow the scientific pattern for the rearing of hens. Many of them are attacked by dogs, foxes, falcon, etc. and also many of them are died due to various diseases. In Lohagarh, many families' keep ducks, but the number of ducks is much lower than that of chickens. During the field survey, the villagers said that their own pond is very necessary for duck rearing.

Breeds of the Livestock

Table 5: Showing, different breeds of the livestock available in the village

Livestock	Breed	Total	Percentage
Cattle	Non-descriptive zebu cattle	126	86.3
	Cross breed jersey	20	13.7
Goat	Black Bengal goat	64	65.3
	Jamunapari	34	34.7
Poultry	Kurki	120	59.7
	RIR	40	19.4
	Haringhata Black	22	10.7
	Leghorn	24	11.7
Duck	Indian Runner	24	63.2
	Khaki Campbell	14	36.8
Sheep	Garol	33	100
Buffalo	Murrah	4	100

Source: Primary survey

The majority of the cattle belong to non-descriptive Zebu cattle and very few numbers of cattle belong to cross-breed jerseys among the sample households. Generally, Non-descriptive Zebu cattle have poor milk capacity. Therefore, efforts are being made to upgrade this breed by breeding improved breed semen through Artificial Insemination. It is good to see that people are now trying to breed their cattle by A.I. As a result, 28 Cross Breed Jersey are found among the households (see Table 5).

In Lohagarh, there are 98 goats in total, of which 64 (65.3 percent) are Black Bengal Goats and 34 (34.7 percent) are Jamunapari (see Table 5). BBGs are primarily found in Assam, West Bengal, Odisha, and Bangladesh. Its meat, skin, and high kid output make it one of the most popular goat breeds. Uttar Pradesh is the principal location for Jamunapari goats. It is one of the most well-liked dairy goats and is renowned for producing high-quality meat.

The total number of Poultry is 206 out of that, 126 (almost 60 percent) are Kurki, 40 (19.4 percent) RIR followed by

HB (10.7 percent) and Leghorn (11.7 percent). The Kurki hens are common in this area but at the same time in many houses, we also found RIR whose full name is Rhode Island Red, Haringhata Black and Leg Horn. RIR is an American breed, Leghorn is a European breed. Haringhata Black is our breed, which originated from West Bengal, India. Though there are enough chickens in these few houses, the number of chickens is not at a satisfactory level if we look at the whole village.

The number of ducks in the village is very low. There are two types of duck breeds in the village. Among 50 households, we found a total of 38 ducks, out of which 24 (almost 64 percent) are Indian Runner and 14 (almost 37 percent) are Khaki Campbell. The Khaki Campbell is a European duck breed, developed in England. In our study area, people reared the Garol breed of sheep. The two households where the buffaloes were found belong to the Murrah breed (see Table 5).

Health & Nutritional Status of the Livestock

One of the problems in animal husbandry is the attack of various diseases. Suddenly livestock started dying due to a serious outbreak. During the field survey, many livestock keepers reported that their poultry died every year for no reason. Therefore, it is very important to be conscious of the health of domestic animals and the following situation related to health issues have been found in the study area:

Deworming

- **Cattle:** Among the total cattle population, only 32 cattle are dewormed and the remaining cattle are not dewormed. Most households are not aware of the necessity of deworming. So, the health of the livestock is at a poor level. They also believe that in the time of pregnancy of animals and in the time of lactating animals, deworming should not be done. So, they always avoid it. As a result, the cattle mostly suffer from various parasitic diseases.
- **Buffalo:** There are only two buffalos in the sample households and deworming has never been done among the two.
- **Goat and Sheep:** Out of all the goats, only 21 (21.4 percent) numbers of goats are dewormed and not a single number of sheep is dewormed.
- In the case of Poultry and Ducks, the households do not have any idea about deworming.

Vaccination

Vaccination is the most important thing for animals to prevent various infectious and viral diseases. This work is done by the employee of Govt. like the Livestock Development Assistant (LDA) and also done by the local *Prani Bandhu* and local *Prani Mitra*, *Prani Sebi*. Vaccination is also done within the schedule provided by the Animal Husbandry Board. Among the 50 households, 38 households are aware of the vaccination and they vaccinated their animals when it is provided. But the remaining 12 households, are not aware of vaccination and do not prefer it.

