

**AN ANALYTICAL STUDY ON LIVELIHOOD
SECURITY AMONG TRIBAL WOMEN OF
SOUTHERN RAJASTHAN**

**दक्षिणी राजस्थान की जनजातीय महिलाओं की आजीविका सुरक्षा
पर एक विश्लेषणात्मक अध्ययन**

MS ASHA DAGAR

THESIS

Doctor of Philosophy in Home Science

**(HOME SCIENCE EXTENSION AND COMMUNICATION
MANAGEMENT)**



2021

**DEPARTMENT OF EXTENSION EDUCATION AND
COMMUNICATION MANAGEMENT
COLLEGE OF COMMUNITY AND APPLIED SCIENCES
MAHARANA PRATAP UNIVERSITY OF AGRICULTURE &
TECHNOLOGY, UDAIPUR (RAJASTHAN)**

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A

THESIS

SUBMITTED TO THE

MAHARANA PRATAP UNIVERSITY OF

AGRICULTURE & TECHNOLOGY, UDAIPUR

IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR

The Degree of

Doctor of Philosophy in Home Science

(Home Science Extension and Communication Management)

BY

MS ASHADAGAR

2021

CERTIFICATE - I

CERTIFICATE OF ORIGINALITY

The research work embodied in this thesis titled “**An analytical study on livelihood security among tribal women of Southern Rajasthan**” submitted for the award degree of **Doctor of Philosophy** to Maharana Pratap University of Agriculture and Technology, Udaipur (Rajasthan), is original and bonafide record of research work carried out by me under the supervision of **Prof. Rajshree Upadhyay**, Professor, Department of Extension Education and Communication Management, College of Community and Applied Sciences, MPUAT, Udaipur. The contents of the thesis, either partially or fully, have not been submitted or will not be submitted to any other Institute or University for the award of any degree or diploma.

The work embodies in the thesis represents my idea in my own words and where others ideas or words have been included. I have adequately cited and referenced the original sources. I also declared that I have adhered to all principle of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the University and can also evoke penal action from the source which have thus not been properly cited or form proper permission has not been taken when needed.

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This is to certify that this thesis entitled “**An analytical study on livelihood security among tribal women of Southern Rajasthan**” submitted for the degree of **Doctor of Philosophy** in the subject of **Home Science Extension and Communication Management** embodies bonafide research work carried out by **Ms. Asha Dagar** under my guidance and supervision and that no part of this thesis has been submitted to any other degree. The assistance and help received during the course of investigation have been fully acknowledged. The draft of the thesis was also approved by the advisory committee on 01.03.2019

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This is to certify that **Ms. Asha Dagar** (Ph.D. Scholar) has worked under me on “**An analytical study on livelihood security among tribal women of Southern Rajasthan**”

1. I have monitored her research work.
2. My self and the scholar were in contact with the committee members and the research work was reviewed regularly.
3. The advisory committee members have gone through Ph.D. of thesis critically and made the corrections as per requirement.

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INTRODUCTION

The tribal population is identified as the aboriginal inhabitants of our country. For centuries, they have been living a simple life based on the natural environment and have developed cultural patterns congenial to their physical and social environment. According to Majumdar (2010), tribe is a collection of families or group of families bearing a common name, members of which occupy the same territory, speak the same language and observe certain taboos regarding marriage, profession or occupation and have developed a well-assessed system of reciprocity and mutuality of obligations. According to Oxford dictionary 'A tribe is a group of people in a primitive or barbarous stage of development acknowledging the authority of a chief and usually regarding them as having a common ancestor'.

Article 342 of the Constitution of India provides for specification of tribes or tribal communities or parts of or groups within tribes or tribal communities which are deemed to be for the purposes of the constitution, the scheduled tribes in relation to that State or Union Territory. In pursuance of these provisions, the list of scheduled tribes are notified for each State or Union Territory and are valid only within the jurisdiction of that State or Union Territory and not outside. The list of scheduled tribes is State/UT specific and a community declared as a scheduled tribe in a State need not be so in another State.

According to 2011 Census, the Scheduled Tribes (STs) comprise about 8.6 percent of India's population and tribal population in India constitutes over 104 million. On the whole, as per rough estimates, the prominent tribal areas constitute about 15 percent of the total geographical area of the country. At present the tribal population of India is larger than that of any other country in the world. If all the tribals of India had lived in one state, it could have been the fifth most populous state after Uttar Pradesh, Bihar, West Bengal and Maharashtra. Broadly the STs inhabit two distinct geographical areas – the Central India and the North-Eastern Area. More than half of the scheduled tribe population is concentrated in Central India, i.e., Madhya Pradesh (14.69%), Maharashtra (10.08%), Orissa (9.2%), Rajasthan (8.86%), Gujarat (8.55%), Jharkhand (8.29%), Chhattisgarh (7.5%) and Andhra Pradesh (5.7%). The other distinct area is the North East (Assam, Nagaland, Mizoram, Manipur, Meghalaya, Tripura, Sikkim and Arunachal Pradesh).

Covering an area of 342,239 square km, Rajasthan is the largest state (10.4% of country's area) in the Republic of India and it consists of 33 districts with Jaipur as its capital. It is located in the northwestern part of the subcontinent. It was formally known as 'Rajputana' meaning 'the adobe of the rajas (kings)' (Sethy, 2020). The population of the state is 68 million according to 2011 Census, which is 6 percent of the national population. The ratio of the rural and urban population is 77:23. Rajasthan has one of the largest concentrations of SC (17.15%) and ST (12.56%) population in the country. As per the 2011 Census, the Scheduled Tribe population of Rajasthan state is 9,238,534. Out of twelve tribes scheduled for the State, Meena is the most populous tribes, having a population of 3,799,971, constituting 53.05 per cent of the total ST population followed by Bhil (2805948). Meena and Bhil together constitute 93 per cent whereas Garasia, Damor, Dhanka and Saharia combine to form 6.6 per cent of the total ST population. Six tribes, Bhil, Meena, Naikda, Kathodi, Patelia, Kokna and KoliDhor along with the generic tribes constitute the residual 0.3 per cent of the total tribal population. The highest concentration of this population is mainly in districts viz. Udaipur, Bhilwara, Dungarpur, Banswara, Chittorgarh, Pratapgarh, and Rajsamand. The tribal situation in the State presents a varied picture, some areas have high tribal concentration while in others they form only a small portion of the total population. Based on the Census of India, 2011 and Directorate of Census Operations, Rajasthan, the district wise distribution of tribal population shows that they have their highest concentration in Banswara district (81.3 per cent), followed by 74.4 per cent and 60.3 per cent in Dungarpur and Udaipur districts respectively. Nagaur (0.2 per cent) has the lowest share of tribal population in the total population than Bikaner (0.4 per cent).

Tribals in Rajasthan can be described as the poorest among the poor. On the one side they might have had a wonderful past but their present status is miserable. The probable reason might be that the tribal community mainly resides in forests and depend on forests for livelihood and they are being uprooted along with jungles. Poverty, lack of knowledge, ill health and exploitation are a few of the complex problems that occupy the lives of tribal. They have little access to education, health and nutrition, opportunity to acquire skill and training, employment opportunities, easy credit, market technology and information (Sarangi, 2009). On the other side

they are not being brought into the mainstream of modern Indian development process.

The life style of each indigenous community is unique and related to the utilization of particular natural resource and particular type of work. Since tribal communities live in the close proximity with biodiversity rich landscapes, they have evolved local specific and novel livelihood strategies based on their indigenous knowledge. This knowledge was passed on through generations and it played an important role in conservation and sustainable use of biodiversity. By and large, they were depending on nature for their survival. Thus, there always existed an organic unity between human and their surrounding environments in the traditional societies. As a result, there existed an intricate relationship between their culture and nature.

A person's livelihood refers to their means of securing the basic necessities- food, water, shelter and clothing of life. Livelihood is defined as a set of activities, involving securing water, food, medicine, shelter, clothing and the capacity to acquire above necessities working either individually or as a group by using endowments (both human and material) for meeting the requirements of the self and his/her household on a sustainable basis with dignity. The activities are usually carried out repeatedly. For instance, a fisherman's livelihood depends on the availability and accessibility of fish. Livelihood is adequate stock and flow of food and cash with an individual or a family to meet its basic needs. Livelihood security then means secured ownership of, or access to, resources and income-earning activities, including reserves and assets to offset risks, ease shocks and meet contingencies (Acharya, 2006). Different scholars describe livelihood in different ways; Engberg *et al.* (2012) defines a livelihood as "the mix of individual and household survival strategies, developed over a given period of time that seeks to mobilize available resources and opportunities." Livelihood strategies include paid and unpaid work, accumulation and investments, borrowing, food production, income enterprise, social networking, community managing, cooperation and changing consumption patterns and sharing.

Almost 90 per cent of tribal population in Rajasthan was depending upon the land for their survival. Expectedly, the main source of tribal livelihood is agriculture, livestock, horticulture, fisheries, forest, sericulture and several microenterprises like medicinal and aromatic extracts, vermiculture, poultry, bee keeping, rabbit farming, etc. Several factors like geographical location, ethnical, educational qualification and

availability of resource, infrastructures along with social, cultural, ecological, economic and political factors determine livelihood patterns of tribal communities (Haldankar, 2016; Haan & Zoomers, 2002; Surayya, *et al.* 2008 and Oraon, 2012). Collection of forest based products and living with forest; dependent on nature are the basic features of tribal resources. While 69 per cent of total workers are 'Cultivators' which is significantly higher than the national average of 44.7 per cent, 'Agricultural Labourers' constitute only 14 per cent which is less than half of that recorded by of total STs at the national level (36.9 per cent). 'Other Workers' constitute 16.3 per cent and workers in 'Household Industry' account for only 0.7 per cent. Expectedly, majority of the workers are 'Cultivators' among Mina, Damor, Bhil and Garasia tribes whereas Seharia have maximum proportion of 'Agricultural Labourers' followed by 'Cultivators'. Dhanka have the highest proportion of 'Other Workers'.

According to the Agricultural Census 2010-2011, there are 6.88 million farm holdings in the Rajasthan state. This includes 1.12 million tribal farm holdings. Out of 1.12 million tribal farm holdings, 67 thousand tribal farm holdings are female headed tribal farm holdings (FHFHs) sharing 6 percent of the total tribal farm holdings. Out of 67 thousand female headed tribal farm holdings, 56 thousand farm holdings belong to small (1-2 ha) and marginal farm (<1ha) holders. In other words 84 percent female headed farm holdings come under small and marginal farm sizes. In fact agricultural income from owner cultivation is the single most important source of income for the poor in the tribal communities.

Forest sector is the second largest land use after agriculture. More than half of India's 70 million tribal people, the most disadvantaged section of society, subsist from forests (Biswas *et al.* 2012). All the tribal are engaged in production, distribution, exchange and consumption of wealth like other rural communities of Rajasthan. Forests provide a wide spectrum of livelihoods for tribal communities in the form of direct employment, self-employment and secondary employment.

Apart from forest, animal husbandry is another significant occupation and source of livelihood, especially in tribal areas of all over the State where it accounts for over a quarter of household income. The importance of animal husbandry emerges clearly both from the occupational classification of the work force and as well as from the analysis of household income. Household income analysis indicates that the

contribution of animal husbandry is around 50 per cent all over Rajasthan, varying from a low of 13.5 per cent in the tribal areas to a high of 17.8 per cent in the north-western region. Animal husbandry plays an important role not only in providing alternative source of income but also acts as a value to cultural ethos of the tribal communities. The abundance of green pastures provides a favorable atmosphere for rearing of wide varieties of animals (Suresh and Padma 2018)

Goat rearing in the tribal communities appears important as a supplementary source of income, especially for the poorest sections that are unable to migrate. Goat, the poor man's cow as said by our Father of Nation, is very important livestock species in the world, especially in the developing countries like India (Gargi 2014). Goats are contributing about 15,210 million rupees through 3.5 per cent of total milk, 30.3 per cent of meat and 8.04 per cent of skins (Census 2011). Goat husbandry is especially suited to weaker section of tribal households with small land base and abundant labour force, as it is an important economic activity of earning supplementary income with low capital at lower risk. They could thrive on fodder resources that can scarcely be made use of by other livestock. The worth of goats in Rajasthan lies primarily in their quick proliferation intervals, higher rates of growth and the ease with which the goats as well as their derived products can be marketed for food, fiber, etc. From the perspective of the poor, small animals like sheep, goat, pig and backyard poultry are considered important, because of their low initial investment; zero/low input requirement and quick returns to investment on a continuous basis (BIRTHAL and NEGI, 2012).

Poultry production has distinct advantage of being relatively easy to raise and to adopt on a wide range of climatic conditions. This is an all the year round business and the farmers get a continuous flow of income through eggs and meat sales. Poultry farming also provides valuable manure which can supplement the fertilizers, a costliest input. Additionally it helps in stabilizing the prices of coarse food grains as they provide a good base for poultry feed. It has special advantage in tribal communities, where cheap land, labour and feeds are available. This helps in eliminating the unemployment and underemployment from the tribal rural masses and will change their socio-economic conditions considerably.

JUSTIFICATION OF THE STUDY

The tribal women, constitute as in any other social group, about half of the total population. However, the importance of women in the tribal society is important than in other social groups in India, because of the fact that the tribal women work harder and the family economy and management depends on her own responsibility. They play a vital role in agricultural management and production activities in addition to their responsibilities at home. They are the backbone of the agricultural workforce. They do the most tedious and backbreaking tasks in agriculture, animal husbandry and homes (Sahu 2014). Women are involved in all aspects of agriculture and allied enterprise from land preparation to processing and marketing. Many households in tribal areas are headed by a single parent, usually a mother because men migrate with their limited literacy skills to urban areas for secondary jobs leaving the illiterate women behind with the land and children leading to 'feminization' of agriculture.

Women living in the mountain regions work harder and for longer hours than men and have vital role in conservation and management of sustainable ecosystem (Bankey *et al.* 2012). While women workers share all the vulnerabilities of men of their own class, they have added disadvantages which make them more vulnerable. They have even less assets, most of them are illiterate and unaware of their rights as workers or as women.

