ROLE OF LIVESTOCK HUSBANDRY ON RURAL TRANSFORMATION IN NORTH INDIA: A CASE STUDY

Md.Asif Iqubal
M.Sc., Research Scholar
Department of Geography
Aligarh Muslim University, Aligarh, India
e-mail: daialig@rediffmail.com

UDK: 911.373(540-17):331.5
COBISS: 1.02 – Review article

Abstract
Livestock husbandry is an important source of economic activity in the agricultural sector contributing a major portion of GDP to India and improving the socio-economic conditions for people in general and rural people in particular. Livestock husbandry has been practiced, usually in rural areas, since ancient times. The increasing urbanization of the growing population and the changing food habits of people has enhanced the demand of livestock products worldwide. Thus, the world's livestock sector is growing at an unprecedented rate in developing countries. India is one developing country that shares the largest number of livestock and has a top position in milk production in the world. The livestock in India with 185 million cattle and 98 million buffaloes possesses 20% of the world's bovine and 14% of the world's cattle population. A micro level geographical area known as Aligarh district in north India has been selected for study. The data regarding various aspects of livestock husbandry at the grass roots level is not available in recorded form. 12 villages from the district have been selected for field survey to generate data regarding the socio economic transformation of rural people in the study region. The study revealed that livestock husbandry shows upward dynamism in terms of numbers. A positive growth of 7.5% livestock as a whole has been observed through the data analysis of two points of time i.e. 1993 and 2003. 83% of the workforce of households surveyed in the rural areas is found to be involved directly or indirectly in livestock husbandry, and it is practiced by landless, marginal and small farmers particularly.

Key words
livestock, women's participation, employment, economic viability

The editor received the article on 6.2.2010.

1. Introduction

Livestock husbandry is an important form of agriculture in the world. It is practiced in various forms, such as mixed farming, nomadic herding, commercial grazing, etc. This activity is very closely related to agricultural activity/production, as cultivation receives input from livestock and, in turn, provides output from livestock in the form of animal feed (Khan 2006). An important form of diversification of agriculture has recently emerged in the livestock sector in many developing countries like India. Employment generation for millions of poor and small rural landholders is also served by this sector. It provides a significant contribution to the national economy. Approximately 75% of the world's poor live in rural areas. For most of these people, livestock are an important part of their livelihood. In rural India, where over 15-20% families are landless and about 80% of landholders belong to the category of small and marginal farmers, livestock is their main source of livelihood. The unaffordability of modern inputs such as tractors and fertilizers for poor farmers is compensated by livestock husbandry (Info resources 2007).

The mixed crop-livestock system is also prominent in India and resource use in mixed farming (crop + livestock) is often highly self reliant as nutrients and energy flow from crops to livestock and back. This system allows the environment to internalize any cost to the environment i.e. being less damaging or more beneficial to the natural resource base. Pollution problems in rural areas are also internalized, as the small amount of waste produced is used as fuel or organic manure in the field (Conroy 2004).

Production of animal food products grew most rapidly in places with high consumption rates. A revolution is taking place in global agriculture that has profound implications for human health, livelihood, and the environment (Rollefson 2001). The change in the diets of billions of people could significantly improve the well-being of many rural poor. Livestock products are a source of protein and micronutrients, in which the poor in rural areas are usually deficient. This could be alleviated by increased consumption of even small amounts of meat and milk, which provide the same level of nutrients, protein, and calories that a large amount of vegetables and cereals would provide.

Unlike the supply-led green revolution that precedes it, the livestock revolution is being driven not by new technology, but by rising demand. That means it won't go away, regardless of its consequences. The rising demand for animal foods can be met: we can grow enough grain to feed livestock without taking food from the mouths of people, but research-based sustainable development is needed to achieve this (Hegde 2006).

The livestock revolution offers the way toward green commercial organizations and international development uniting their concern for poor farmers. Farm income could rise dramatically with a rising demand for livestock products. If it is handled correctly, it will improve and meet the rising demand of millions of poor and help save them from being driven deeper into poverty (ILRI 2006).

1.1 Objectives of the Study

Keeping in view the significance of livestock husbandry in socio-economic transformation as well as maintaining the agricultural sustainability and the economic

viability of poor farmers in developing countries like India in general and Aligarh district in particular, the researchers intend to meet the following objectives:

∞ To show the input of female labourers in livestock husbandry.

∞ To show the livestock oriented employment for various socio-economic groups in the study area.

