CHAPTER - III

Review of Literature

LIVELIHOOD SUSTAINABILITY OF RURAL WOMEN THROUGH LIVESTOCK ENTERPRISES - AN ANALYTICAL STUDY IN GOALPARA DISTRICT OF ASSAM

CHAPTER- III

REVIEW OF LITERATURE

The more one knows about the peripheral investigations germane to one's own study, the more knowledgeably one can' approach the problems inherent to one's own area of investigation" ***Paul Leedy (1980).***

In conducting a research work review of literatures is an important task which will help to clarify the concepts and to avoid the unnecessary duplication of the work. On the basis of the review of literature, hypothesis suggesting the methodology of research can be developed which can provide the comparative study of the proposed work and thus interpretation can be drawn.

While dealing with a problematic situation, a researcher can find out a technique to approach the same consulting the review of literatures only in the respective areas. It may show as to how the collateral researchers have studied the situation. Thus, a researcher may easily approach in evaluating own research efforts by comparing the related works already done by others earlier.

In accordance with the objectives of the study, literature have been reviewed and presented in the following three sections.

Section-I : Socio-economic profile of the women dealing with livestock enterprises.

Section-II : Livelihood sustainability of women through livestock enterprises.

Section-III: Livestock enterprises

3.1. SOCIO-ECONOMIC PROFILE OF THE WOMEN PARTICIPATING IN LIVESTOCK ENTERPRISES

Socio-economic status of the rural women those who are involved in livestock rearing, management and production system are the most important factors under the study because such factors affect the entire process of livestock farming practices and production level of livestock products from the available resources. For this, age, family

size, family type, cast, education, herd size, social participation, extension contact and much media exposure of the respondents are to be reviewed from the available literatures.

3.1.1. Socio-economic profile of the respondents:

3.1.1.1 Age of the women livestock farmers:

In a study on rural women empowerment and development banking, Lalitha (1997) observed the profiles of effective women borrowers were in the age group of 31-40 years.

In a study on socio-economic and psychological characteristics of rural women dealing with animals, Singh (2001) found that most of the women were middle aged with low literacy level and low family income. Bhagyalakshmi *et al.* (2003) in their study on profile of rural women's micro-entrepreneurs mostly with livestock of Hyderabad observed that majority of the respondent belonged to the middle age group (66.67%), young age group (22.22 %) and old age (11.11 %).

Kaur (1991) found majority of farm women (67.50 %) belonged to the age group 31-45 years followed by those up to 30 years (17.5%) and above 45 years (15.00percent).

In a study conducted in the district of Jabalpur (MP), Sharma D.K (1992) reported that majority of farm women who were involved in agricultural activities were of younger and middle age group.

Borgohain (1993) in a study on the working pattern of farm women in Assam in relation to livestock farming, observed a considerable number of respondents from both young and middle age group were having medium level of knowledge but older age group were having low level of knowledge. The study also concluded a negative and significant correlation between age and knowledge level.

Shreeshailja and Veerabhadraiah (1993) revealed that majority of the dairy farm women belonged to the middle-aged group.

Shoremi and Wodi (1997) in a study conducted in the Kogi state of Nigeria would record the involvement of farm women age group in between 31-45 years.

In a study conducted by Malik (1997), observed that majority of farm women were in the middle age group ranging from 24-42 yrs. In the study, he could reveal that the ages of the respondent were negatively correlated with their role performance to a significant level.

Akand and Borgohain (2010) studied on the role of expectation, perception and performance of tribal women in animal husbandry operations of Lakhimpur and Kamrup district of Assam could record that (38.00percent) of woman were belonged to the old age group.

In a study on analysis of constraints in women empowerment in tribal areas of Assam conducted by Das (2012) reported that st5atus of women in a society had a significant level of social justice in that society. Women status is often described in terms of their level of income, employment, education, health and fertility as well as their roles within the family, the community and society.

3.1.1.2. Family size of women livestock farmers

Gautam and Meenakshi (1992) reported that average family size of the sampled women farmers was 8.73 percent.

Hasib (2004) reported a significant relationship between family size and adoption of scientific animal husbandry practices by farmers of Hajo development block of Assam.

Akand and Borgohain (2010) studied on the role of expectation, perception and performance of tribal women in animal husbandry operations of Lakhimpur and Kamrup district of Assam found majority of women (48.68 %) were having small families.