Besides routine household work, the tribal women work in the agricultural fields, forests for long hours. The overall output if seen in terms of number of hours of work is low. Their schedule of long working hours continues even during pregnancy, natal and postnatal stages. They have a negative energy balance, high morbidity rate and low child survival rate. As women are major stakeholder of family, it is also equally important to work out gender specific role in livelihood security. With the loss of traditional forests, there is a change in occupation therefore, how new generation is managing the family income with new enterprise and what are the problems they face in livelihood, need to be worked out. Broadly, it becomes imperative to know what activities are being taken up for livelihood, what is the participation of tribal women in different activities and if there are any factors which affect their livelihood security and problems being faced by tribal women in different livelihood activities. There are many studies conducted by different researchers on tribal people and their problems,

but sporadic attempts have been made to analyse their livelihood support system. Hence, the present investigation has been undertaken with the following objectives:

OBJECTIVES OF THE STUDY

1. To study the livelihood pattern among tribal women of Southern Rajasthan.
2. To study the role of tribal women in the livelihood security of the family.
3. To identify the factors affecting livelihood security of the family.
4. To study the constraints faced by tribal women in livelihood security of the family.

IMPLICATIONS OF THE STUDY

1. The finding of the study related to different livelihood pattern will give an idea to make the livelihood pattern more productive and income generating so that government make special efforts to develop capacity of women in their respective field.
2. The study will help the policy makers and extension workers to know the information regarding the constraints experienced by tribal women and also make policies for further welfare of the tribal women.
3. The study will help the government agencies and policy makers to identify the factors affecting livelihood security and make favourable environment and strategies for securing and sustaining their livelihood.

REVIEW OF LITERATURE

One of the most important early steps in a research work is the conducting of the literature review. In any scientific investigation a comprehensive review of relevant literature is imperative. It is designed to identify related research, to set the current research project within a conceptual and theoretical context. Besides giving knowledge of work already done in the area and providing insight to the methods and procedure, it provides a basis for operational definition of a major concept. The studies having direct and indirect link with the present investigation have been reviewed under following major heads:

- 2.1 Livelihood pattern among tribal women.
- 2.2 Role of tribal women in the livelihood security of the family.
- 2.3 Factors affecting and constraints faced by tribals in livelihood security.

2.1 LIVELIHOOD PATTERN AMONG TRIBAL WOMEN.

Tribals are engaged in various occupations like hunting, fishing, animal husbandry, mining, poultry farming, gathering of forest products, shifting cultivation to settled agriculture, rural crafts and artisans. Besides routine household work, the tribal women work in the agricultural fields, forests produce collection, livestock, laborer and goat rearing.

According to Chaudhary (2010) collection and marketing of firewood was generally the domain of tribal women of Betul in Madhya Pradesh. Economic activities of the tribes were food gathering including hunting and fishing, shifting hill cultivation, settled cultivation, handicraft, trade and commerce, labour work including agricultural and industrial labour.

In a research conducted on “Livelihood security of farmers in Virudhu Nagar District of Tamil Nadu”, Lakshmi (2009) it was reported that 37.50 per cent of tribal farmers attained medium level of livelihood security followed by those with low (33.33%) and high (29.17%) livelihood security.

According to Shah (2010) 45.46 per cent of the respondents were dependent on farming alone followed by farming and non-farming (18.18%), farming and migration (18.18%), farming + non-farming + migration (18.18%).

A study on tribal women farmers by Aazamiet *al.* (2011) indicated that the activities of women go beyond crop production, as about 36 per cent of the tribal women were involved in rearing goats followed by 30 per cent involved in fishing, while 20 per cent were involved in poultry keeping. Few women were involved in poultry production because it is tedious and capital intensive and also there is need for some level of education. Most of the women in the study area depended on farming as the only source of income and livelihood.

A critical study on “Livelihoods of tribal farmers in Andhra Pradesh” by Kiran (2011) concluded that majority of the respondents (95.00%) make their living based on the combination of occupations like farming, rearing of livestock, collection of non-timber forest products and wage work. Few of the respondents (5%) were involved in the business activities besides the above activities.

The study by Meenakshi (2011) reported that majority of the respondents (58.33%) were wage earner while less than one fifth of the respondents (16.67%) were observed to be farmer cum wage earner. Some of the respondents (7.50%) were found engaged in farming alone. Further it was reported that 11.67 per cent of the respondents were found without any employment. Only 5.38 per cent of the respondents were doing their own business.

Study conducted by Raval and Chandawat (2011) concluded that majority of the respondents (78%) were engaged in agriculture and animal husbandry, while 4.00 per cent were having agriculture, animal husbandry and government service/private employment and 12.00 per cent engaged in business along with agriculture and animal husbandry. This indicate that majority of the respondents (80.00%) were dependent on agriculture, dairy farming and related occupations.

In a study on “Contribution of non-timber forest products to livelihood economy of the people living in forest in Changlang district of Arunachal Pradesh”, Sarmah and Arunachalam (2011) reported that total contribution of Non Timber Forest Produce to annual household income was maximum (23%) of the total income in the village of Miao circle. It was minimum (11%) of the total income in the village of Bordumsa circle.

According to Desai *et al.* (2012) cent per cent of the respondents (100%) considered livestock production as their livelihood source of income. They concluded that agriculture enterprises were best option to increase the family income per annum for sustainable livelihood and rapid growth.

Devika (2012), in a study on “Non wood forest produce (NWFPs) in improving the livelihood of tribal women: An explorative study” revealed that more than half of the tribal women (55.83%) were involved in non-wood forest product activity as main occupation and remaining 44.17 per cent practiced it as subsidiary occupation.

Mahadik and Sawant (2012) conducted a community based research on “Livelihood security of tribal people in Thane district of Maharashtra” and reported that nearly three fourth of the respondents had medium livelihood security status, while more than one fourth of them had high livelihood security status.

According to Mishra *et al.* (2012) majority of the tribal women (95%) were engaged in wage labour works in the unorganized sector especially in private agricultural farms, construction of work in brick kilns, road and unskilled manual labour in ginning factories/cotton mills and very few of the respondent (5%) were involved in business activities to earn their livings.

A study conducted in Satara district of Maharashtra by Monika *et al.* (2012) examined that the contribution of livestock production of the respondents livelihood was highest in PhaltanTaluk (33.90%) followed by those in SataraTaluk (26.75%), PatanTaluk (20.58%), KaradTaluk (10.51%) and KhatawTaluk (8.63%).

Shit and Pati (2012) in a study on “Non timber forest products for livelihood security of tribal communities: A case study in PaschimMedinipur district (West Bengal)” revealed that majority of the respondents (63%) were dependent on NTFPs followed by daily wage (24%), agriculture (8%), livestock (4%) and service and allied activities (1%) for their livelihood.

In a study on “Livelihood patterns and resource base of tribal in Koraput and Rayagada district of Odisha”, Singh and Sadangi (2012) identified five livelihood patterns namely farm, forest, wage, service/business and migration based existing in the area of study. The livelihoods of tribals consisted of primary, secondary and tertiary activity and 49.16 per cent of the respondents were involved in crop based

followed by wage based (27.48%), forest based (6.67%), horticulture based (5.83%), migration based (5.41%), business based (5.00%) and animal husbandry based (0.42 %) as primary livelihood. The secondary sources of income were farming (34.58%), wage (30.83%), forest (15.00%), business (8.33%), migration (6.67%), and other (4.58%). The tertiary activities in livelihood were forest collection (73.75%), wage earning (10.00%), farming (8.33%), others (5.00%), business (0.83%) and migration (0.41%).

Oraon (2012) found in their study that 52.94 per cent household were involved in non-agricultural labour activities, they were mostly confined to construction and industrial activities, followed by 14.70 per cent as owner cultivators and 17.64 per cent were involved in service sector. Only 5.20 per cent respondents were involved in both agricultural labors and business activities.

According an economic survey in Assam (2013), agriculture is the primary source of livelihood for more than 75 per cent of tribal population in Assam characterized by subsistence nature of farming and low use of inputs and productivity. The farming system practice is crop based along with livestock and homestead activities as secondary activities. Although, rice dominate the cropping pattern in the region, the importance of livestock as an alternative source of income, employment generation and livelihood sustainability is significant particularly in the tribal economy of Assam where about two-thirds of female work force is engaged in this sector.

A research study conducted on tribal women by Barman et al. (2013) indicates that agriculture was the main occupation for majority of the tribal respondents (58.33%) followed by other occupations such as agriculture labourer (37.50%), service (2.50%) and business (1.67%). Dhanasree and Vijayabhinandan (2014) in their study on “Livelihood security of tribal women in high altitude and tribal zone of Andhra Pradesh” reported that majority of the respondents (42.22%) were involved in forest based activities and wage earners followed by agriculture plus forest based activities and wage earners (27.22%), agriculture wage earners plus animal husbandry (15%), agriculture alone (8.88%) and agriculture plus business (6.66%).

Dung and Pattanaik (2013) in a study conducted in Sundargarh district of Odisha reported that agriculture, hunting, food gathering and forest produce collection

and sale were the main source of livelihood of tribals of this area. The study by Gouda *et al.* (2013) concluded that all the respondents were engaged in crop production and considered it as their livelihood activity followed by wage earning (85.00%), dairy (33.33%), sheep/goat rearing (06.67%), backyard poultry (06.67%), business (05.00%) and others (06.67%). Whereas, in case of landless labours cent per cent were involved in wage earning followed by other (28.33%), sheep/goat rearing (13.33%), backyard poultry (13.33%) and business (10.00%).

According to Indumathy (2013), overall classification of the occupational status of the respondents revealed that less than half of the respondents (48.50%) were involved in farming and labor followed by farming alone (26%) farming with labor and business (17.50%) and some of the respondents (8%) were involved in farming and business, respectively.

Ajaz-ul-Islam *et al.* (2013) in their study on “Livelihood contribution of forest resources to the tribal communities of Jharkhand” found that the average size of forest based direct paid employment among sample population was 19.82 per cent man days per household per annum and the mean income earned from these activities was Rs. 2149.70 per household per annum in the area. The livelihood generation from forest based secondary employment in the study area was nil as no wood based or non-timber forest products based enterprises were established.

In a research study conducted on tribal women, Nisha, (2013) revealed that more than half of the tribal women (59.17%) were involved in farming and wage earners followed by farming alone (27.50%) and farming + business (13.33%). According to Pawar (2016) agriculture is the main source of the family income in the tribal area Northern Gujarat. Income from farm produce it supplemented by the income from other activities like collecting and selling forest products, working on others farm as casual labour, periodic migration to the other area of the state for working as farm labour and livestock rearing to some extent.

According to Senthil (2013), the majority of the tribal respondents (74.17%) had farming as their primary occupation whereas, 25.83 per cent of them had farming as their secondary occupation. According to Waqaset *al.* (2013), revealed that more than half of the respondents (53.30 %) had source of income from livestock along

with crop farming. A sound majority of the respondents (60.00 %) were raising livestock for livelihood and commercial purpose as well.

Raksha (2014) observed that more than half of the respondents (53%) have taken agriculture as primary occupation, 29.00 per cent have taken animal husbandry as primary occupation, 08.00 per cent farm women were labourers and 10.00 per cent of them were engage with any other occupation.

According to Rewani and Tochhawng (2014), majority of the tribal families (62.10%) had up to Rs. 25,000/- annual income followed by 28.60 and 09.30 per cent of the respondents with Rs. 25,001/- to 30,000/- and Rs. 30,001/- to Rs. 35,000/- annual income respectively. No one had above Rs. 35,000/- of annual income.

In a study on tribal people of Sathuragiri Hills in Tamil Nadu, Mareeswaran, (2014) observed that majority of the tribals (69.86%) were involved in wage earners followed by those with wage and agriculture (27.94%) and few of the respondents (2.20%) were involved in services like forest guard.

According to Chaturvedani *et al.* (2015), the respondents reported agriculture as primary (51.7%) and poultry as secondary occupation (35.4%) whereas 64.6 per cent respondents reported backyard poultry as a subsidiary source of income for tribal woman.

In a study on “Indigenous knowledge and livelihood systems or tribal families in Uttara Kannada district”, Sannidhi (2015) indicated that all the respondents had adopted agriculture + forest based activities for their livelihood, followed by agriculture + forest based activities + wage earning (98.89%). This study also revealed that income generated from identified livelihood sources of tribal families that agriculture + forest activities generated an income of Rs. 55852.42 annually, while agriculture + forest activities + wage earning generated an income of Rs. 137514.60 annually.

In a study on “Tribal poverty and sustainable livelihoods in agrarian sector of Andhra Pradesh”, Krishnaprasad (2015) reported that majority of the respondents (73.75%) belonged to Farming + Wage earners followed by the remaining farming + livestock (12.50%), farming alone (6.67%), skilled wage earner (4.16%), wage earners (1.67%), farming + business (0.83%) and farming + services (0.42%).

Rai (2015) found that two-fifths (43.5%) of the respondents were doing farming and animal husbandry, with 40.50 per cent farming alone, only 10 per cent had farming + animal husbandry + business. Few of the respondents (3%) had farming + service, agriculture + business (2%) and farming + animal husbandry + service (1%) as the source of livelihood.

The study by Rathod and Damodhar (2015) reported that more than half of the respondents (56.66 %) were engaged in farming as a family occupation followed by 21.66, 15.83 and 05.83 per cent of the respondents had allied to agriculture, other services in addition to agriculture and labour in addition to agriculture, respectively.

A study conducted on tribal communities by Uma *et al.* (2015) reported that more than half of the respondents (57.03%) were dependent on labor followed by agriculture (34.07%) and some of the respondents (8.9%) were dependent on artisans work.

According to Alex (2016), as a result of improvement in education and access to new employment opportunities, the younger generation of tribal in Attappady have started to move away from the traditional livelihood. This has resulted not only in livelihood mobility but in structural changes of agricultural activities.

According to Arook and Rahman (2016) more than half of the tribal families (60.94%) were involved in agriculture labour activities. Around 22.14 per cent depended on their own cultivable land for production, whereas 5.99 per cent in various formal and non-formal sectors (offices support staff, security guard and garments factory). Few of the respondents were involved in small business activities (2.85%) and livestock rearing (2.34%).