Tab. 1: Basic data of the sampled villages in Aligarh district.
Source: Field survey 2007-2008

Blocks	Villages	Total household	Total population	Total male population	Total Female population
Khair	Manpur Kalan	103	588	316	272
Tappal	Bairamganj	116	637	317	320
Atrauli	Raipur Munzapta	369	2408	1302	1106
Bijauli	Ranmochna	217	1389	778	611
Gangiri	Bhay	104	637	362	275
Iglas	Tehara	274	1655	895	760
Gonda	Mati	233	1474	783	691
Lodha	Mirzapur Siya	113	921	513	408
Dhanipur	Morthal	334	2125	1130	995
Akrabad	Badri	79	465	230	235
Jawan	Samastpurkota	190	1279	709	570
Chandaus	Balrampur	78	623	330	293
Total		2210	14201	7665	6536

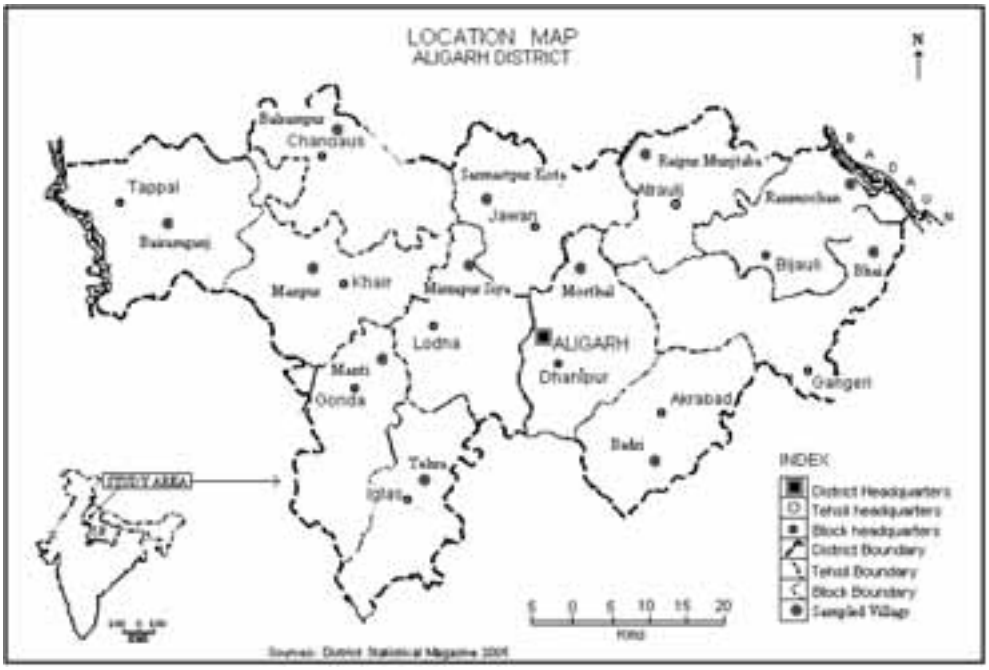

Fig. 1: Aligarh district research area.

1.2 Geographical Outlook of Study Area

Aligarh district, located in the western part of Uttar Pradesh, is an important district in India lying in the central part of Ganga Yamuna Doab. The capital of India is 130 km from Aligarh and 84 km from the city of Taj (Agra). The total area of the district is 3,700 km^2 and the population in 2001 was 2,992,286. The maximum extent of the district from east to west is 116 km and the maximum extent from north to south is about 62 km.

The shape of Aligarh district is dominated by an east-west protrusion. It is separated from Badaun district by the extreme north-eastern boundary of the river Ganga and the extreme north-western boundary, formed by the river Yamuna, separates Aligarh from Gurgaon district of Haryana state. It is bound by the district of Bulandshahr in the north, Hathras in the south, Etah in the east and Mathura in the west and southwest. The district has been divided into 5 tehsils, namely, Atrauli, Gabhana, Khair, Koil and Iglas. These tehsils are further subdivided into 12 development blocks, namely, Atrauli, Gangiri, Bijauli, Jawan, Chandaus, Khair, Tappal, Dhanipur, Lodha, Akrabad, Iglas and Gonda, which include 1180 villages. Information regarding sampled villages is given in Tab. 1. All the villages are dominated by poor farmers. Most of them practice a mixed farming system, i.e. a livestock-crop integrated farming system. These villages are served by pucca road (metalled road). The houses mostly have thatched roofs except for those owned by big farmers. Some villages, such as Bairamganj in Tappal block, are dominated by Brahmn (high caste); Mirzapur Siya in Lodh block and Morthal in Dhanipur are dominated by a Muslim population; Tehra in Iglas block by Hindu Rajput, and the rest of the sampled villages have mixed populations.