Khumang (2011) in his study on communication behaviour among tribal and non-tribal dairy farmers in Cachar district of Assam indicating that majority of (53%) of dairy farmers belonged to the small sized family.

3.1.1.3. Family type of women livestock farmers

Borgohain (1993) reported that the families of rural farm women were predominantly of nuclear type i.e., 71percent. He also cited that the farm women were predominantly nuclear type devoted time in livestock rearing activities, irrespective of their family type.

Narmatha and Subramonium (1994) also reported that majority of the respondent lived in nuclear families.

Zadeng (2012) in a study on pig rearing in Mizoram revealed that majority of the respondent hailed from nuclear families.

3.1.1.4. Caste of women livestock farmers

Sharma (1992) regarding castes of the farm women that majority of them belonged to the middle caste group and very less percent of that belong to the higher and lower caste group.

Malik (1997) observed that majority of the respondent belong to the medium caste group, 23percent belonged to the lower cast group and 22.50percent belong to the higher cast group.

3.1.1.5. Education level of women livestocks farmers

Sharma and Singh (1970) revealed that women irrespective of educational level, participated in farm operation.

Malik (1997) also observed that most of the farm women had medium level of family education.

Shoremi and Wodi (1997) observed that educational attainment by woman lowered their involvement in livestock production.

Kadian (1998) observed a significant and positive correlation between the level of knowledge in the field of dairy farming and the educational level of farm women.

Omprakash (1998) revealed in his study that 68percent of ladies had medium family educational status.

3.1.1.6. Herd size of livestock managed by women farmers

Kadian (1988) observed that 61 percent ladies had large herd size. He also showed a positive correlation between knowledge level and herd size.

Malik (1997) reported that large number of farm women reared animal ranging from 6-10 and the mean herd size was 7 animals per family. Saroj and Omprakash (1998) observed that mostly ladies have medium herd size.

3.1.1.7. Social participation of women livestocks farmers

Borgohain (1993) reported that majority of farm women 50 percent had medium level of social participation followed by 42percent with low level.

Shreeshailja and Veerabhadriah (1993) reported that majority of dairy farm women had low social participation.

3.1.1.8. Contact with the extension workers of women livestocks farmers

Kaur (1981) reported that extension contact had no relationship with role performance of farm ladies in animal related activities.

Malik (1997) revealed that extension contact of farm woman was low to moderate and indicated it to be positively and significantly related with role performance.

Kadian (1988) reported that knowledge of farm women in the field of dairy farming had significant and positive correlation with extension contact.

3.1.1.9. Mass media exposer of women livestocks farmers

Kadian (1988) reported that level of knowledge of farm women in the field of dairy farming and significant and positive correlation with mass media exposure.

Shreeshailaja and Veerabhadriah (1993) observed that 55 percent of farm women has media participation.

3.2. LIVELIHOOD SUSTAINABILITY OF WOMEN THROUGH LIVESTOCK ENTERPRISES

3.2.1. Knowledge level of women in improved livestock management

Kakaty (1980), Singh (1982), Srivastava (1982), Majumdar (1985), Saharia (1985), Subramanian (1987), Nataraju and Channegowda (1987), Jyrwa (1988), Kaushik (1988), Gautam (1989), Borgohain and Kakaty (1990), Singh (1990), Das (1991), Angami (1993) and Kakati (1993) reported that knowledge about dairy innovations was positively associated with adoption of improved dairy practices. Similar finding was reported by Marwale *et. al*. (1995).

Bargain (1985) and Angami (1993) reported that majority of the respondents had low level of knowledge in improved dairy practices. But Majumdar (1985), Saharia (1985), Das (1991) and Kakati (1993) reported medium level of knowledge of majority of the farmers. Raut *et al*. (1989) reported that most of the respondents were aware of improved dairy practices such as A.I. and calf dehorning. Singh (1992) reported that most of the farmers had medium level of knowledge about dairy technology in less successful society as well as more successful society.

Kadian (1988) reported that knowledge level of farm women in relation to dairy farming has 22 percent, 49 percent and 29 percent low, medium and high respectively.

Jamal (1989) reported that the farm women had low level of knowledge in the role of segment of animal feeding, management, health care and marketing of dairy products. They had also low skill hands in the animal husbandry practices.