The study by Khokhar (2007) indicated that more than half of the dairy farm women (68.33%) were engaged in household work + animal husbandry, followed by 25.83 per cent of the respondents who were engaged in household work + animal husbandry + farming and only 05.84 per cent of the respondents were engaged in household work + animal husbandry + service.

In a study on “Livelihood security of small and marginal farm families in Gurgaon division of Haryana State”, Jodha (2018) observed that majority of the respondents (79.33%) were engaged in farming, followed by farming + service (14%)

and that only 6.67 per cent of the respondents were working as farmers + business in Bhiwani.

According to Kalyaniet *al.* (2018) most of the tribes depend on minor forest products collection and also follow the agriculture based economy. They have unique skill in agriculture operations and minor forest products collections.

In a study on “Participation of farm tribal women in agriculture”, Kumar and Saranya (2019) concluded that the 10,000 to 30,000 earned by the 85 per cent of the respondents and the 15 per cent of the respondents had earned 30,000 to 50,000 annually. It indicated that mainly respondents of the research area were dependent on agriculture.

The above review about livelihood pattern among tribal women reveal that mainly the tribals depend on various sources for their income i.e. crop, horticulture, animal husbandry, wage, forest, poultry and business. It can be stated that majority of the respondents had only one source of income and some of the respondents also had secondary means of livelihood.

2.2 ROLE OF TRIBAL WOMEN IN THE LIVELIHOOD SECURITY OF THE FAMILY.

Report entitled “Socio-economic empowerment of tribal women: An Indian perspective” by Awaiset *al.* (2009) points out that the husbands was mainly responsible for land preparation, spraying, staking, tying plants to stakes, hauling and crating or sacking the produce. In larger farms, women take on the added tasks of hiring, supervising and paying the field laborers. Over 80 per cent of the tribals work in the primary sector against 53 per cent of the general population. About 45 per cent were cultivators against 32.5 per cent of the general population. Tribal women work as men’s partners in agriculture, yet their status remains the same. Tribal women work very hard for the livelihood of the family but live a poor life, in spite of their many contributions in the house and on the farm. Tribal women were the pivot of tribal agriculture, performing many household and agricultural jobs. Without them, tribal welfare in agriculture is meaningless.

According to Arshadet *al.* (2010), women are playing a leading role in livestock sector. They are responsible for 60 to 80 per cent of the feeding and milking of cattle. They take responsibility for cutting fodder, cleaning sheds, milking dairy

animals, processing animal products and looking after the health of the herd. Livestock management has always been considered to be the sole responsibility of women.

According to Bindu (2010), tribal women play a crucial role in all kind of livelihood activities. They work from sunrise or before it rises, women start their journey from home to the agricultural field. They engaged themselves whole heartedly all round the day in agricultural field during kharif and Rabi seasons. Tribal woman is more conscious about taking care of the crops and other agricultural operations. She does not take rest until and unless the crops are harvested and brought home. Apart from agricultural operations, tribal woman was the sole active person in family activities too. She engaged herself in cooking, household work and served her family members from early morning till evening before and after the agricultural work. In general, woman works for more than 12 hours a day for her family purpose.

According to Chauhan and Thakor (2010), majority of the activities of farm management were not performed by tribal farm women , they were husband dominated roles such as, irrigate the fields (87.50%), quantity and type of fertilizers to be used in the farm (85%) introduction of new crop variety, buying farm machinery/equipment, using plant protection measures, borrowing money for farm operation, installing oil engine, electric motor and pumps, selection of seed, deciding area to be sown under each crop etc. The joint participation was made only in case of hiring farm laborers (66.67%), buying and selling of land and selling of surplus farm produce. It can be concluded that the tribal farmwomen did not play dominant role in farm management. Selection of fodder and feed was dominated by tribal farm women (81.67%) followed by sale of milk and its products. The joint participation was in sale and purchase of animals (65.00%) followed by selection of animal breed and keeping size of herd. It can be concluded that the important role regarding animal husbandry were dominated by tribal farm women themselves. The husbands remain recessive in role regarding animal husbandry.

A study on “Participation of tribal farm women in dairying and poultry farming” by Prajapatiet *al.* (2010) concluded highest involvement of tribal women in feeding of animals (MWS-2.76) followed by milking (MWS-2.76), watering animals (MWS-2.60), care taking of animals (MWS-2.40), marketing of milk/curd/ghee

(MWS-2.00), curd making (MWS-1.64), ghee making (MWS-1.44) , grazing (MWS-1.20) and cow dung cake preparation (MWS-1.16).

A community based research on “Time utilization pattern of tribal women in animal husbandry” by Borgohain and Akand (2011) concluded that tribal women performed well in various animal husbandry operations. They were involved in preparing feed for animals, providing water to the animals, cleaning animal shed, grazing animal, milking, cutting and bringing fodder.

According to Chauhan and Nikulsinh (2011), majority of the role regarding farm management were husband dominated. The joint participation made by tribal farmwomen and other members of family were hiring farm laborers (66.67%), buying and selling of land (71.67%) and selling of surplus farm produce (58.33%), respectively. It can be concluded that the most of the role related to farm were made by husband of tribal farmwomen followed few role made jointly by the tribal farm women after discussion with any of their family members. It can be further concluded that tribal farm women had a recessive role in farm management.

Chauhan (2011) in a study on “Role performance of tribal farm women in agricultural and animal husbandry in Gujarat” revealed that highest participation of tribal women was observed in sowing, transplanting followed by stubble collection, clod crushing, manuring and seedbed nursery preparation. The highest participation was observed in weeding followed by gap filling, application of fertilizer, bird scaring, irrigation, budding and hoeing with hand. Bihariet *al.* (2012) concluded that tribal farm women were involved in almost all type of farm operations.

In a study on “Role performance of tribal women in agriculture - a study in agency area of East Godavari district, Andhra Pradesh, Kalyaniet *al.* (2018) revealed that the participation of women was found to be high in agriculture and allied activities except in horticulture. In comparison to men, the rate of work participation of tribal women was more in agricultural labour (27.7%), cattle/sheep rearing (41.6%), collection of minor forest produce (25.0%) and allied activities (25.0%) where as in men the participation rate in these activities was low i.e. 16.6, 33.3, and 8.3 per cent, respectively. Only in horticulture, the participation rate of men was high (12.5%) when compared to women (8.3%). The results revealed that the tribal women

work harder and longer than men, as the number of working hours and work participation has high.

According to Mundy (2011) tribal women were critical to the well-being of farm and households. Aside from raising children, they were expected to prepare all meals, maintain the homestead and assist in crop and animal production, all the while tending to the general health of their families. Perhaps, ironically, it is because they have so many responsibilities.

In a study on “Contribution of the tribal farm women in livestock management”, Chauhan (2012) concluded that majority of the tribal women (86.67%) were involved in animal husbandry related operation viz. compost making, watering, feeding to animal, milking, cleaning of cattle shed and selling of milk and its products.

According to Singh (2010), tribal women was responsible for collection, preparing dung cake, an activity that also brings additional income to poor families. Evidently, tribal women were involved in almost all livestock related activities. Except grazing, all other livestock management activities were predominantly performed by females. Majority of women were involved in shed cleaning and collection of farmyard manure. However, males shared the responsibilities of taking care of sick animals. It is evident that the women were playing a dominant role in the livestock production and management activities.

Study by Jain and Singhal (2012) revealed that 62 per cent of tribal women individually participated in activity for feeding of animals, 56 per cent of them had independent participation in activities concerning care of livestock, cattle shed and excreta management (62 to 66 per cent), milk and milk process (58%) and financial aspect (47.70%). In case of the tribal male farmers, they support the families in growing, procuring and storage of fodder (34.00 to 54.00%) and care of sick animals (52%).

According to Kalashet *al.* (2012), regarding the role of tribal women under agriculture related task, majority of the respondents performed storage of grain (74.17%), seed grading (73.33%), planting (46.67%), harvesting (38.33%) and application of manure and fertilizers (35.83%) whereas plant protection (76.67%), land application (72.50%), seed treatment (65.83%), seed sowing (35%) and

harvesting (22.50%) were performed by male members of the family while, farm women and men jointly performed seed sowing (56.67%), threshing (45.83%), harvesting (39.17%), planting (35.83%) and seed treatment (27.50%).

Motinet *al.* (2014) found that role of tribal women in backyard poultry production had significant importance. They are performing most of the activities in backyard poultry rearing system with utmost care and interest.

In a study on “Economic empowerment of tribal women in Karnataka: A case study in Mysore and Chamarajanagara districts”, Puttaraja and Heggade (2012) revealed that the tribal women worked for about 12 to 15 hours per day in agriculture and allied activities. The tribal women collected minor forests produce like amla, soapnuts, adda leaves, hill brooms, firewood and bamboo sold these products in nearby *Mandi* and exchanged the produce for their daily requirements through barter system. The work participation rate and role performance of tribal women in agriculture and allied sectors was higher as compared to their male counterparts and contributed lion’s share to the family income.

According to Pandya *et al.* (2014), majority of the tribal women (71.50%) were taking regular participation in activities of selection of type of the milch animal, while 68.00 per cent of the respondents were regularly participating in activity of selecting breed of the dairy animals. Then huge number of the respondent participated in activities like bringing fodder (96.00%), feeding animals (94.00%), preparing feed mixture (88.00%), cutting fodder (63.00%), purchase of feeds (55.50%) and grazing animals (47.00%). Further, more than half of the respondents (59.50%) had their stack in activities of purchase of feed/fodder and 93.50 per cent of the respondents sold milk through cooperative society.

Mohanta (2017) reported that tribal women play an important role in farm and non-farm activities. They also make significant contribution in small and medium sized farm. The overall research showed that in farm activities participation of tribal women was found maximum in transplanting with highest mean score 2.90 and ranked value ‘I’, followed by cleaning and drying of grains, harvesting, weeding and shifting produce to threshing floor with mean score 2.86, 2.85, 2.82, 2.81 having rank position II, III, IV, & V respectively. In allied farm activities the participation of tribal farm women was maximum in kitchen gardening with highest mean score 2.76 and

rank position I, followed by goateries and dairy farming with mean score 2.73 & 2.36 with rank position II & III respectively. There was very poor response in mushroom production, piggery and floricultural activity. In spite of their active involvement and participation in agriculture and allied farm activities, they were not recognized and appreciated.

A survey carried out by Patra (2018) highlighted that tribal families are more orthodox and traditional taboos are creating lots of problems for the development of women. Besides problems faced by women they manage everything very smoothly in the household as well as outside household work like agriculture, collection of forest products, selling them in the local market and so on. They always work harder for the livelihood purpose of their family and in taking care of children, cooking at home, and working inside home, they are far behind productive workforce. Majority of the women were engaged in wage labour outside (70%), agricultural work (80%) while marketing of production was male work (70%). It was unfortunate to note that hard labour in the agricultural field, bending down whole day, collecting forest goods (90%) in dangerous environment were women's work.

It can be ascertained that the studies cited in this section show that women are primarily involved in works related to household and family responsibility, child care, family food security, caring cattle and supplementing family's subsistence economy. It can be concluded that tribal women work for about 10 to 15 hours per day involving in agriculture and allied activities. They participate in storage of grain, seed grading, planting, harvesting and application of manure and fertilizers, plant protection and seed sowing. They play an important role in rearing the cattle and involved in cutting fodder, cleaning sheds, milking dairy animals, processing animal products and looking after the health of the herd. Poultry farming related studies show that most of management practices viz., housing, feeding, breeding, health care, marketing and consumption practices were carried out by the women. They are also involved in collection of forest produce.

2.3 FACTORS AFFECTING AND CONSTRAINTS FACED BY TRIBALS IN LIVELIHOOD SECURITY.

According to Chauhan and Nikulsinh (2011), tribal women faced many challenge and problems. The farming system was more complex in poor resource, rainfed areas and socio-economic factors also influences the production systems. Illiteracy, lack of awareness, low level of skills, suppression and lack of appropriate technology, extension and training programmes are the main factors which need to be tackled for mainstreaming of tribal women in agriculture.

In a study on “Socio-economic development of primitive tribes: An empirical study in *Adilabad* district of Telangana”, Lal and Devanna (2016) mentioned that the obstacles that hindered the growth of women in agriculture sector as only few women were holding agricultural productive resources such as land, animals and machinery. They did not participate in inside or outside the home and they performed all un-mechanized agricultural tasks and performed multiple tasks, which added more burdens to them. They earn fewer wages, especially in joint, informal and private sector and they were not aware of their legal rights. Women farmers were frequently ignored in the developing strategies and policies. In most of the developing countries, both men and women farmers do not have access to adequate resources but women are even more constrained because of cultural, traditional and sociological factors.

In a report entitled “Tribes and Development: Retrospect and Prospect”, Nathan and Xaxa (2012) pointed out that the tribal women are mostly engaged in household activities, along with it, 52 percent of them go for agricultural activities as labourers and other menial jobs to earn some livelihood. Majority of the tribes used to reside in the remote forest areas, remain isolated, untouched by civilization and unaffected by the development processes. This situation has changed to a great extent over the years. As long as the tribes have access to resources generated from the forest, they have no difficulties in satisfying their basic needs. In turn they have an interest in preserving the forest as it is their life support system. But large scale industrialization, urbanization and exploitation of natural resources due to deforestation to meet the urban and industrial demands has greatly affected the livelihood pattern. This trend has been responsible for displacing large number of tribes from their habitations. They face many problems in their daily basis livelihood activities.

According to Swathi (2016) agro biodiversity is one of the major tools for livelihood security of tribal farmers. But, introduction of high yielding varieties (HYVs), modern varieties, or introduced crops and hybrids in place of local land races for commercial cultivation is the major factor contributing towards the loss of agro biodiversity.