1.3 Research Methodology:

The present study is based purely on primary data. Primary data was collected through field survey of the sampled villages. Collected data was processed, presented in tabular form and analysed well for the purpose of deriving concrete and precise results. 1105 livestock-rearing households of various socio-economic groups were interviewed using a detailed survey regarding various issues of the study. Farms are classified as landless, marginal, small, middle and large on the basis of size of landholdings. Less than 1 hectare, 1-2 hectares, 2-4 hectares and more than 4 hectares of land are the criteria for marginal, small, medium, and large farms. Women's participation and employment generation in livestock husbandry were taken as indicators for socio-economic development in the study area.

2 Results and Discussion

2.1 Sampling of Farmers

For detailed study, 1105 households were surveyed, out of which 950 were livestock rearers, which is 85.97% of the total households.

Tab. 2: Number of Sampled Households in Aligarh district.

Sampled households	Share of households in livestock rearing	Percentage of livestock rearers
1105	950	85.97%

Tab. 3: Number of households involved in livestock husbandry in Aligarh district.

Category of farms	Share of farmers to livestock rearers	Percentage share of livestock rearers
Landless	103	10.84%
Marginal Farms (less than 1 hectare)	207	21.26%
Small Farms (1-2 hectares)	392	42.10%
Medium Farms (2-4 hectares)	155	16.31%
Large Farms (more than 4 hectares)	93	9.78%

Source: Field survey 2007-2008.

2.1 Share of Female Participants in livestock husbandry

The level of structural change in production of various livestock is the reflection of physio-socio-economic milieus of the concerned area. Increasing urbanizations, social transformations, food habit changes and increasing purchasing power appears to be very catalytic factors for livestock growth. Women play a crucial role in the sector of livestock farming. Women workers are equal in efficiency and performance to male workers in identical roles. In certain roles, women workers are even more efficient than men. In respect to reliability, promptness and punctuality, women have an edge over their male counterparts.

Gender discrimination in the matters of food, nutrition, education and health, compulsory responsibilities of domestic affairs, limited mobility and lower wages as compared to male workers, lack of economic independence and support and lack of confidence due to customs and family pressure are the most common hurdles for women.

Gender discrimination in agriculture in general and livestock in particular on large farms is accentuated due to social stratification and involvement in other respectable work such as education and indoor household work. Despite such variations, women's participation in animal husbandry, since ancient times, has been well recognized.

This study reveals that more than 90% of female participants on all categories of farms, except large farms, are involved in livestock husbandry. The marginal farms' share in animal husbandry is 99.12%, while it is 98.52% for small farms and 45.45% for large farms. The highest participation of landless farms and the lowest participation of large farms can be attributed to the socio-economic conditions of the respective groups.

Tab. 4: Percentage share of female participants involved in livestock rearing.

Type of farmers	Total female members in household	Female participants in rearing	Percentage of female participants in total female members
Landless	309	307	99.35
Marginal farms	802	795	99.12
Small farms	1442	1470	98.52
Medium	495	450	90.90
Large farms	407	185	45.45
Total	3505	3207	91.49

Source: Field survey 2007-2008.

2.2 Share of Female Labourers in Livestock Husbandry

The mode of utilization of women's labour in animal husbandry activities was also estimated, and it was found that, of the total input by female labourers, more than 90% were unpaid i.e. they were women from the same household.

Women are mostly engaged in activities like milking, feed mixing, cleaning stalls, and feeding the animals. In all areas, milking in particular is done mostly by women in the household. In some villages, women from a few households take the animals for grazing. In addition to their own animals, they also take animals belonging to other households, for which they get monthly payments. Tab. 5 indicates that large farms have the largest share of paid women's labour and their female members are restricted to bringing the animals to graze in the field; however, at these households, they serve their own animals with no help from neighbouring farms.

Tab. 5: Estimation of women's labour input in livestock husbandry.

Type of farms	Average number of livestock	Women's labour input Per household		Total no. of female labourers per household
		Paid	Unpaid	
Landless	2	3 (0.97)	304 (99.02)	307
Marginal farms	2	23 (2.89)	771 (96.98)	795
Small farms	2	58 3.94)	1367 (92.99)	1470
Medium	4	45 (10)	405 (90)	450
Large farms	5	62 (33.51)	123 (66.48)	185
Total		188 (5.86)	2973(92.70)	3207

Source: Field survey 2007-2008.
Note: Figures in brackets are in percent.