Kokatge and Tyagi (1994) observed a significant but negative relation of knowledge with technological gap in breeding practices. In regression analysis they found that breeding practice had significant influence in the variation of technological gap.

Marwale *et al*. (1995) and Mathiyalagan (1997) found that knowledge could significantly influence the variation of adoption level.

Davis (1995) studied the gender-based difference in the ethno-veterinary knowledge of Afgan nomadic pastoralists. The study showed that the woman not only play a greater role in the care of livestock, but suggested that they know as much, sometimes more about livestock health and disease than men.

Neelam *et al.* (1998) found that farm women of Hissar district in Haryana had lack of knowledge and skill about improved technology (Agriculture and Veterinary) and they have interested to get it.

Kumar, S. (2004) studied knowledge level and role of women in dairying and animal husbandry in Meerut district of U.P. and found significant contribution of women and their decision-making power in dairy sector. The study also revealed that extent agencies working in rural areas must provide intensive training to the farm women.

A study on the impact of training for more performance of women farmers in animal husbandry practices was conducted at the Livestock Research Station, Mandira in Kamrup district of Assam under Assam Agricultural University. Critical evaluation of the participating women farmers was done and it was assessed that the women farmers who participated in the training program could earn more economic gain through duck farming practices. The study revealed economic status and knowledge of the women duck farmers were found positive correlation through scientific training of the trade.

Similar study was also conducted by Ray *et. al*. (2013) in Sibsagar district of Assam on the need of training of the farm women in goat rearing and management and recorded the need training of the women farmers with their socio-personal and economic variables. The study revealed that the women farmers attending in the training programs gained more knowledge on scientific and management system and they could run economically viable small animal enterprises in animal husbandry sector.

Knowledge is a necessary requirement for occupational socialization of farmers. It is the basis for any action, which must precede the act of adoption. Profitable application of modern dairy technology supposes adequate knowledge and necessary

skill as pre-requisite. Needless to say that use of dairy innovations will depend upon the volume of acquired knowledge, which is an important component of adoption behavior.

3.2.2. Attitude towards livestock farming

Omprakash (1988) observed that the farm women had 21 percent low, 48 percent medium and 31 percent high attitude towards dairy farming.

Kadian (1988) reported that the farm women had 21 percent low, 48 percent medium and 31 percent high attitude towards dairy farming.

Khandekar (1992) reported that majority of tribal women in roadside 84 percent and interior 90 percent and deep interior 61.11 percent villages had medium level of attitude towards livestock rearing as economic enterprise.

Kumar (2013). Observed that women farmers were still have poor access to extension services. Despite the fact that women produced much of the food in the developing world, they remain malnourished then most men are. He emphasized on the access to extension services, gender friendly technologies, mobilization farm women and mainstreaming of gender for more empowering farm women.

3.2.3. Decision making pattern in livestock farming practices

Seema (1986) reported that the decision about purchase and sell of land, care and management of animals and children's education were taken jointly.

Jamal (1989) reported that most of the decision about feeding of dairy animals and milk products making were taken by housewives alone. Farm women were also involved in contributing for the joint decision made in respect of some of the aspects of breeding, green fodder production and marketing of livestock products.

Chauhan *et al*. (1994) reported that 10percent of women were in high, 76 percent in medium and 14 percent in low participants groups for decision making.

Namratha and Subramanium (1994) revealed that involvement of women in decision making was higher in operational decision than the investment decision.

Baumann and other researchers (2000) in their research works find that little research effort has been oriented towards livestock and intra-household decision making and gender disaggregated data on work sharing, access to resources and sharing of benefits.

Dogra (2002) observed that in Indian villages, women farm workers are neglected due to gender based discrimination and, in the study, he suggested the need for organizing them for their economic empowerment.

Mulugeta and Amsalu, T. (2014) revealed that rural women play a key role in livestock management and household activities. The authors could record overwhelming majority (98.9 %) of the respondent participated regularly in cleaning of animals sheds, preparing of milk products, gathering dungs, selling of milk and milk products (94.4%), selling eggs (85.5%), egg collection (84.4%) and selling of poultry (77.8%). It was observed that the rural women actively participated and performed in all aspects of livestock production and management, besides regularly engaged them in food preparation, looking after family members and also other activities. The author recorded level of rural women involved in taking decision of women in various activities of animal husbandry viz., Artificial insemination (36.7%), selling and purchasing of eggs (32.2%). Concerning the role of rural women in final decision, the highest percentage of responses were found in the case of selling and purchasing of milk and milk products (47.8%) followed by selling and purchase of egg and selling and purchase of poultry (44.4%) of the respondents.