In a report entitled “Agricultural information needs and accessibility: A case study of tribal farmers of Attappady tribal block of Palakkad district of Kerala” Jalaja and Kala (2015) reported that there are many factors that affected the tribal farmers have to go through while seeking information. A small size of holdings, the high rate of population growth, health problems, unemployment and land alienation are the common problems faced by the tribals. They are largely isolated from the mainstream of life and development. A high rate of illiteracy (54.19%) and ignorance of information sources (54.19%) which also affect the efficiency of the agricultural practice and information use. Inadequate contact to extension officials (24.42%), Negative attitude of Government officials (24.42%), agricultural programmes in television and radio (24.42%) and unavailability of information centers (13.74%) were identified as the significant factors the tribal farmers faced.

A report on “How lockdown has hit tribal communities and forest dwellers” by Vinoth (2020) revealed that the minor forest produces (MFP) collection season from April to June provides major income support to tribals (almost 60 percent of annual collection takes place during this period), but due to the lockdown, tribals have already lost two months of collection. Also, the restrictions have affected people of certain tribes settled or moving inside forests, who are unable to come out of their settlements to the plains or the cities nearby. The main factor affecting of livelihood security among tribal community is that selling of milk to the cities of Dehradun and Rishikesh in Uttarakhand have been stopped by the forest department, based on rumours that they were carriers of COVID-19, and so they threw away the milk. Even in Punjab, residents of some apartments refused to take milk provided by them on apprehensions that they were connected to the TablighiJamaat event in Delhi and the police in most states did not allow tribals to transport their produce to the market. Other factor is unable to go to the mountains, where their cattle feed on fresh grass, due to the lockdown, these people have suffered not just economic losses but also lost some of their cattle to hunger.

In a study on “Differential perception of dairy farmers towards improved cattle rearing in Teonthar Block of Rewa district of M.P”, Badole (2010) reported that the distribution of tribal women according to order of seriousness of the constraints perceived by them in adoption of improved cattle rearing that majority of the respondents (73%) expressed major constraint was opinion of dairy farm and feeding practices (Ranked I) followed by regarding breeding practice (70%) of the respondents (Ranked II) and regarding general management practices (56%) with ranked III.

Devarajaiah (2010) reported that lack of marketing facilities for the products (rank I) and lack of storage facilities (rank II) has emerged as most important constraints among infrastructural constraints faced by the tribals. As regards to the social constraints, non-exposure to new occupations (rank I), shyness of doing socially underestimated work (rank II) and rank III being the inadequate knowledge and information about the diversification. The other constraints listed by the respondents include in order of ranking, less time available for business activities, climatic risk and uncertainties, seasonal attacks of the pests and diseases, poor harvest leading to less income, degraded and insufficient natural resources in agriculture and allied sector.

In their study on “Constraint analysis of tribal livestock farming in Tamil Nadu” Meganathan *et al.* (2010) concluded that lack of sufficient pasture land was the major constraint expressed by more than half of the respondents (52.55%) with MPS 52.55(1st) since, cattle requires large quantity of green fodder which could not be easily cultivated in the hilly areas as that of plains. The 2nd constraint was lack of marketing infrastructure facilities with MPS 48.90, since in hills, the road and other marketing facilities were limited and the farmers have little incentive to produce more milk than needed for their family consumption. In Yercaud hills, lack of proper marketing infrastructure facilities for sale of milk, huge capital requirement and lack of sufficient pasture lands occupied the first three ranks, with MPS 71.15, 69.44 and 59.07 respectively, while, in Ooty hills, the farmers perceived that the shelter requirement/unhygienic living conditions for maintaining the cattle as the first major constraint with MPS 72.05, since, majority of the sample tribal farmers reared high valued crossbred cattle and Toda buffaloes without properly constructed cattle shed (which require huge amount of money).

A survey was carried out on “Constraints in milk production faced by the tribal farmers in Pondicherry Union Territory” by Manoharan *et al.* (2011). It was observed that the major constraints faced by farmers in dairy farming were higher feed cost, low price for milk, high investment, infertility problem, low productivity, higher rate of calf mortality, frequently becoming sick, inadequate availability of grazing lands, costly veterinary treatments and aids.

In a study on “Participation of tribal women in agriculture development” by Naranyarao (2011), it was observed that majority of the respondents reported lack of time (85.00%) as the constraint. The tribal women faced lack of technical knowledge (71.70%) and lack of information about the source of availability of resources to solve the problem (70.80%). The close observation of the constraints reported by them revealed that they did not get proper guidance (65.00%), government agriculture programs and schemes were not effectively implemented in tribal areas (59.20%). More than half of the respondents (51.70%) expressed illiteracy as a major problem which their participation in agricultural development. The poor economic status of the tribal women was also responsible for less participation in agriculture development as reported by the tribal women (48.30%).

Birthal and Negi (2012) in a study on “Improved health and veterinary services in the livestock development” reported that non-availability of improved breeds was the most significant constraint (95%) followed by high cost of concentrate feed (86.5%). Lack of knowledge on scientific management and rearing of animals and inadequate availability of fodder as constraints at the individual farmer’s level were stated by 85 per cent and 70 per cent respectively. Lack of departmental coordination and inadequate veterinary infrastructure for prophylactic and curative measures were the other major constraint expressed by 70 per cent and 65 per cent of the respondents.

Saha and Bahal (2012) in their study on “Constraints impeding livelihood diversification of tribal farmers in West Bengal”, reported that among the infrastructural constraints, lack of marketing facilities for the product (mean score-1.75) and absence of storage facilities (mean score-1.60) were the severe constraints. In case of social constraints inadequate or no experience on new occupation (mean score-1.70) and shyness in doing socially under estimated work (mean score-1.48) were regarded as main constraints.

In a study on “Nutritional security as related to livelihood patterns among tribal families of Orissa”, Singh (2010) revealed that the low wages in agriculture work was ranked top most constraint (rank-1) followed by low work opportunity in the nearby areas (rank-2), gender based wage disparity was another constraint (rank-3), poor transparency in wage based government schemes (rank-4), poor access to occupational health service (rank-5), poor financial condition to meet medical expenses (rank-6) were found to be the constraints in wage based livelihoods pattern.

Tailor *et al.* (2012) in a study on “Constraint faced by the tribal farmers in dairy farming in Udaipur district”, found that the major constraints faced by respondents were in feeding, production and health management of milch animals. They observed that no availability of green fodder throughout the year, inadequate knowledge about proper/scientific feeding of dairy animals, repeated breeding of animals, non-availability of pedigree bulls for natural services, low milk productivity of animals and lack of scientific housing as the constraints in dairy farming.

In a study on “Constraints analysis in adoption of vegetable production technologies for livelihood perspective of tribal farmers in North Sikkim” Mohanty *et al.* (2013) observed that significant percentage of the farm women (56.67%) faced the medium level of constraints in respect of all the three sectors of major constraints viz., technical, economic and organizational. The low (23.33%) and high (20.00%) level of constraints were perceived by the rest of the respondents.

In a study on “Constraints analysis of tribal livestock farming in Warangal district of Andhra Pradesh”, Shreenivas (2013) concluded that majority of the respondents (82.5%) observed the most important infrastructural constraint in improving the management system, expansion and commercialization of their farm. Shortage of electricity had adversely affected commercialization and was reported by 74 per cent of the respondents. The problem related to transportation and marketing were reported by 22.5 and 20 per cent of the sample farmers located in the interior of the villages. Livestock rearing primarily depended upon family labour and hence the non-availability of labour as a constraint was reported low (40%).

According to Dhanasree *et al.* (2014) the tribal women and tribals face lot of problems to enhance their livelihood security. About three fourth of tribal respondents (71.11 to 82.11%) expressed lack of credit facilities, illiteracy, exploitation by money

lenders, poor connectivity and lack of accessibility to nearby markets. On the other hand, about 50 per cent respondents (47.77% to 65.55%) expressed limited social participation, lack of access and control of productive resources and services and finally some of the respondents (20%) indicated location of isolated villages, limited extension staff and no access to basic amenities as problems.

In a study on “Status and constraints in livestock farming amongst tribal farmers of Kamrup District of Assam”, Mazumder *et al.* (2014) revealed that the present practice of rearing livestock and poultry was traditional in nature, uneconomic in size and the breeds of livestock and poultry were indigenous with low productivity and income. The farmers were unaware of the scientific management practices as they were not exposed to sufficient training and other extension programmes for the enhancement of their knowledge and skill. There were also other factors that acted as constraints in the commercialization and development of the livestock sector. The productivity of the livestock and poultry reared by the farm families was low attributed to various technological, socio-economic and infrastructural constraints.

According to Nisha and Asokhan (2015) majority of the tribal women (83.33%) have faced more prevalence of social taboos, superstitions and traditions followed by indebtedness (67.50%), lack of awareness about credit sources (68.33%), insufficient credit facilities (66.67%), lack of awareness about the tribal development schemes (60.83%), fear of social security (60.00%), lack of adequate communication skills (60.00%) less importance to actual need (58.33%), gender bias (54.17%), inadequate motivation from family members (50.00%), lack of self-motivation (48.33%), suppression due to the dependable nature of women (42.50%), lack of adequate training facilities (33.33%) and lack of periodical training (28.33%) as the major constraints in farming and non-farming activities.

According to Patel *et al.* (2015) constraints faced by the tribal farm women for their better involvement in agricultural activities in descending rank order of their importance were illiteracy (rank-I), lack of irrigation facilities (rank-II), lack of educational facilities(rank-III), uneven land (rank-VI), lack of knowledge about improved agricultural technology (rank-VII), lack of transportation facility (rank-VIII), unavailability of timely inputs (rank-IX), lack of appropriate technology (rank-X), unfavorable climatic conditions (rank-XI), low selling price of farm produce (rank-XII), lack of regular and timely contact with village level worker and

experts(rank-XIII), lack of marketing facility (rank-XIV), lack of training(rank-XV), social handicaps (rank-XVI) and unemployment during off season (rank-XVII). Besides these, tribal farm women also faced some constraints in performing their role in various animal husbandry activities. Those constraints in descending rank order of their importance were lack of availability of cheaper fodder (rank I), lack of regular veterinary services (rank II), lack of latest know how (rank III), lack of timely vaccination (rank IV), high cost of cross breed (rank V), lack of pasture land (rank VI) and lack of active dairy co-operatives (rank VII).

The study on “Back yard poultry farming as a source of livelihood in tribal village: an economic appraisal” by Jha and Chakrabarti(2017) revealed that constraints experienced in small holder back yard poultry production low earning in backyard poultry is due to the high input cost, shortage of feeds, rearing of poultry by the traditional methods, weak and unhealthy birds, outbreak of diseases leads to mortality, high mortality in chicks, low egg production, lack of veterinary extension services and no facility for medication or vaccination. Other constraints faced by the respondents were related to disease control, protection against various predators, better feeds and medicine availability, separate house, improved breed, proper marketing, training and management for efficient back yard poultry farming.

Keshava and Mandape (2017) analyzed the problems and prospects of dairy farming in Muzaffar district of North Bihar and found that dairy farming in tribal area was characterized by inadequate herd size, low milk productivity and poor feeding practices. The major problems faced by tribal farmers in dairy farming were proneness of animals to diseases, costly feeds and unavailability of veterinary facilities and regular milk market.

In a study on “Impact of integrated farming system demonstration programme on livelihood and nutritional security of farmers of Mandya district”, Kowsalya (2017) reported that major constraints faced by the tribal farmers were lack of remunerative price for farm produce and high price fluctuation (rank I), high cost of inputs even to take small enterprises (rank II), lack of awareness on nutrition garden (rank III), more working hours (rank IV), lack of credit to invest on other income generation activities (rank V), lack of basic facilities at work site (rank VI), lack of training on skilled work performance (rank VII), non-availability of good housing

facilities (rank VIII) and lack of awareness and government encouragement about the subsidiary (rank IX).

The findings of Mareeswaran *et al.* (2017) on tribal women of Salem, Namakkal, Coimbatore districts of Tamil Nadu, mentioned that many constraints were faced by tribal women in livelihood. They remain backward due to traditional values, illiteracy superstition and many other social and cultural factors.

According to Shamna *et al.* (2018) the tribal women of the West Bengal area faced lack of education, knowledge, and skill, lack of child care facilities, low income derived from agriculture, etc. as the major constraints.

In a study on “A step towards improving livelihood of tribal farmers through integrated farming”, Singh (2017) stated that the general constraints expressed by tribal farmers in goat farming were lack of knowledge about scientific goat rearing practices, particularly about feeding and economic management among the tribal farmers, poor quality breeds and lack of availability of improved breeds within the reach of poor farmers and poor growth rate, health and reproductive problems and mortality among the goat population in the region. In dairy, low milk production due to non-descript poor quality animals, unavailability of optimum quantity of green fodder, concentrates mineral mixtures, vitamins, etc. and low availability of good forage and fodder, non-availability of nutritious forage varieties and more feeding of dry roughages, lack of awareness about balanced feeding, breeding and health management in dairy animals leading to poor quality and low milk production per animal, reproduction problems like anoestrus and repeat breeding due to malnutrition, inbreeding, infections etc.

Nikita *et al.* (2018) in their study on “Economics of poultry enterprise in Rajasthan” reported that major constraints faced by poultry producers in poultry production were high cost of feed followed by cost of day old chicks, medicine and veterinary charges in MPUAT service area and in case of Ajmer district high disease incidence was identified as most important constraint followed by high fluctuations in selling prices, high rate of mortality, high cost of variable inputs, high cost of establishment, non-availability of government policies and subsidies and non-availability of resources.

Jodha (2018) in a study on “Livelihood security of small and marginal farm families in Gurgaon division of Haryana” found the constraints faced by tribal farm families related to livelihood. The small size of land, lack of capital, no timely procurement, non-accessibility of better seeds and fertilizers and low rainfall, poor access to resources, price fluctuations of outputs and declining soil fertility were the major constraints faced by tribals of Hisar division.

In a study on “Constraints faced by poultry farmers in adoption of improved poultry farming in Anand district of Gujarat”, Patel *et al.*(2019) revealed that great majority of tribal families (98.57%) were having high cost of feed as major constraint followed by high charge of electricity (88.57%), non-availability of labour (7.14%), risk and uncertainty (82.86%), inability to pay constant attention (78.57%), lack of man power to look after livestock (78.57%), difficulty in getting electricity (74.29%), lack of finance (70.00%), difficulty in getting loan (64.29%), marketing problem (58.57%) and high price of medicines (54.29%).