Treatment of the Livestock

The treatment of the livestock is provided by government employees like veterinary officers, veterinary pharmacists and also by the LDA. There is an LDA in every Gram Panchayat level working at ADAC and there also be a BAHC and ABAHC at the block level. The livestock keepers of the Lohagarh village are getting treatment for their livestock from BAHC Sriniketan and they also get treatment facilities from local veterinary practitioners like *Prani Bandhu* and *Prani Sebi*. Out of 50 households, 82 percent of households treated their livestock both by VO and veterinary field practitioner, and the remaining 18 percent of farmers always call the veterinary field practitioner for the treatment of livestock. Almost 56 percent of families use to treat their livestock at home as well as hospital and the remaining 44 percent of livestock keepers use to treat their livestock at home only.

Nutritional status of the livestock

The livestock in the village survives only grassing on pasture land, straw, rice bran, wheat bran, rice starch, leaves, vegetable waste etc. Out of 50 households, no one is giving their livestock extra nutritious food like mineral

mixture, calcium suspensions, multivitamin liquid etc. At the time of pregnancy, they do not provide any extra food to the animals but they provide a regional food namely *Jouli* (local name). It is a mixture of boiled rice waste, vegetable waste and water. During time of lactating period, they do not provide any extra food to the animals but they only provide a regional food namely *Jouli*.

Economic Gain from the Livestock

Most of the people of the village are rearing livestock but due to traditional farming and subsistence manner make it non-commercial. But those houses have a cattle population; they earn little by selling milk. During the time of the field survey, 54 percent of the cattle keepers got milk from the cow. But most families use milk for their own consumption. We found, 14 families sell an average of two litres of cow's milk every day. *Goala* (milk buyer) collects milk from home at the rate of 40 rupees per litre. Some families earn a small amount by selling milk in their neighbouring houses. We can say that households with dairy cows earn direct or indirect income (visible & invisible) in various ways.

Cow dung is an important source of income. Villagers earn some income by selling cow dung and many farmer families save their fertilizer costs by using it on their farmland. In Lohagarh, most families use cow dung as fuel (saving in fuel expenditure). Among the 50 households, there are nearly about 150 cattle and buffalo and out of them nearly about 34 percent of animals are adults. According to estimation, 1 trolley of dung is produced by 15 adult animals per month. The market value of 1 trolley of dung is Rs.5000-6000.

Livestock is also considered a fixed asset to the rural poor. During the economic crisis, it is possible to make a living by selling livestock. In Lohagarh, the livestock keepers also gain an amount from the selling of livestock such as cows, hens, goats, sheep, ducks etc. A small amount of money is also gained through the selling of eggs and meat.

Suggestions and Conclusion

From this research paper, it was found that most of the village people rear livestock for their needs. Despite the wide market demand and huge potentiality not a single family rears livestock commercially. But all the families are keeping some livestock. Despite having been rearing livestock for a long time, they have inadequate knowledge of modern livestock-rearing methods. In the case of Deworming livestock, most households are not aware of the necessity of it. So, the entire household should be aware of deworming for the health improvement of the livestock. A large percentage of people do still not prefer vaccination against various diseases. So, they should be aware of the importance of vaccination for preventing various infectious, contagious and viral diseases. In the case of housing quality of the livestock, though all the households have separate housing for keeping their animals, in most cases the housing quality is not good. Most of the housing for livestock is *kancha* and the sanitation is not done properly. Not a single household is giving their animal's extra nutrient-rich food to their animals in time of pregnancy and in time of lactating. They only provide the animals at that time with a regional food named, *Jouli* for their animals. But it is not enough for those animals. For improving the health condition, the respective authorities of govt. should be more active as the villager can get facilities easily, they should provide more

awareness camps regarding animal health issues and they should also provide vaccination for the animals from time to time. Mobile Veterinary Clinic can be more initiated for it. Finally, it can be concluded that livestock rearing is one of the ways to eradicate rural poverty. Government and private initiatives are required to develop dairy entrepreneurship among rural people. Alternative income generation and sustainable livelihood diversification are possible through the successful implementation of the goat bank approach, piggery, poultry farm and dairy initiatives.

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