Ogdand and Hembade (2014), in a study of Maharashtra state on the extent of participation of women in decision making in dairy occupation, revealed that most of the work regarding feeding, watering of animals was the sole responsibility of women (84%), management (88%), while involvement of women breeding activities (8%) and health care (8%). Participation of women in processing and marketing activities was not much appreciated. In the study only 4 percent of women could be recorded to involve in processing and marketing of milk and milk products.

Hagone, V and Basunathe (2015) in a study conducted in Melghat region of Amravati District of Maharastra state in the decision-making pattern of tribal women in dairy enterprise could record that majority of (81.33%) respondent were belonged to medium followed by low (9.33%) and (9.34%) high level of decision making. while in case of improved dairy farming practices majority of the respondents (59.11%) took decision after consultation with others and only 7.22 percent took independent decision in health care practices. Majority of the respondent (59.11%) consulted with others actually 16 percent took independent decision. Decision making about marketing practices majority of the respondent (75.00 percent) took had consult with others but only 10.17 percent had taken independent decision. In selling and purchasing of animals it was recorded that majority of them (74.67%) had consulted with others.

Kavithaa and Rajkumar (2016) revealed that rural farm women were dominated in decision making process in non-financial activities like construction of shed, vaccination, deworming, management of new born calves, sick and pregnant animals, milking and processing of milk, utilization of dung. It was observed from the study that 63.33 percent of women were actively involved in decision making process regarding vaccination and deworming while 76.66 percent were actively involved in construction of shed.

From the study it was evident that rural farm woman were less dominated in decision making activities regarding economic aspects.

The authors could record decision making process of women in economic aspects like insurance of animals (25.00 %), marketing of milk and milk products (30.00%) and loan and advances (30.00%) and so it was need to them regarding financial regulators like loans, insurance and marketing structures.

3.2.4. Nature of extent of participation in livestock management

Banu (1987) in her works on the role of Bangladeshi women observed that many of the important activities are performed by women and the rural women are having significant contribution in livestock production and management.

Ray (1994) studied on the participation of scheduled caste women in Hajo Development Block of Kamrup district of Assam and observed significant participation and contribution of their socio-economic empowerment through agriculture and animal husbandry practices. The research worker also could record the constraints faced by the farm women of the particular caste of Assam in existing socio-economic system prevailed in the study area. He suggested some measures for improving the socio-economic empowerment of schedule caste women through animal husbandry and diversified farming system. In the study, he pointed out some important aspects of for improving livestock rearing and management system enabling the women farmer to maximize their income level.

Census (2001) reported that out of the total 496 million of rural female population 23.90 percent are workers and about 87.00 percent female worker are found in agriculture.

Sobha (2001) conducted a case study at Chittoor district of Andhra Pradesh on the participation of women in agriculture and recorded the performance of women both in agriculture and animal husbandry practices. He could record a vast majority of women in rearing of milch animals (cows) and keeping of domestic poultry. He recorded 46percent of women in study area were rearing domestic poultry for income generation. He also found a sizeable numbers of respondents were having the good experience in providing feeds and fodder, drinking water, cleaning and washing of farm animals, caring of poultry and livestock, besides engaging them in agriculture and other operations.

Women are backbone of the rural economy. In spite of the fact women's participation in livestock management relation activities is more critical as compared to man, their contribution and involvement is neither well documented or nor considered as paid work (Hassan *et al*, 2007).

Younas *et al*. (2007) found that nearly half of the rural population consist of women who contribute 60.00 to 80.00 percent of labor required for animal rearing

Amin *et al.* (2010) reported that some of the activities like fodder production, cutting and transportation are mostly performed by male family members, but in many cases the women are also involved with these additional duties.

Arshad *et al.* (2010) reported that women make a significant contribution to food production, particularly in horticulture and small livestock.

In a study conducted by Iqubal (2010) in Aligarh district of U.P. in the year 2007-08 on the role of women in livestock husbandry for rural transformation, the author could estimate that 90 percent workers were female workforce engaged in various operations of livestock production and management.