In a study on “Determinants of livelihood security among small and marginal farmers in Betul, District of Madhya Pradesh”, Dhakade (2020) out of six constraints perceived by them, first rank was assign to the lack of awareness of appropriate technologies and technical knowledge to improve crop productivity (48.17 MPS). Other constraints faced by the respondents in technical constraints were, lack of proper guidance/ training workers before any new initiative (36.90 MPS) rank II, lack of information on scientific crop management practices (33.10 MPS) rank III, lack of awareness about the schemes/subsidy for agribusiness/animal husbandry (29.44 MPS) rank IV. The last but not least technical constraints faced by the tribal farmers were non-availability of agricultural machinery and equipment (25.61 MPS) rank V.

From the comprehensive review of literature about constraints faced by the respondents in different livelihood activities it can be said that the respondents faced personal, technical, economic, operational and marketing constraints. Tribal women faced many problems and challenges in getting a sustainable livelihood and a decent life. They had a lot of struggle and worked hard for their children and family. It is amply clear that majority of the respondents faced problems related to small land holding, low fertility of land, no irrigation facilities, high cost of fertilizers and plant protection measures, non-availability of credit facility, poor marketing facilities, lack of storage facilities and high cost of treatment of diseased animal. There is lack of

research studies related to factors affecting livelihood security. Few studies reported in this section reveal that industrialization, urbanization and exploitation of natural resources have adversely affected the livelihood pattern of tribals.

METHODOLOGY

This chapter deals with research design, sampling procedure, variables and their measurements, tools of data collection, statistical tests and analytical procedures used to find out the personal and socio-economic characteristics of tribal women involved in agriculture farming, horticulture, livestock, fish farming and forest collection, role of tribal women in livelihood security of family and factors affecting their livelihood and the constraints faced by them. The various aspects pertaining to the study are described under the following heads:

3.1 Locale of the study

3.2 Selection of panchayat samities and villages

3.3 Selection of the sample

3.4 Development of research tool

3.5 Procedure of data collection

3.6 Analysis of the data

3.1. LOCALE OF THE STUDY

The operational area of MPUAT, Udaipur includes seven districts of Rajasthan state i.e. Udaipur, Rajsamand, Bhilwara, Chittorgarh, Banswara, Pratapgarh and Dungarpur. Out of these three districts viz. Banswara, Dungarpur and Udaipur were selected purposively for the present study having high concentration of tribal population (Table 3.1).

Table 3.1: Tribal population in Southern Rajasthan

Districts	Total population	Tribal population	Percentage of tribal
Banswara	1,797,485	1,372,999	76.4
Dungarpur	1,388,552	983,437	70.8
Udaipur	3,068,420	1,525,289	49.7

(Source-Census, 2011.)



Fig. 3.1 Map of the study area

3.2.SELECTION OF PANCHAYAT SAMITIES AND VILLAGES

Two panchayat samities were selected randomly from each district. Thus, there were total six panchayat samities i.e. Banswara and Talwada from Banswara district, Dungarpur and Bichiwada from Dungarpur district and Girwa and Jhadol from Udaipur district. After selecting the panchayat samities two villages from each panchayat samiti were selected randomly. Thus, there were total 12 villages namely Bodla, Siyapura, Padala and Tamatiya from Banswara district; Mal ki mata, Mashaniya, Dhamot and Chhitratl from Dungarpur district and Dedkiya, Umarada, Belniya and Leelawas from Udaipur district.

3.3.SELECTION OF THE SAMPLE

In order to draw representative sample, a village wise list of tribal families was prepared with the help of gram panchayat officials. From the list, 30 families from each village were selected randomly. From each family, one active woman was included in the sample. Thus, there were 120 tribal women from each selected district constituting a sample of 360 tribal women from the three selected districts. The details of sample and its selection have been presented in Fig. 3.1.

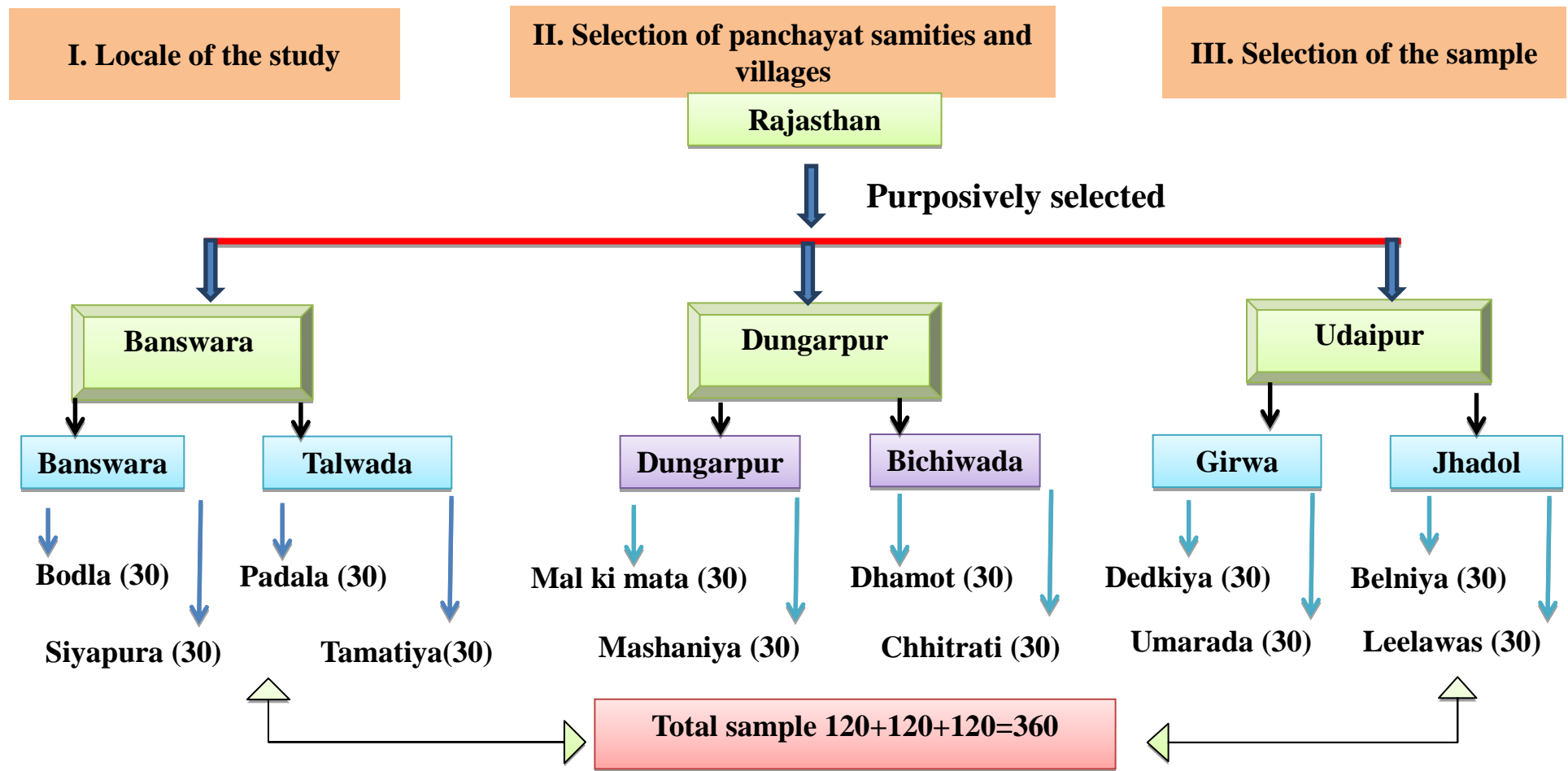


Fig.3.2 Diagrammatic representation of sample selection

3.4. DEVELOPMENT OF RESEARCH TOOL

In view of the study objectives and nature of respondents, interview technique was used to get the information from the respondents. This technique was considered most appropriate technique to collect in-depth information from tribals as it helped in face-to-face interaction along with clarification of doubts. The interview schedule was developed by the researcher after extensive review of literature and in consultation with the subject matter specialists and experts. The interview schedule for the present investigation consisted of following sections:

Section I

This section dealt with general information of the respondents such as age, marital status, education, family structure, family occupation, organizational membership, extension participation, fixed assets, household assets, farm assets, media ownership and distinctive features. For this purpose Socio Economic Status scale developed under AICRP, Home Science Extension (1997) was used.

Section II

This section included information related to different livelihood patterns among tribal women of southern Rajasthan. The livelihood patterns of families were classified into seven categories, namely: Based on crop, horticulture, animal husbandry, wage, forest, poultry and business. Information about primary and secondary livelihood pattern, different agriculture products, methods of marketing, place of sale and storage, annual income, expenditure, profit, time and days devoted in different livelihood activities were also gathered through this section.

Section III

This section gathered the information related to role of tribal women in different livelihood activities i.e. based on crop, horticulture, animal husbandry, forest, wage, poultry and business. The response was recorded as activity performed either independently or jointly with other family members and no participation.

Section IV

This section gathered information related to factors affecting the livelihood security of tribal women, categorized in seven sub section viz. access to resources, technological information, market facility, risk, personal, economic and financial

sources. The response was recorded on a 3 point continuum i.e. complete, partial and no access.

Section V

This section dealt with the information related to the constraints faced by tribal women in livelihood security of family, such as personal, technical, operational, economic, constraints was gathered. The response was recorded on a 3 point continuum i.e. great extent, some extent and not at all.

Pretesting

Researcher developed an interview schedule which was pretested on 10 non sampled respondents. Modifications in questions were made on the basis of pretesting. After final correction and modification, the schedule was introduced for data collection.

Validity of the tool

Content and construct validity of the tool was examined by the researcher. Statements were selected to cover the whole universe of the content with the help of literature and scientists from different departments. The tool was given to the panel of experts, to see whether the whole universe and sub-universe of content are covered or not and the items framed were clear and in an understandable form. The items securing concurrence of experts were including in the final tool.

3.5 PROCEDURE OF DATA COLLECTION

The relevant data were collected by the researcher herself with the help of developed interview schedule using personal interview technique. After establishing good rapport, the respondents were contacted individually at their homes. The questions were asked in Hindi as well as in local dialect which helped the respondents to understand the questions more clearly and answer correctly and completely.

3.6 ANALYSIS OF DATA

a) **Measurement of variables:** Measurement of personal and socio economic variables on the basis of responses obtained from the respondents, was as under-

i. Personal characteristics of the respondents:

Age: The chronological age of the respondents at the time of data collection in complete years was taken as their age. The respondents were grouped on the basis of their age as in Table 3.2.

Table 3.2: Categorization of the respondents on the basis of their age

S. No.	Categories
1.	18 to 30 years
2.	31 to 45 years
3.	46-60 years
4.	Above 60 years

Marital Status: On the basis of marital status the respondents were grouped into categories as given in Table 3.3.

Table 3.3: Categorization of the respondents on the basis of their marital status

S. No.	Categories
1.	Unmarried
2.	Married
3.	Widow
4.	Divorced

Caste: Caste referred to the status accorded to the individual by birth. Four categories were formed based on this aspect as in Table 3.4.

Table 3.4: Categorization of the respondents on the basis of their caste

S. No.	Categories
1.	SC/ST
2.	Backward caste
3.	Upper middle caste
4.	Upper caste

Education: It refers to the number of years of formal schooling completed by the respondent at the time of investigation. On the basis of their education level, the respondents were categorized as given in Table 3.5.

Table 3.5: Categorization of the respondents on the basis of their education

S. No.	Categories
1.	Illiterate
2.	Can read and write
3.	Primary School
4.	Middle School

Occupation: It indicates the respondent's means of livelihood. On the basis of occupation respondents were categorized into different categories as in Table 3.6.

Table 3.6: Categorization of the respondents on the basis of their occupation

S. No.	Categories
1.	Non-wage earners
2.	Wage earners
3.	Farming

Family structure: Depending upon the composition and size of family, the respondents were categorized as in Table 3.7.

Table 3.7: Categorization of the respondents on the basis of their family structure

S. No.	Categories
Family Type	
1.	Nuclear
2.	Joint
Family size	
1.	Small (up to 4 members)
2.	Medium (5-8 members)
3.	Large (Above 8 members)

Land holding: Land holding was categorized on the basis of amount of land in acres possessed by the respondents at the time of investigation into the following categories as in Table 3.8.

Housing: On the basis of type of house owned, the respondents were classified into the categories as given in Table 3.8.

Table 3.8: Categorization of the respondents on the basis of land holdings and housing

S. No.	Categories
Land holding	
1.	Landless
2.	0 to 1 acres
3.	1.0 to 2.5 acres
4.	2.6 to 5.0 acres
5.	5 to 10 acres
6.	More than 10 acres
Housing	
1.	Kutcha house
2.	Mixed house
3.	Pucca house

Livestock Ownership and Dwelling: Livestock ownership refers to the number of milch animals possessed by the respondents. The type of livestock ownership and dwelling is categorized as in Table 3.9.

Table 3.9: Categorization of the respondents on the basis of their livestock ownership and dwelling

S. No.	Categories
Livestock Ownership	
1.	Small herd (1-3 milch animals)
2.	Medium herd (4-6 milch animals)
3.	Large herd (more than 6 milch animals)
Dwelling for livestock	
1.	Open/ nil
2.	Kutcha
3.	Pucca

Organizational membership: Categories were made based on organizational membership by respondents as presented in Table 3.10.

Table 3.10: Categorization of respondents on the basis of their organizational membership

S. No.	Categories
1.	No membership
2.	Member of one or more formal organization (Panchayat, Cooperatives, Political etc.)
3.	Office bearer of formal organization
4.	Member of one or more non formal organization (religious or mandalies)
5.	Office bearer of non-formal organization

Media ownership: The respondents were grouped in different categories on the basis of media ownership as presented in Table 3.11.