Fig. 2: A landless female livestock rearer milks a cow.
Source: Author.

2.3 Social Structure of Employees

Moreover, the social structure of the population has also shown a paramount effect on the level of employment generation through livestock husbandry. This study revealed that some specific castes belonging to a backward group are specialized in particular kinds of livestock husbandry operations. Other backward castes (OBCs) and politically recognized social groups, including Rajput, Lodha Yadau, etc. showed the highest proportion (64.52%) of workforce involved in this sector (Tab. 6). These are followed by high castes and scheduled castes (SCs), the most socially deprived group. The high level of employment of OBC groups in livestock husbandry is mainly attributed to their traditional experience of animal rearing as well as the scarcity of land for full-time involvement of all family members throughout the year. They follow a mixed farming system in which both cropping and livestock rearing are practiced together with a view to increase economic viability of their family members and sustainability of different crops grown on limited land.

Tab. 6: Social structure of employees of animal husbandry in Aligarh district.

Category of farmers	Workers in Animal husbandry to Total workers (in percent)	Operations of livestock husbandry		
		Rearing producer	Marketing	Collection/Processing
High Caste	229 (24.10)	179 (78.16)	38 (16.59)	12 (5.24)
O B C	613 (64.52)	412 (67.21)	134 (21.85)	67 (10.92)
Schedule Caste	108 (11.36)	80 (74.07)	20 (18.51)	8 (7.40)
Total	950 (100)	679 (70.63)	192 (1.79)	87 (9.15)

Source: Field survey 2007-2008.
Note: OBC (Other Backward Caste).

The discussion regarding work also showed variation with social stratification. High castes showed the highest participation in rearing. They accounted for 78.16% of total people involved in animal husbandry. The highest share of this group in animal rearing is attributed to the easy availability of capital for investment in animal husbandry. Land for fodder is easily available to the high castes as they usually have a large size of landholding in the study area, which also contributes to the highest percentage of high castes in livestock rearing. After high castes, schedule castes are the second largest livestock rearers because they are either employed as labourers by high castes or involved in livestock husbandry either directly or by following the sharing system of small ruminants like goats and sheep.

Marketing involves the transaction of livestock and their products through different channels from producers to consumers. Next to OBCs with 21.58%, SCs were the largest shareholder (18.51%) because the marketing of livestock by high castes is done by the schedule castes, as they serve the high castes as hired labour. Moreover, collection/processing activities are mostly done by OBCs, with a share of 10.92% of the total workforce being OBCs, while the smallest share is of the privileged groups, i.e. high castes, because they almost never perform this job; it also differs from individual caste among high castes.

2.4 Employment Generation

Economic stratification on the basis of landholdings of the farmers is an important controlling factor of employment level generated through various operations of

animal husbandry in the study area. The study revealed that the level of employment generated or workforce absorption in the livestock sector is controlled by the size of operational holdings of the farmers. Farmers with marginal, small and medium sized holdings participated in a larger proportion of work, and more than 21% of their total workforce in each category was employed in different operations of livestock husbandry in selected villages of the district. The farmers follow the livestock-cropping integrated agricultural system, in which crop residues are consumed as animal feed and livestock wastes are used in crops as manure for good production. The family members of these groups of farmers involve themselves in both cropping and livestock husbandry simultaneously and are therefore able to enhance their incomes.

Tab. 7: Proportion of workers in different operations of livestock husbandry in Aligarh district.

Category of farmers	Workers in Animal husbandry to Total workers (in %)	Operations of livestock husbandry			
		Rearing producer	Marketing	Collection/ Processing	Total
Landless (0 hect.)	103 (10.84)	80 (77.66)	10 (9.70)	13 (12.62)	103 (100)
Marginal (0-1 hect.)	207 (21.78)	170 (62.96)	27 (13.04)	10 (4.83)	207 (100)
Small (1-2 hect.)	392 (41.25)	340 (86.73)	30 (7.65)	22 (5.61)	392 (100)
Medium (0-1 hect.)	155 (16.31)	122 (78.70)	18 (11.69)	15 (9.67)	155 (100)
Large (>4 hect.)	93 (9.78)	83 (89.24)	8 (8.62)	2 (2.15)	93 (100)
Total	950 (85.97)	795 (83.68)	93 (9.78)	62 (6.52)	950 (100)

Source: Field survey 2007-2008.