Lemelem *et al.* (2010) found that in rural Ethiopia, women play key role in both livestock management and household activities besides farming activities. They are the household manager but their work is considered as nonproductive, unorganized and un documented.

Sethi, N. (2010) found that women are generally responsible for the feeding, grazing, fodder collection, milking, processing, dung management, while men who manage the finances generally sale of milk products

WTO (2010) reported that 93.00 percent of women are employed in dairy activities in dairy production.

Upadhyay and Desi (2011) reported that rural women contribute a share of more than 75 percent in animal husbandry operations like feeding, milking and sale of milk

Chauhan (2012) reported that the involvement of tribal farm women in livestock management indicated that the highest mean score of involvement of tribal farm women was obtained in case of cutting and bringing of fodder. Other involvement of tribal farm women was seen in compost making, followed by watering and feeding to animal, milking, cleaning cattle shed, selling of milk and milk product, bathing of animals, preparation of milk products, grazing of animals, taking animals for bull and veterinary services.

Chauan (2012) found that age, educational status, occupation, herd size land holding and family size were observed negative significant with their involvement in livestock management

Mulugeta and Amsalu (2014) reported that overwhelming majority (98.90%) of the farm women participated regularly in cleaning of animal shed, preparing milk product (94.40%), selling egg (85.50%), egg collection (84.40%) and selling of poultry (77.80%)

Ogdand and Hembade (2014) reported that most of the work regarding feeding and watering of animals was the sole responsibility of the women.

Hagoneand Basunathe (2015) reported that majority of tribal farm women (47.33%) took independent decision about management practice in dairy, whereas 37.26 percent took decision after consultation with other

Hagone and Basunathe (2015) found that 82.66 percent of tribal women took independent decision of quantum of milk to be saved for further milk product preparation.

Kavitha and Vimal Rajkumar (2016) found that 76.66 percent of the farm women actively involved in construction of shed, 60 percent in dung utilization and 56.66 percent women involved in management of new born calves, sick and pregnant animal.

Mahesh *et al.* (2016) reported that there was highly significant relationship between social participation and overall contribution of tribal farm women in agricultural operations

Radhakrishnan *et al*. (2016) reported that most of the respondents were involved in storage of concentrates (87.50%), feeding of young calf (92.50%), watering the livestock (89.16%), offering the concentrate mixture (95.66%), offering the concentrate mixture (95.66%) and soaking of concentrates (82.50%).

Sharma *et al.* (2016) found that characteristic namely age (10.40%), education (13.30%), size of land holding (11.90%), socio economic status (13.9), attitude towards dairy practices (10.80%), extent of participation (10.00%), management orientation

(13.60%), exposure to training (12.20%) and economic motivation (10.30%) were found to positive and significant on the extent of participation in animal husbandry practices.

3.2.5. Impact of livestock on livelihood sustainability:

Govt. of India (2003) recorded that livestock sector employs 11 million people in principal status, 8 million people in subsidiary status. Around 71 percent of workforce are engaged in livestock sector are women, thus livestock have a key role in improving the economic welfare women.

In a study, conducted by Rao (2003) evaluated the performance of women dairy projects (WDP) in Rajasthan, that women dairy farmers were found were happy with the benefits from the dairy husbandry practices which reflected in their higher intake food, improved health conditions, better clothing, enhance savings and finally leading to increased status. He could record a positive correlation between awareness among women and Women Dairy Co-operative societies (WDCSs). Women were realizing their place in the house and village and existing pressure change age old prejudices. Some of them also started Self-Help Groups (SHGs) and operating internal loaning among them.

Similarly, study was also conducted by the same author in the year 2004 in Rajasthan and studied the viability of Women Dairy Projects through Dairy Co-operatives and recorded the increasing income and employment generation of women participants in dairy sector. In the study, he presented and overview of Indian co-operative movement with a particular focus on the role of women in it and he examined on the implementation of support to women's dairy projects and its impact on Rajasthan's women's dairy projects. The author revealed that all women's co-operatives formed only 2 percent of the total numbers of co-operatives in India, despite the fact that there were a number of successful co-operative owned, controlled and managed by men.

Kalita (2005) observed that rearing of domestic chicken (poultry) in rural condition as one of the main tools for income generation. He highlighted certain economic aspects of rearing of poultry by tribal women of Assam. In the study, he elaborated in details on the demographic and livelihood patterns, food habit of the tribal people and also on the production performance of indigenous poultry for more profit by the tribal women.