Table 3.11 Categorization of the respondents on the basis of their media ownership

S. No.	Categories
1.	Nil
2.	Newspaper/magazine
3.	Radio/transistor
4.	Television

ii) Socio economic status (SES):

For SES, three categories were formed as given in Table 3.12:

Table 3.12: Categorization of the respondents on the basis of their socio economic status (SES)

S. No.	Categories	Score range
1	High SES	Above 50
2	Medium SES	30-50
3	Low SES	Below 30

b) Measurement of livelihood pattern

Livelihood is operationally defined as the means and ways of living to meet the basic minimum necessities of the tribal family. Livelihoods encompass all resources (capacities) to sustain basic needs, including food, shelter, clothing, cultural values, and social relationships. Keeping above consideration in view, an analysis of the type of tribal livelihood; their economic activities, both natural and non-natural resource based; and the income portfolios of the tribal families were analysed in present study. As the livelihood strategies are composed of different categories of activities that generated income, were examined by considering the activity status of all the respondents. The livelihood status of tribal families was classified into eight categories, namely: based on crop, horticulture, animal husbandry, forest, poultry, wage and business. The said categories were then further analysed for their secondary livelihood combinations. The criteria for identification of livelihood are presented in Table-3.13.

Table 3.13: Criteria for identification of livelihood

S. No.	Livelihood category	Criteria (income share from livelihood)
1	Primary livelihood	50 per cent or more of household income
2	Secondary livelihood	30 to 49 per cent of household income
3	Tertiary livelihood	Less than 30 per cent of household income

Source- (Singh and Sadangi, 2012).

An attempt was made to quantify the combination of secondary livelihood with major livelihood patterns also.

1. **Crop based livelihood pattern:** The livelihood which depends on crop (subsistence and commercial agriculture practiced, place of sale and storage, marketing and use of cash earned from the sale examine) to an extent of 50 per cent or more is called as crop based livelihood pattern. It may also have secondary source of income.
2. **Horticulture based livelihood pattern:** The livelihood which depends on horticulture (Purpose of horticulture activities, season, horticulture produce, place of sale and storage, marketing analysis) to an extent of 50 per cent or more is called as horticulture based livelihood pattern. It may also have secondary source of income.
3. **Animal husbandry based livelihood pattern:** The livelihood which depends on animal husbandry to an extent of 50 per cent or more is called as animal husbandry based livelihood pattern. It may also have secondary source of income.
4. **Forest based livelihood pattern:** The livelihood which depends on forest (collection of forest produce for self and sale) to an extent of 50 per cent or more is called as forest based livelihood pattern. It may also have secondary source of income.
5. **Wage based livelihood pattern:** The livelihood which depends on wage labour in agriculture and non-agriculture sector to an extent of 50 per cent or more is called as wage based livelihood pattern. It may also have secondary source of income.
6. **Poultry based livelihood pattern:** The livelihood which depends on poultry farming (rearing chicken for consumption and selling purpose) to an extent of 50 per cent or more is called as poultry based livelihood pattern. It may also have secondary source of income.
7. **Business based livelihood pattern:** The livelihood which depends on business to an extent of 50 per cent or more is called as business based livelihood pattern. It may also have secondary source of income.

c) **Measurement of role of tribal women**

This section deals with the information related to the role of tribal women in different livelihood activities based on crop, horticulture, animal husbandry, forest, poultry, business, and wage. The responses of the respondents were recorded on a

three point continuum i.e. independently, jointly with other family member and nil assigning of 2, 1 and 0 scores respectively.

d) Measurement of factors

In this section, factors like access to resources, technological information, market facility, information sources, income sources, decision making ability and risk factors that are affecting the livelihood security of the family were studied. The response of the respondents regarding factor affecting the livelihood security of the family was recorded on three point continuum assigning 2, 1 and 0 scores respectively. Three point continuum of complete, partial and not at all was used for factor viz. access to resources (capital, farm assets, input, pest management, labour, cash earned from sale of produce, credit and loan, storage facility and transportation facility). The response regarding information sources was recorded on continuum i.e. regular, occasional and never. The response regarding economic and market factor was recorded on three point continuum i.e. always, sometime and never.

e) Measurement of Constraints

In this section constraints faced by tribal women were divided into four categories namely personal, technical, operational and economic constraint. The response of the respondents regarding constraints was recorded on a three point continuum i.e. to great extent, to some extent and not at all which were assigning of 2, 1 and 0 score respectively.

3.7 STATISTICAL ANALYSIS OF DATA

After collecting data, it is necessary to analyze them with the help of statistical tools to arrive at proper and adequate conclusion. Following statistical measures were used to analyze the data:-

- i) **Frequency and percentage:** Frequency and percentage were used to analyze the data on the basis of their personal and socio economic characteristics and general background information.
- ii) **Mean percent score:** Mean per cent scores were calculated to analyze data regarding livelihood pattern, role of tribal women, factors affecting and constraints faced by tribal women. Mean percent scores were obtained by

dividing total scores of the respondents by the maximum obtainable score and multiplying by 100 under each constraint. The formula is as under:

$$\text{MPS} = \frac{\text{Sum of scores obtained by respondents}}{\text{Maximum obtainable scores}} \times 100$$

- iii) **Chi square test:** Chi square test was used to test the association between income generate by tribal families and different factors in livelihood activities.

The formula for chi square is:

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

Where:

χ^2 is the value of chi square.

Σ is the sum

O is the observed frequency

E is the expected frequency

RESULTS AND DISCUSSION

The chapter of results and discussion is the most crucial and significant part of research work. It deals with the findings of the present investigation which have been arrived at after subjecting the data to statistical analysis and interpretation. Keeping the specific objectives in view, the findings of the present study have been enumerated and discussed in this chapter under following major headings:

- 4.1 Background information of the respondents
- 4.2 Livelihood pattern among tribal women of Southern Rajasthan
- 4.3 Role of tribal women in the livelihood security of the family.
- 4.4 Identification of the factors affecting livelihood security of the family.
- 4.5 Constraints faced by tribal women in livelihood security of the family.

4.1 BACKGROUND INFORMATION OF THE RESPONDENTS

This part of results deals with the general information of the respondents. The information was collected regarding age, family education, marital status, caste, family size and type, family occupation, ownership of fixed assets, farm assets, household assets, live stock ownership and their socio-economic status.

Table 4.1: Distribution of the respondents by their personal variables

n=360

S. No.	Personal variables	f	%
A.	Age		
	• 18-30 years	65	18.06
	• 31-45 years	161	44.72
	• 46-60 years	134	37.22
	• Above 60 years	0	0

B.	Marital status		
	• Unmarried	57	15.83
	• Married	187	51.94
	• Widow	61	16.94
	• Divorced	55	15.27
C.	Education		
	• Illiterate	263	73.05
	• Read/write	97	26.94
	• Primary school	0	0
	• Middle school	0	0
D.	Occupation		
	• Non-wage earner	0	0
	• Farm labour	137	38.05
	• Farming	223	61.94
	• Service sector	0	0

Age: Data in Table 4.1 reveal that 44.72 per cent respondents belonged to the age group 31- 45 years whereas around one third of them were in the age group of 46-60 years and only 18.06 per cent respondents were 18-30 years old.

Marital Status: Table 4.1 portrays that more than half of the respondents (51.94 %) were married rest of them respondents were widow (16.94%), unmarried (15.83%) and divorced (15.27%).

Education: Table 4.1 indicates that majority of the respondents (73.05%) were illiterate. Out of the literates, 26.94 per cent were able to read and write. This may be due to their poor economic condition and social environment which prohibited them to upgrade their education. Further, there are poor educational facilities in the tribal areas and the schools are located at faraway places.

Occupation: Table further portrays that majority of the respondents (61.94%) were involved in farming and 38.05 per cent were farm labor.

Table 4.2: Distribution of the respondents by their social variables**n=360**

S. No.	Social variables	f	%
A.	Caste		
	• SC/ST	360	100
B.	Family Structure		
	a) Family type		
	• Nuclear	264	73.33
	• Joint	96	26.66
	b) Family size		
	• Small (upto 4)	180	50
	• Medium (upto 5-8)	60	16.66
	• Large (8 and above)	120	33.33
C.	Organizational membership		
	• Member of formal organization	0	0
	• Office bearer of formal organization	0	0
	• Member of non-formal organization	0	0
	• Office bearer of non-formal organization	0	0
	• No membership	360	100

Caste: Data in Table 4.2 reveal that cent per cent of the respondents were under the SC/ST category as the sample of the study consisted of tribal women.

Family Structure: Visualization of Table 4.2 indicates that majority of the respondents (73.33 %) were from nuclear family and rest of them (26.66%) belonged to joint family. Regarding the size of family, table further reveals that 50 per cent of the respondents had small family and 33.33 per cent had large family whereas 16.66 per cent respondents had medium family. This is mainly due to tribal families preferred to lead an independent family life. The nuclear family is the ultimate basis of the tribe. Generally as soon as a person gets married, he builds a new house in the village and lead an independent life with his wife and newborns.

Organizational membership: Table 4.2 reflects that none of the respondents were member of any organization. This may be due to the reason that majority of the tribal lives in remote area and they did not get information about various organizations. Majority of them were illiterate and they generally lack knowledge about government schemes and organizations.

Table 4.3: Distribution of the respondents by their economic variables**n=360**

S. No.	Economic variables	f	%
A.	Land holding		
	• Landless	174	48.33
	• 1.0 to 2.5 acres	186	51.65
	• 2.6 to 5.0 acres	0	0
	• 5.1 to 10.0 acres	0	0
	• Above 10 acres	0	0
B.	Housing		
	• Kutcha house	136	37.77
	• Mixed house	174	48.33
	• Pucca house	50	13.88
C.	Livestock ownership		
	• Small herd (1-3 milch animals)	315	87.50
	• Medium herd (4-6 milch animals)	45	12.50
	• Large herd (more than 6 milch animals)	0	0
D.	Dwelling for livestock		
	• Open/ nil	0	0
	• Kutcha	260	72.22
	• Pucca	100	27.77
E.	Media ownership		
	• Nil	0	0
	• Newspaper / magazines	0	0
	• Radio/transistor	75	20.83
	• Television	175	48.61
	• Mobile phone	110	30.55

Land Holding: Table 4.3 shows that more than half of the respondents (51.65%) had 1.0 to 2.5 acres land whereas 48.33 per cent respondents were having no land.

Housing: Information related to housing presented in Table 4.3 reflects that less than half of the respondents (48.33%) had mixed house whereas 37.77 per cent had kutcha house and only 13.88 per cent respondents had pucca houses.

Livestock Ownership: Data presented in Table 4.3 shows that majority of the respondents (87.50%) had small herd size whereas rest of the respondents (12.50 %) were having medium herd size.

Dwelling for livestock: Table 4.3 further reveals that 72.22 per cent respondents had kutcha dwellings and 27.77 per cent had pucca dwelling for their livestock.

Media Ownership: Table 4.3 shows that less than half of the respondents had television sets (48.61%), mobile phones (30.55%) and radio sets (20.83%) at their home.

Table 4.4: Distribution of the respondents according to their socio-economic status **n=360**

S. No.	Categories	f	%
1.	Low (below 30)	294	81.66
2.	Medium (30-50)	66	18.33
3.	High (above 50)	0	0

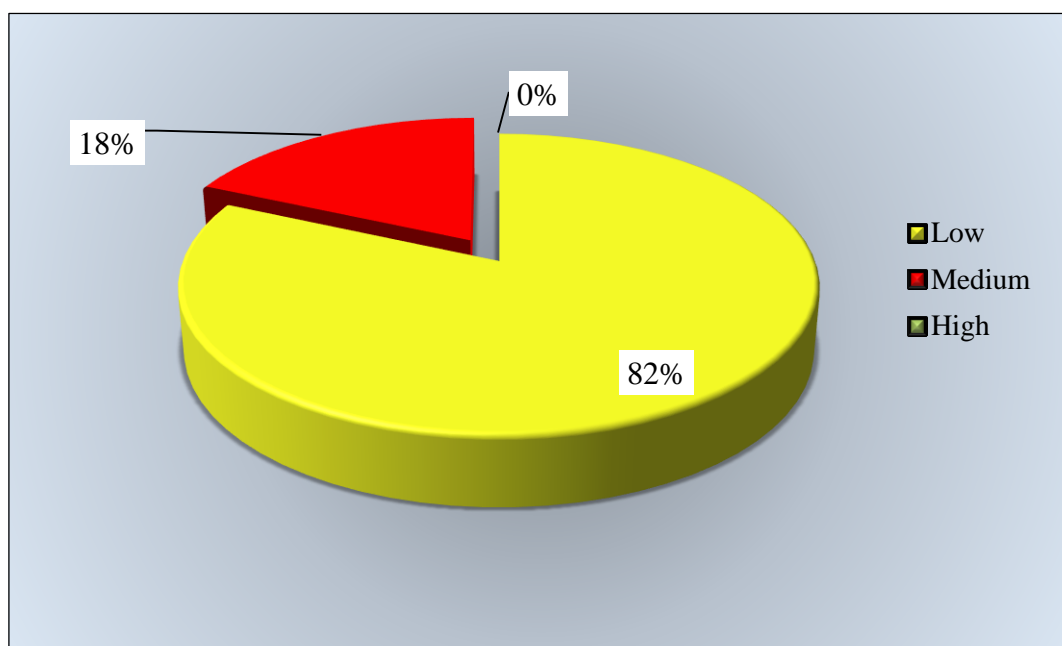


Fig.4.1: Socio-economic status of the respondents

Socio economic status: Information pertaining to socio economic status has been presented in Table 4.4 and Fig. 4.1. The respondents were categorized as high, medium and low categories of socio-economic status on the basis of scores obtained in different items of socio- economic status scale. Data in the table reveal that majority of the respondents (81.66%) were from low socio-economic status whereas 18.33 per cent of the respondents had medium and none of the respondent was found in high socio economic status category. The probable reasons for low socio economic status might be that majority of the tribal women were not having a proper source of livelihood.