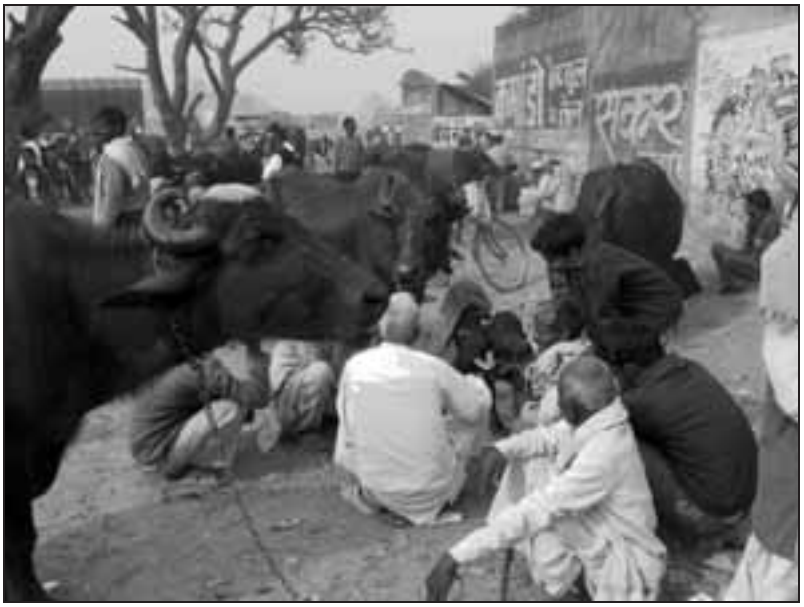

Fig. 3: Marginal and Small Farmers Selling their animals at the Livestock Market.
Source: Author.

Limited land and high agricultural population pressure have compelled poor farmers to be involved in the livestock sector. Landless and large farms at two extreme ends showed a low level of participation in this sector of not more than 9.78% of the total workforce of these categories. The low rate of participation of the landless category of the population is due to the fact that this group does not have sufficient capital for purchasing livestock, which is very costly, especially buffalo and cattle. Besides this, the absence of fodder or crop residue needed for livestock feeding also increases the production cost, as they would have to purchase feed from other farmers. These farmers are only involved in the rearing of small ruminants like goats, which do not require much capital or land for crop residue and fodder. Large farmers, although they have much capital and crop residue, show low participation because they hire labourers to do this kind of work. Their family members prefer not to work in livestock husbandry.

The analysis of farmers' work also reflected the impact of land-holding size on shares of participation in various categories of work like rearing, marketing and collection and processing. The highest percentage (89.24%), held by large farms, have easy availability of capital to rear livestock, but do not have much time for marketing and collection or processing. In the marketing sector, the highest percentage of workers involved are marginal farmers (13.04%) and medium farmers (11.69%) respectively, while in collection/processing, landless farmers are involved in largest percentage (12.62%).

3. Conclusion

The increasing level of income of the population, burgeoning middle class families, food habit changes and increasing urbanisation are becoming major factors in increasing livestock husbandry activities in the study area. Despite gender discrimination towards women in general and in livestock rearing in particular, the participation of women in livestock husbandry is enhancing rapidly.

Thus, the study shows that the social structure of the population has a paramount effect on the level of employment generation through livestock husbandry. Women's participation in animal husbandry by landless women is highest, and the participation of large farms is the lowest among all farms due to their low and high socio-economic divisions, respectively. The utilization of female labourers in animal husbandry activities was also estimated, and it was found that of the total input by female labourers, more than 90% were unpaid, i.e. they were women from the same household. Women on these farms are mostly engaged in activities like milking, feed mixing, cleaning stalls, and feeding the animals. The total time devoted to these activities by different classes of farmers is also high in landless farmers due to much spare time after completing their household work.

Caste stratification among different social groups, which is very prominent in Aligarh district, also contributes to livestock husbandry for survival. All the work related to livestock husbandry and done by Scheduled Castes is not accepted by the higher social groups. Untouchability concepts restrict the Scheduled castes from selling milk, so their share in collection is less than the Other Backward Caste (OBC) and the Higher caste. Only Other Backward Castes who are known for having traditional experience of livestock husbandry are acceptable in all social groups (High castes and scheduled castes) for marketing of milk, so their share is the largest in all the work of livestock husbandry.