Integration of livestock and agriculture for increasing both the short-term long-term benefits were found to be sustainable in the mixed farming system which was critically evaluated by Burdhan *et.al*. (2007). The author could also recorded that livestock farmings were more sustainable in existing farming system.

George *et al.* (2009) in a study conducted in Kerala in 2006 to assess the socio - economic profile of rural women and the authors recommended more involvement of rural women in Animal Husbandry practices to improve the rural socio-economic conditions as they could record income generation through livestock farming continued by rural women.

Socio-economic empowerment of rural women through Dairy Co-operatives were systematically studied by Kumar *et.al*. (2011). In the study, the authors revealed that there was a positive and highly significant impact of dairy husbandry practices with the formation of co-operative societies. The authors also recorded the empowerment of members of the society in respect of their socio-economic traits.

Payeng (2013) inn a study on the livelihood among Tribal women of Pub-chaiduar Development Block of Sonitpur district of Assam, it was found that Tribal women not only reared Pigs for ritualistic purpose, but also found they reared for more earning within a short period of time with less investment. The study also attempted to motivate and creation of awareness among the women folk for scientific system of rearing to uplift their socio-economic status.

Women empowerment is critical as far as inclusive growth of a nation is concern. A number of strategies have been devised worldwide for women empowerment, SHG is being the most widely adopted one. Empowerment of women through SHGs through livestock-based enterprises were studied by Paul, S. and other workers of the ICAR complex, Umiam Meghalaya in the year 2013.

Duck farming as income generating activity to women SHGs in rural Development was studied by Hazarika and other workers in 2013 in Dimoria Development Block of Kamrup district of Assam. In the study it was found that average family income from duck farming by women SHGs ranges from minimum Rs.3, 000.00

to maximum Rs. 20,000.00 and total annual family income ranged from Rs. 5,000.00 to Rs.30,000.00.

In the sustainable livelihood guidance sheet prepared by the Department for International Development, London, and mention was made about vulnerability context, livelihood assets, transforming structure, livelihood strategies and livelihood outcomes. Under vulnerability context, shocks, trends and seasonality were the three components. On the other hand, there were five livelihood assets viz. human capital, natural capital, financial capital, social capital and physical capital.

Human capital includes the skills, knowledge, ability to labor and good health, which together enable people to pursue different livelihood strategies and achieve livelihood objectives. Human capital is a factor of the amount and quality of labor available and it varies in accordance with household size, skill levels, health status etc.

Natural capital includes the natural resource stocks from which resource flows and services for livelihoods are derived. There is a close relationship between natural capital and vulnerability context. Natural capital is important for the people who depend upon resource-based activities like farming, fishing, gathering in forests and mineral extraction.

Financial capital includes the financial resources that people use to achieve their livelihood objectives. These generally include availability of cash or equivalent that enables people to adopt different livelihood strategies. Financial capital comes from two sources – available stocks and regular glow of money.

By social capital it is meant to denote the social resources will give benefit in attaining livelihood objectives through network and connectedness, membership of more formalized groups and relationship of trust, reciprocity and exchange that facilitating co-operation.

Physical capital means to basic infrastructure and producer goods needed to support livelihoods. The infrastructures consist of changes to the physical environment that helped to meet their basic needs. These generally includes affordable transport, secure shelter and building, and adequate water supply and sanitation

3.3. LIVESTOCK ENTERPRISES

3.3.1. Livestock production :

Food and Agriculture Organization (FAO) of the UNO (United Nations Organization), in 1985, in a study confirmed that women are the mainstay of small-scale agriculture, the farm labor force and day to day family subsistence. About 70 percent of the agriculture workers, 80 percent of food producers and 10 percent of those who possesses basic foodstuffs are women and they also undertake 60 to 90 percent of the rural marketing, thus making up more than two third work force in agricultural production.

Singh and Viitanen (1987) observed Livestock production is a family operation. While it is recognized that most of the livestock management works are carried out by women, development, extension and training programs are not geared to their involvement and hence they derive no benefit

Kasar *et al.* (1989) revealed that the average income from livestock among tribal farmers was Rs. 349.82 percent

Borgohain (1993) reported that 63 percent of farm women were in middle income group having income ranging from 1,600 to 3,900 annually from livestock and poultry enterprise.