4.2 LIVELIHOOD PATTERN AMONG TRIBAL WOMEN OF SOUTHERN RAJASTHAN

Livelihood can be defined as the assets, activities, ways and means of a family to earn income from different source to lead a normal life of an individual of family. Mainly tribal depend on various sources for their income. Based on the percentage of total income, they are divided into primary, secondary and tertiary sources of income and livelihood. Livelihood of a family which accounts for 50 per cent or more of their total income is known as their primary livelihood. Livelihood of tribal household which contribute 30-49 per cent to their income is known as secondary livelihood. Source of income from which a family gets less than 30 per cent of their total income is known as tertiary livelihood (Singh and Sadangi, 2012).

As the livelihood strategies are composed of activities that generate the means of family survival, different categories of income generating activities are examined by considering the activity status of the respondents. Most of the tribal families are engaged in agriculture. This has been their primary source of livelihood. With the changing economic scenario, shift in livelihood means was also observed in many villages. The livelihood patterns of families were classified into seven categories viz. based on crop, horticulture, animal husbandry, wage, forest, poultry and business.

This section contains information related to the primary and secondary livelihood activities followed by the respondents. None of the respondents had any tertiary means of the livelihood. Data in Table 4.5 show the distribution of respondents by their primary livelihood pattern. It can be seen from the table that crop based livelihood was accounted as the primary source of income for half of the respondents (50%). It was followed by wage based (14.16%), forest based (11.94%) and animal husbandry based livelihood (8.61%). Some of the respondents had poultry based (6.38%), business based (6.38%) and horticulture based livelihood activities (2.50%) (Fig.4.2).

Table 4.5: Distribution of the respondents on the basis of primary livelihood pattern **n=360**

S. No.	Type of primary livelihood	f	%
1.	Crop based	180	50
2.	Horticulture based	9	2.5
3.	Animal husbandry	31	8.61
4.	Wages based	51	14.16
5.	Forest based	43	11.94
6.	Poultry based	23	6.38
7.	Business based	23	6.38

The result are in conformity with Barman et al. (2013) who reported that agriculture was the main occupation for more than half of the tribal respondents (58.33%), followed by other occupations such as agriculture labourer (37.50%), service (2.50%) and business (1.67%), respectively. Swathi, (2016) also reported that 77.50 per cent of the tribal farmers earned their living based on the combination of occupations like farming, rearing of livestock, collection of forest products and wage work. About 5 per cent of the tribal farmers were involved in the business activities.

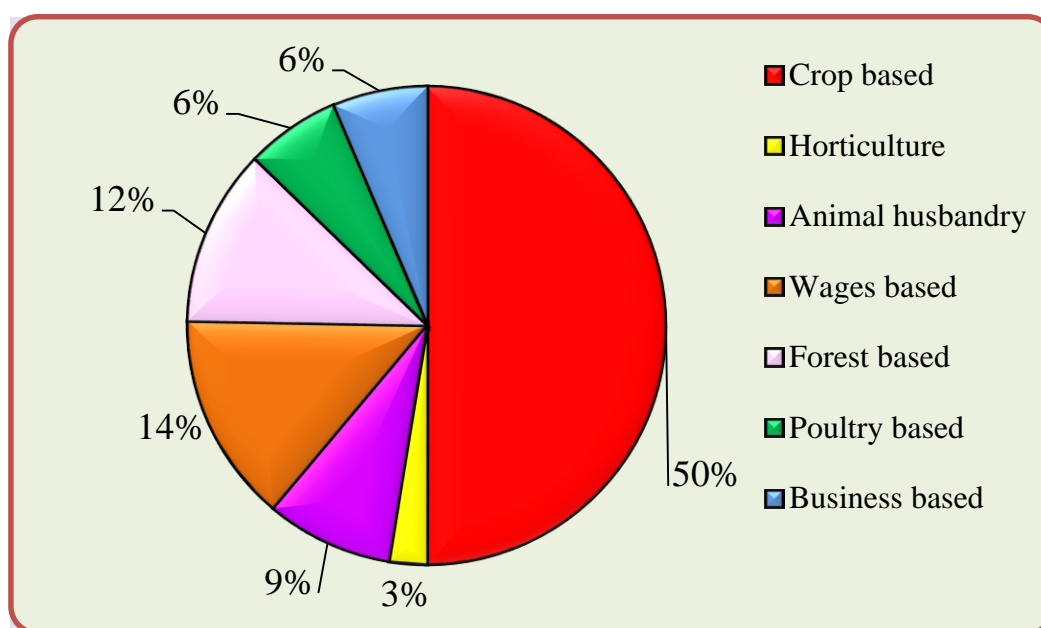


Fig. 4.2 Primary livelihood pattern of the respondents

A study by Meenakshi (2011) explained that majority of the respondents (58.33%) were wage earner while less than one fifth of the respondents (16.67%) were observed to be farmer cum wage earner. Some of the respondents (7.50%) were found engaged in farming alone. Further it was reported that 11.67 per cent of the respondents were found without any employment. Only 5.38 per cent of the respondents were doing their own business.

Information related to the engagement of tribal women in secondary livelihood activities has been presented in Table 4.6. From the table it can be inferred that 16.38 per cent respondents had wage earning as a secondary source of income, where wage based livelihood was combined with primary livelihood like crop production (8.33%), animal husbandry (12.90%), forest based (53.48%), business based (52.17%) and poultry based livelihoods (21.73%). A close look at the table further reveals that 19.61 per cent respondents had animal husbandry as secondary source of income, where it was combined with crop production (36.11%) and horticulture (44.44%). It was closely followed by horticulture based livelihood (18.88%) where it was combined only with crop production (37.77%). Further data in Table 4.6 reveal that 9.99 per cent had forest based livelihood pattern and it was combined with animal husbandry (64.51%) and crop production (8.88%). Poultry and business were also followed by 2.49 per cent and 0.54 per cent respondents respectively as secondary means of livelihood. None of the respondents opted crop production as a secondary source of livelihood. It can be clearly seen from the table that 32.5 per cent of the respondents opted only primary livelihood for their source of livelihood. The reasons for such findings may be that due to very small land holdings and very low productivity of the land, many tribal families earn a living by maintaining a diversified pattern of occupation, as single activity does not provide sufficient resources to ensure livelihood. In the past, the livelihood of tribal people was dependent solely upon cultivation, animal husbandry, horticulture activities and sale of forest produce. But today, the situation seems to have changed. The data show diverse occupational activities of the tribal families.

Table.4.6. Distribution of the respondents on the basis of secondary livelihood pattern

n=360

S. No	Primary livelihood	Secondary Livelihood f (%)							
		Crop Based	Horticulture Based	Animal husbandry Based	Forest Based	Business Based	Poultry Based	Wages Based	Nil
1.	Crop based (n=180)	-	68 (37.77)	65 (36.11)	16 (8.88)	0	0	15 (8.33)	16 (8.88)
2.	Horticulture based (n=9)	0	-	4 (44.44)		0	0		5 (55.55)
3.	Animal husbandry based (n=31)	0	0	-	20 (64.51)	1 (3.22)		4 (12.90)	6 (19.35)
4.	Forest based (n=43)	0	0	0	-	1 (2.32)	8 (18.60)	23 (53.48)	11 (25.58)
5.	Business based (n=23)	0	0	0	0	-	1 (4.34)	12 (52.17)	10 (43.47)
6.	Poultry based (n=23)	0	0	0	0	0	-	5 (21.73)	18 (78.26)
7.	Wages based (n=51)	0	0	0	0	0	0	-	51 (100)
	Total (n=360)	0	68 (18.88)	69 (19.61)	36 (10)	2 (0.54)	9 (2.49)	59 (16.38)	117 (32.5)

According to Mareeswaran (2014) majority of the tribals (69.86%) were wage earners followed by those with Wage + Agriculture (27.94%) and Wage + Services (2.20%) like forest guard. Similar findings were also reported by Anand (2007) that majority of the respondents (73.00%) belonged to farming + wage earning category followed by the rest belonging to farming + livestock (9.00%), farming alone (7.00%), skilled wage earners (4.00%), farming + business (3.00%), farming + services (2.00%) and wage earners (2.00%) categories.

An investigation conducted by Kiran (2011) on “Livelihoods of tribal farmers in Andhra Pradesh” revealed that majority of the respondents (95.00%) make their living based on the combination of occupations like farming, rearing of livestock, collection of non-timber forest products and wage work. Very few of the respondents (5%) were involved in the business activities besides the above activities.

4.2.1 Different types of livelihood pattern among tribal women

An attempt was made to study each livelihood pattern in detail i.e. based on crop, horticulture, animal husbandry, wage, forest, poultry and business. The information relevant to different livelihoods like type of agriculture, products, methods of marketing, place of sale and storage, time and days devoted in different livelihood activities was gathered and the findings have been presented in this section.

4.2.1 Crop based livelihood

Rajasthan has two principal crop seasons i.e. rabi and kharif. The rabi crops are winter crops and are sown in the months of October and November and are harvested in the months of March and April. The principal rabi crops are barley, wheat, gram, pulses and oil seeds. The major oil seeds are rapeseed and mustard. The kharif crops are the crops that are grown in the rainy season and are seeded in the months of June and July. These crops are harvested in the months of September and October and include bajra, pulses, sorghum, maize and groundnut. (Government of India, Ministry of Agriculture, Department of Agriculture & Cooperation Mechanisation & Technology Division)

Crop production is the main occupation in tribal area. Wheat, sorghum, pearl millet, maize constitute major cereals whereas pigeon pea, black gram, green gram and black bean are the major pulse crops. The cotton, groundnut, guava, ber, anola and potato, cauliflower, gourd, tomato, cabbage, onion and lemon are the major

commercial crops grown. Tribal families save the seeds from the previous year's crops. Farm animals fertilize the fields with manure while the crop residue of this organic mixed farming, completely free from chemical poisons, provides nutritious food for bullocks, cows and other farm animals. Mixed farming of grains and legumes ensures that soil fertility is maintained. If one crop fails due to some reason, other crops of the mixed farming enable tribal families to survive despite some loss.

Table 4.7: Purpose of activity, season and crops grown by the respondents in crop based livelihood n=180

S. No	Items	f	%
I	Purpose of activity		
a.	Subsistence Agriculture	10	5.55
b.	Commercial Agriculture	20	11.11
c.	Both	150	83.33
II	Season		
a.	Rabi	180	100
b.	Kharif	180	100
c.	Zaid	90	50
III	Crops		
1.	Food grain		
a.	Wheat	180	100
b.	Maize	176	97.77
c.	Jowar (sorghum)	90	50
d.	Bajra (millet)	110	61.11
2.	Pulses		
a.	Mung (green lentil)	139	77.22
b.	Masoor (red lentil)	146	81.11
c.	Chana (chickpeas)	178	98.88
d.	Tuvar (pigeon peas)	120	66.66
3.	Oilseeds		
a.	Groundnut	40	22.22
b.	Soybean	32	17.77

Table 4.7 depicts the distribution of the respondents by the purpose of activity practiced, season and crops grown. It can be seen that the tribal families practice agriculture for subsistence and commercial purpose. Subsistence agriculture is meant to cater the needs of the family and commercial agriculture is practiced to sell the crop and animal products in market. Information in Table 4.7 shows that majority of the respondents (83.33%) had both subsistence and commercial agriculture, while some of the respondents had commercial agriculture (11.11%) and subsistence agriculture (5.55%).

Tribal communities have three season of agriculture, kharif (rainy season) while rabi (winter season) and zaid (summer season). Bajra (millet), maize, jawar (sorghum) and groundnut are kharif crops while wheat, jou (barley), gram and mustard are the rabi crops and fruits, vegetables fodder, barseem, etc. are zaid crops. Information related to season based crops presented in Table 4.7 depicts that cent per cent respondents (100 %) were cultivating rabi and kharif based crops whereas half of the respondents (50%) were growing zaid based crops.

Further information was gathered regarding the crops grown by the respondents. It can be seen from the Table 4.7 that all the respondents (100%) cultivated wheat as a major cereal crop followed by maize (97.77%), pearl millet (61.11%), and sorghum (50%). In case of pulses, most of the respondents grew bengal gram (98.88%) followed by red lentil (81.11%), green gram (77.22%) and pigeon peas (66.66%) Relatively less number of the respondents were cultivating groundnut (22.22%) and soybean (17.77%).

Table 4.8: Place of sale, storage and marketing methods practiced by the respondents in crop based livelihood n=180

S. No	Crop based activity	f	%
I	Place of sale		
a.	Local market	168	93.33
b.	City market	12	6.66
II	Place of storage		
a	Household	170	94.44
b.	Warehouse	10	5.55
III	Methods of marketing		
a	Wholesale	40	22.22
b.	Retail/Trades	140	77.77

Storage, place of sale and methods of marketing followed by the respondents have been presented in Table 4.8. It can be seen from the table that majority of the respondents (93.33%) sold their produce like cereals, pulses, fruits and vegetable to other tribals in local market. Only few of the respondents (6.66%) sold their produce in city market. Further information regarding the storage of produce depicts that majority of the respondents (94.44%) stored their items at their own home and only few of them (5.55%) put their produce in warehouse. It is evident from the Table 4.8 that majority of the respondents (77.77%) marketed the produce in retail while rest of the respondents (22.22%) sold on wholesale basis.

Table 4.9: Time use pattern among the respondents in crop based livelihood

n=180

I	Time devoted	f	%
a.	Less than 2 Hours.	0	0
b.	2-4 Hours.	104	57.77
c.	4-6 Hours.	76	42.22
II	Work days in a month		
a.	1-10 Days.	50	27.77
b.	10-20 Days.	76	42.22
c.	20-30 Days.	54	30

Further information regarding time devotion in livelihood activity reveal that more than half of respondents (57.77%) devoted 2-4 hours and rest of them (42.22%) devoted 4-6 hours in a day. Findings related to working days in a month show that 42.22 per cent respondents worked for 10-20 days in a month while almost equal number of the respondents worked for 20-30 days in a month (27.77%) and less than 20-30 days in month (30%).