Economic stratification on the basis of landholding of the farmers is also one of the important controlling factors of employment level generated through various operations of animal husbandry in the study area. The work analysis of farmers reflects the impact of land-holding size on shares of their participation in various categories of work, such as rearing, marketing and collection and processing. The highest percentage (89.24%) in this work, held by large farms, is due to easy availability of capital to rear livestock.

References

GOI, 2008: Eleventh five year plan, Report of the Working Group on Animal Husbandry and Dairying. (2007-12). Planning Commission, New Delhi.

Conroy, C. 2004: Livestock Sector Growth and Poverty with particular reference to India, Natural Resource Institute.

Hegde, N. G. 2006: Livestock Development for Sustainable Livelihood of Small Farmers, Souvenir of the 39th Annual General Meeting and 48th National Symposium on Emerging Rural India - A Challenge to Livestock Industry. Compound Livestock Feed Manufactures Association of India (CLFMA). Manesar, Haryana.

ILRI, 2006: Why livestock matter. http://www.ilri.org/home.asp?CCID=52&SID=1

Inforesources, 2007: The Livestock Revolution: An Opportunity for Poor Farmers. Focus No. 1.

Khan, N. et al 2006: Livestock Marketing and Diversification of Agriculture. Vista International Publishing House, Delhi.

Rollefson, K. I. 2001: Livestock Development for Food Security. Annual Report of the League for Pastoral Peoples, 2000/2001.

ROLE OF LIVESTOCK HUSBANDRY ON RURAL TRANSFORMATION IN NORTH INDIA: A CASE STUDY

Summary

In the paper is presenting the role of livestock husbandry as an important source of economic activity in the agricultural sector in India. The livestock sector improves the socio-economic conditions of people in general and rural people in particular. It is usually practiced in rural areas since ancient times. The increasing urbanization with the growing population and the changing food habits of the people enhances the demand of livestock products in the whole world. India is one of the developing countries with the highest number of livestock, and in the first place in the world as regards milk production. India has 185 million cattle and 98 million buffaloes, which is 20% of the world's bovine and 14% of cattle population.

For detailed study, 1105 households were surveyed in Aligarh district, located in the western part of Uttar Pradesh. 12 villages from the district have been selected for field survey to generate data regarding the socio economic transformation of rural people in the study region. All the villages are dominated by poor farmers. Most of them practice a mixed farming system, i.e. a livestock-crop integrated farming system. A positive growth of 7.5% livestock as a whole has been observed through the data analysis of two points of time i.e. 1993 and 2003. 83% of the workforce of households surveyed in the rural areas is found to be involved directly or indirectly in livestock husbandry, and it is practiced by landless, marginal and small farmers particularly.

The level of structural change in production of various livestock is the reflection of physio-socio-economic milieus of the concerned area. Increasing urbanizations, social transformations, food habit changes and increasing purchasing power appears to be very catalytic factors for livestock growth. Women play a crucial role in the sector of livestock farming. Women workers are equal in efficiency and performance to male workers in identical roles. In certain roles, women workers are even more efficient than men. In respect to reliability, promptness and punctuality, women have an edge over their male counterparts.

The study shows that the social structure of the population has a paramount effect on the level of employment generation through livestock husbandry. Women's participation in animal husbandry by landless women is highest, and the participation of large farms is the lowest among all farms due to their low and high socio-economic divisions, respectively. The utilization of female labourers in animal husbandry activities was also estimated, and it was found that of the total input by female labourers, more than 90% were unpaid, i.e. they were women from the same household. Women on these farms are mostly engaged in activities like milking, feed mixing, cleaning stalls, and feeding the animals. The total time devoted to these activities by different classes of farmers is also high in landless farmers due to much spare time after completing their household work.

Caste stratification among different social groups, which is very prominent in Aligarh district, also contributes to livestock husbandry for survival. All the work related to livestock husbandry and done by Scheduled Castes is not accepted by the higher social groups. Untouchable's concepts restrict the Scheduled castes from selling milk, so their share in collection is less than the Other Backward Caste (OBC) and the Higher caste. Only Other Backward Castes who are known for having traditional

experience of livestock husbandry are acceptable in all social groups (High castes and scheduled castes) for marketing of milk, so their share is the largest in all the work of livestock husbandry.

Economic stratification on the basis of landholding of the farmers is also one of the important controlling factors of employment level generated through various operations of animal husbandry in the study area. The work analysis of farmers reflects the impact of land-holding size on shares of their participation in various categories of work, such as rearing, marketing and collection and processing. The highest percentage (89.24%) in this work, held by large farms, is due to easy availability of capital to rear livestock.