In a study conducted by Fuller (1994) mentioned that Women's role in livestock production range from no role at all, to high levels of function depending on the enterprise and local situation often the contribution of women is grossly under estimated because of the myth of male dominance in livestock production and lack of monetization and statistical recognition of the contribution of women to the production process. The database of women's involvement in raising livestock especially the large stock and their role in control and decision making of sub household level is lacking (Fuller, 1994).

Khandekar and Kunzru (1996) reported that tribal woman belonging to roadside villages, having higher employment in animal husbandry had higher income from it.

A report of the Working Group of Animal Husbandry submitted to the planning commission of Govt. of India in the year 2012 mentions that in India, livestock production is largely in the hands of women. In fact, animal husbandry is becoming feminized. The share of women in the total agricultural work force increased from 70.5 percent in 1993-94 to 76.6 percent in 2004-05. The proportion is as high as more than 90 percent in the state like Punjab and Haryana where animal husbandry is more commercialized and engaged more than 40 percent of total agricultural workforce. Most of the animal farming activities such as fodder collection, feeding, watering and healthcare, management, milking and household leveled processing, value edition and marketing are performed by women. Livestock are important for their livelihood, culture and they have limited all Agriculture sector employs $4/5^{th}$ of all economically active women in the country. 48 percent of India's self-employed are women. Women make 70 percent of workforce in animal husbandry. There are important stakeholders in farming activities in India constituting 90 percent of the total marginal workers in India (Yojana, Aug/13).

3.3.2. Improved livestock management practices

Borgohain (1985) reported that adoption level of indigenous dairy farmers was low. But in the case of non-indigenous dairy farmers it was medium. Saharia (1985) found that majority of the dairy farmers were medium adopters of improved dairy husbandry practices.

Angami (1993) and Kakati (1993) reported that the level of adoption of improved dairy husbandry practices by the farmers was low. Singh (1992) reported that adoption of scientific dairy farming practices by the respondents was of medium level. He further stated that the extent of technical constraints turned out to be the negative contributing factor to the 3 extent of adoption of scientific dairy farming practices.

Marwale *et al*. (1995) observed that majority of the farmers were medium adopters in feeding of green grasses and dry matter. However, in feeding concentrate majority were low adopters.

Another study conducted by Hari, R. (2013) among twenty-one women SHGs members in the Trissur district of Kerala those who were involved in dairy farming

practices. The participation of members in dairy farming practices were analyzed and their perception level towards women master trainers and adoption of technologies for better performance for viable dairy farming practices in the study it was found that dissemination of knowledge on the improve management practices among the women would pervade to the women resulting in better status and gender equality.

Likewise, similar study was also done by Talukdar, J. *et.al.* (2013). on the innovative animal husbandry practices adopted by farm women in the Kamrup district of Assam which depicted their better understanding of management of livestock farms in cost effective way which influenced livestock farming performance level among the women farmer.

Rewani, S.K. and other workers (2013) conducted a study for empowerment of women in tribal and backward areas through livestock based SHGs in three selected Development Blocks of Ranchi district of Jharkhand. The study revealed a change in social empowerment of the women of the backward and Tribal areas. A positive and significant change in self confidence level, participation in dictions making with family and social participation of the members among the group or community level.

Assessment of the adoption level of different technologies in the field is the central idea of development communication research. In dairy extension, therefore, it has been the sole objective of the researchers to determine the adoption level of improved dairy practices by the farmers.

3.3.3. Indigenous technical knowledge level in livestock farming

Phondani *et.al.* (2010) in their study mentioned that majority of the people (more than 80 percent) were dependent on traditional (herbal) system of treatments practiced by local healers (Pashu Vaidyas). They also mentioned that old aged people had more knowledge and experience particularly in remote areas for curing veterinary ailments.

Laloo, D and Hemalatha, S. (2011) in his study on Ethno-medicinal plants used for diarrhoea by the tribals of Meghalaya, northeast India found that around 58 plants species were used by the tribals of Meghalaya to treat and cure diarrhoea and dysentery.

Gabalebatse *et al.* (2013) in their study found that at least 9 medicinal plant species having Ethno-veterinary applications were recorded in the study area. Single plants are mostly used rather than a combination of plants.

Panda *et al.* observed that Leaves (33%) followed by whole plant, bark and latex were most frequently used plant parts for ethno-veterinary medicine. Usually fresh materials were used for medicinal preparation. The most frequently used routes of drug administration have been oral followed by dermal.

3.3.4. Contribution of livestock in household food security:

Tanka *and others* (2000) studied that the major research focus has been on the role of women in crop production with little recognition of their roles versus those of men and children in livestock farming. The authors also mentioned that women are often responsible for providing basic subsistence needs while men deal with marketed products. Thus, in cases where women have access to home produced milk or egg that is often evidence of child nutrition.

Bordhan *et al*. (2006) reported the factor contributing to food insecurity which are poverty, lack of gainful employment, inadequate distribution of land, the relatively limited access to suitable technologies and other productive resources and fluctuation in the availability of food stocks over period country undernutrition.

They further reported that the declining trend in growth rates of food grain production during 1980s had serious implication for national food security. The per capital consumption of pulses and grams which are a major source of vegetable protein for supplement cereal protein has decreased from 60.70 in 1951 to 26.4 gm in 2007. On the other hand, per capital consumption of different livestock food products has increased during 1983-1990 except goat meat and mutton which have experienced a mild decrease.

They also mentioned that a person's protein intake should be about 1 gram per kg body weight for adequate nutrition, 30-50 percent of the dairy protein intake should be animal protein to provide an optimal rate of amino acids.

They opined that apart from providing nutritional security livestock plays a major role in ensuring food security through

1) Providing employment
2) Providing draught power
3) Providing plant nutrition
4) Providing fuel and biogas
5) Helping in weed control.

Walters-Bayer and Letty (2010) summarize their findings on key lessons for promoting gender equality and women's empowerment through livestock. In the study the authors projected women taking active part in decision making bodies in their communities, in project planning, as partners in livestock research and development and as members as related advisory groups.

Njuki and Miller (2012) reported that livestock interventions are often assumed to promote food security through alleviation of child nutrition. Livestock products controlled by women are more likely to be consumed by the family than products controlled by men. If women did not own the livestock, they may not have decision making authority over the use of products either for home consumption or sale.

Kumar (2013) reported that women account for 60-80 per cent of the food production in all the developing countries. Other than agriculture, they are involved in allied sectors like dairy, piggery, poultry, fishery, sericulture and pisciculture. The rural women form the most important productive work force in the economy of majority of the developing nations including India. Women made 48.5 percent of the total population but constitute 70 per cent of the labor force in animal husbandry. The role of women as custodian of traditional knowledge related to seeds is highly commendable. However, in performing these activities the rural women face a lot of constraints. First due recognition is not given to women for the above-mentioned constraints. Not even 2 percent of the land is owned by women. Available figures show that only 5 percent of extension services have been addressed to rural women. In addition, most extension

services are focused on case crops rather than food and subsistence crops, which are the primary concern of women farmers and the key to food security.

Juliet *et al.* (2015) reported that the extent to which livestock contributes to food security is dependent on intra household dynamics including –

1) Ownership of assets by women including livestock and the extent to which they take part in decision making in the use of assets, their products and the income derived from these assets.

2) Participation of women decision making on how much of the products to sell and how much to keep for domestic consumption.

They also mentioned that increasing women's control over assets (mainly land, and financial) has positive effects on food security, child nutrition and education as well as women's own well-being.

The study revealed that livestock ownership plays a vital role in enabling household to benefit from more diverse diet and control to the consumption of milk, meat, eggs etc. They study reviewed a positive relationship between livestock ownership and food security. Regarding consumption they revealed that household that owned goats and exotic chicken had diets that was twice as diverse as those who did not own these species. Moreover, income gains from exotic chicken sales enabled households to purchase a greater diversity of food and enjoy a more varied diet than household keeping traditional chickens. Household owning exotic chicken also consumed significantly more eggs than those that did not own exotic chicken. However, there was no significant difference in egg consumption in household that owned and did not own local chicken, most likely due to their lower productivity and low number kept by farmer.

Singh (2015) reported that there is a correlation between the right to food and the engagement of other human rights such as live life with dignity, an adequate standard of living, health, water, adequate housing, education and information, work, livelihood, social security, social welfare, property and freedom of association. He further mentioned that the discrimination in terms of food availability, accessibility, adequacy, utilization and stability is inextricably linked to the poverty, hunger and under-nutrition.