Table 4.10: Distribution of the respondents on the basis of annual income earned in crop based livelihood **n=180**

S. No.	Income Range (Rs.)	f	%
1.	10000-22500	80	44.44
2.	22501-35000	55	30.55
3.	35001-47500	25	13.88
4.	47501-60000	20	11.11

Income of the respondents was calculated at on the basis of their annual income, selling price and expenditure. Annual income refers to total earning on rupees of a household in a year. Households were classified into four categories i.e. Rs.10000-22500, Rs.22501-35000, Rs.35001-47500 and Rs.47501-60000. Table 4.10 depicts the information about the respondent's annual income earned through crop based livelihood. It can be seen from the table that less than half of the respondents (44.44%) earned Rs. 10000-22500 annually. Nearly one third of respondents (30.55%) earned Rs. 22501-35000 annually while few of the respondents (13.88%) earned Rs.35001-47500. Only 11.11 per cent respondents had their annual income ranging between Rs. 47501-60000 from crop production.

1. Horticulture based livelihood

Horticulture is an excellent long term opportunity to address the multiple challenges of ending poverty, improving nutrition and sustaining tribal communities in the developing world. Horticulture plays a significant role in improving the livelihood of the tribal people.

Although Banswara, Dungarpur and Udaipur are very suitable for horticultural crops, a very few of the tribal families (2.5%) had horticulture as a primary livelihood source (Table 4.5). Besides horticulture as the primary source of income of the families, less than half of them (44.44 %) had undertaken animal husbandry as secondary livelihood activity (Table 4.6). Further findings in the previous section (Table 4.6) reveal that apart from horticulture as a primary livelihood source; it was adopted as secondary means by 18.88 per cent respondents. Findings based on responses of the respondents having horticulture as primary as well as secondary means of livelihoods have been presented in this section.

In horticulture based livelihood, backyard fruit tree plantation and vegetable cultivation was done by the respondents. Data in Table 4.11 depict the distribution of the respondents by the purpose of activity, season and horticulture crops. Data in Table 4.11 indicate that majority of the respondents (74.02%) had both subsistence and commercial horticulture, while few of them (12.98%) had commercial and subsistence horticulture. Information related to season based crops presented in Table 4.11 depicts that majority of the respondents (74.02%) were cultivating zaid based crops while some of the respondents (25.97%) were growing kharif based crops. None of the respondents cultivated horticulture crop in rabi season as they were growing wheat as major rabi crop.

Table 4.11: Purpose of activity, season and crops grown by the respondents in horticulture based livelihood n=77

S. No	Items	f	%
I	Purpose of activity		
a.	Subsistence horticulture	10	12.98
b.	Commercial horticulture	10	12.98
c.	Both	57	74.02
II	Season		
a.	Rabi	0	0
b.	Kharif	20	25.97
c.	Zaid	57	74.02
III	Horticulture crops		
1.	Fruit		
a.	Guava	71	92.20
b.	Ber	75	97.40
c.	Aonla	77	100
2.	Vegetable		
a.	Potato	70	90.90
b.	Cauliflower	68	88.31
c.	Gourd	52	67.53
d.	Tomato	61	79.22
e.	Cabbage	64	83.11
f.	Onion	70	90.90
g.	Lemon	55	71.42

Further information was gathered regarding the crops grown by the respondents. It can be seen from Table 4.11 that all the respondents (100%) cultivated aonla as a major fruit crop followed by ber (97.40%) and guava (92.20%). In case of vegetables, most of the respondents grew potato and onion (90.90%) followed by cauliflower (88.31%), cabbage (83.11%), tomato (79.22%), lemon (71.42%) and gourd (67.53%).

Table 4.12: Place of sale, storage and marketing methods practiced by the respondents in horticulture based livelihood n=77

S. No	Horticulture based activity	f	%
I	Place of sale		
a.	Local market	70	90.90
b.	City market	7	9.09
II	Place of storage		
a	Household	77	100
b.	Warehouse	0	0
III	Methods of marketing		
a	Wholesale	0	0
b.	Retail/Trades	77	100

Findings regarding storage, place of sale and methods of marketing followed by the respondents have been presented in Table 4.12. It can be seen from the table that majority of respondents (90.90%) sold their produce like fruits and vegetables in local market. Only few of the respondents (9.09%) sold their produce in city market. Further information regarding the storage of produce depicts that all the respondents (100%) stored their items at their own home and none of them put their produce in warehouse. It is evident from the Table 4.12 that cent per cent of the respondents (100%) marketed the produce on retail basis. Selling the produce in local market, not having proper storage facility of fruit and vegetable and selling the produce on retail basis generally contributed to lower return from horticulture crop.

Table 4.13: Time use pattern among the respondents in horticulture based livelihood n=77

I	Time devoted in a day	f	%
a.	Less than 2 Hours.	7	9.09
b.	2-4 Hours.	60	77.92
c.	4-6 Hours.	10	12.98
II	Work days in a month		
a.	Every day.	7	9.09
b.	1-10 Days	20	25.97
c.	10-20 Days.	30	38.96
d.	20-30 Days.	20	25.97

Information presented in Table 4.13 regarding time devotion in horticulture activities per day and work days in a month depicts that majority of the respondents (77.92%) devoted 2-4 hours in a day while some of them devoted 4-6 hours (12.98%) and less than 2 hours in a day (9.09%). Findings related to working days in a month reveal that 38.96 per cent respondents worked for 10-20 days in a month while one fourth the respondents (25.97%) worked for 1-10 days and 20-30 days.

Table 4.14: Distribution of the respondents on the basis of annual income earned in horticulture based livelihood n=77

S. No.	Income Range (Rs.)	Primary Livelihood n=9		Secondary Livelihood n=68		Total n=77	
		f	%	f	%	f	%
1.	10000-22500	2	22.22	30	44.11	32	41.55
2.	22501-35000	3	33.33	18	26.47	21	27.27
3.	35001-47500	4	44.44	12	17.64	16	20.77
4.	47501-60000	0	0	8	11.76	8	10.38

Visualization of Table 4.14 regarding the income earned by the respondents through horticulture as primary and secondary livelihood source indicates that 41.55 per cent of the respondents earned Rs.10000-22500 annually from horticulture while more than one fourth of respondents (27.27%) had their income ranging between Rs.22501-35000 and 10.38 per cent respondents earned Rs.475001-60000 annually.

4.2.1.3. Animal husbandry based livelihood

Animal husbandry and dairying activities, along with agriculture, continue to be an integral part of human life since the process of civilization started. These activities have contributed not only to the food basket and draught animal power but also by maintaining ecological balance. Animal husbandry is a major economic activity of the tribal people, especially in the arid and semi-arid regions of the Rajasthan. Development of livestock sector has a significant beneficial impact in generating employment and reducing poverty in tribal areas particularly among the landless, small and marginal farmers and women. Though animal rearing has been the traditional occupation among the tribals, yet only some households (8.61%) had adopted this as the primary source of income (Table 4.5). As a matter of tradition, village children and women take cattle 5 to 6 km into the forest for grazing. It is common for women and children to collect forest produce while they are out with the cattle in the forest. It is said that animal husbandry constitutes a major source of livelihood but in most of the cases, the cow, goat/sheep and chicks are not main source of commercial income of the tribals. They keep cows and chicks for their own family purpose of milk, meat and eggs. In times of difficulty, they sell their livestock at distress prices. Most of the households become owners of their livestock through inheritance, some of them purchase livestock from neighbours. Buying and selling of livestock is recorded common among tribal families within a hamlet.

Table 4.15: Purpose of activity, type of animal and dairy products prepared by the respondents in animal husbandry based livelihood n=100

S. No	Items	f	%
I	Purpose of activity		
a.	Subsistence	15	15
b.	Commercial	25	25
c.	Both	60	60
II	Type of animal		
a.	Cow	87	87
b.	Buffalo	62	62
c.	Goat	38	38
d.	Sheep	24	24
III	Dairy products		
a.	Milk	92	92
b.	Ghee	78	78

Table 4.15 depicts the distribution of the respondents according to type of animal husbandry practiced, livestock owned and livestock product. It can be seen from the table that the tribal families practice livestock for both subsistence and commercial purpose (60%) while some of the respondents had only commercial animal husbandry (25%) and subsistence animal husbandry (15%). According to Waqas *et al.* (2013), more than half of the respondents (53.30 %) had source of income from livestock along with crop farming. A sound majority of the respondents (60.00 %) were raising livestock for livelihood and commercial purpose as well.

The livestock holding in Table 4.15 clearly indicate that majority of tribal families (87%) owned cows followed by buffalo (62%), goat (38%) and sheep (24%). An overview of the data in table further indicate that majority of the respondents (92%) were milk producer while 78 per cent respondents were making ghee also.

Table 4.16: Place of sale, storage and marketing methods practiced by the respondents in animal husbandry based livelihood n=100

S. No	Items	f	%
I	Livestock products		
i)	Place of sale		
a.	Selling to neighbours	60	60
b.	Local market	40	40
c.	Cooperative society	0	0
ii)	Place of storage		
a.	Earthen pots	10	10
b.	Metallic containers	80	80
c.	Refrigerator	10	10
iii)	Methods of marketing		
a.	Wholesale	0	0
b.	Retail	100	100
II	Livestock		
i)	Place of sale		
a.	In village	74	74
b.	City/town market	16	16
c.	Animal fairs/mela	10	10
ii)	Place of purchase		
a.	In village	75	75
b.	City/town market	15	15
c.	Animal fairs/mela	10	10

The data regarding various aspects like place of sale, storage and method of marketing in selling and purchasing of livestock and products was gathered and presented in Table 4.16. It was found that 60 per cent of the respondents sold livestock products to the neighbours and rest were selling at local market to directly shopkeepers or confectioner. None of them sold milk to milk cooperative society. It may be due to low production of milk from their local breeds and lack of milk cooperative society in the study area. Further information regarding the storage of produce depicts that majority of the respondents (80%) stored their products in metallic containers followed by 10 per cent stored in earthen pots and 10 per cent put their produce in refrigerator at their home. It is evident from the Table 4.16 that cent per cent of the respondents (100%) marketed the produce on retail basis.

In the present study, it was observed that majority of the respondents (74%) preferred selling of their livestock in the village itself directly to other livestock owners. About 16 per cent of the respondents sold their animals in nearby city/town market followed by 10 per cent selling the livestock in animal fairs/mela. Table 4.16 further indicates that about 75 per cent of the respondents preferred purchase of animals from their own village followed by city/town market (15%) and animal fairs/mela (10%). According to Tanwar *et al.* (2012) majority of the goat farmers (92.08%) in Jaipur district of Rajasthan sold the male kids in their own villages to the middlemen (Khatik/Kasai). In Tirunelveli district of Tamil Nadu, Gupta and Kumar (2012) observed that majority of farmers preferred to sell animals in their own villages itself to reap the benefits of negotiation.

Table 4.17: Time use pattern among the respondents in animal husbandry based livelihood **n=100**

I	Time devoted	f	%
a.	Less than 2 Hours.	0	0
b.	2-4 Hours.	18	18
a.	4-6 Hours.	82	82
II	Work days in a month		
a.	Every day.	100	100
b.	1-10 Days	0	0
c.	10-20 Days.	0	0
b.	20-30 Days.	0	0

Table 4.17 point out that majority of the respondents (82%) devoted 4-6 hours and rest (18%) devoted 2-4 hours in a day in animal husbandry activity. Findings related to working days in a month reveal that cent per cent of the respondents (100%) worked every day in a month which is due to the nature of animal husbandry activity.

Table 4.18: Distribution of the respondents on the basis of annual income earned in animal husbandry based livelihood n=100

S. No.	Income Range (Rs.)	Primary Livelihood n=31		Secondary Livelihood n=69			Total n=100
		f	%	f	%	f	%
1.	10000-22500	8	25.80	32	46.37	40	40
2.	22501-35000	10	32.25	14	20.28	24	24
3.	35001-47500	10	32.25	14	20.28	24	24
4.	47501-60000	3	9.67	9	13.04	12	12

Visualization of Table 4.18 reflects the annual income earned by the respondents through primary and secondary livelihood activities. It can be seen from the table that 40 per cent tribal women earned Rs.10000-22500 from livestock activity followed by 24 per cent respondents earning Rs.22501-35000 and Rs.35001-47500. Small number of respondents (12%) were earning Rs.47501-60000 annually by selling milk, ghee and animals. A close look of the table depicts that the respondents who have adopted animal husbandry as secondary means of livelihood were also earning considerable income from it to support their family expenditure.

4.2.1.4: Wage based livelihood

Wage labour is one of the major occupations of the tribal people. Many tribal families work in agriculture fields and farms, brick kilns, construction work, etc. on daily wages. In several villages, wage labour supersedes most occupations as it assures a constant supply of cash money. However, other than providing direct income, wage has numerous drawbacks. Tribals depend too much on this form of employment and refrain from carrying out traditional activities such as forest produce collection and agriculture. Women concerned with household chores alone, was not very common among tribal household and they were engaged in wage labour also. Both, men and women engaged themselves as wage workers in farm and non-farm activities. Wage based livelihood in agriculture and non-agriculture was adopted by

14.16 per cent of the respondents (Table 4.5). Besides wage as the primary source of income of the household, tribal families had undertaken wage as secondary means of livelihood also.

Table 4.19: Type of labour, season and time use pattern among the respondents in wage based livelihood n=110

S. No	Items	f	%
I	Type of labour		
a.	Farm labour	50	45.45
b.	Non farm labour	60	54.54
c.	Both	0	0
II	Season		
a.	Rabi	50	45.45
b.	Kharif	40	36.36
c.	Zaid	20	18.18
III	Time devoted		
a.	Less than 2 Hours.	0	0
b.	2-4 Hours.	10	9.09
c.	4-6 Hours.	40	36.36
d.	More than 8 Hours.	60	54.54
IV	Work days in a month		
a.	Every day.	10	9.09
b.	1-10 Days	15	13.63
c.	10-20 Days.	30	27.27
d.	20-30 Days.	55	50

The data presented in Table 4.19 portray that more than half of the respondents (54.54%) were involved in non farm labour like brick kilns, construction work and 45.45 per cent were working as farm labour. Within the village, it is mostly agricultural work whereas outside the villager, they work as unskilled construction labour. Data further depict that less than half of the respondents (45.45%) were working as a labour in rabi season while more than one third of the respondents (36.36%) in kharif season and some of the respondents (18.18%) worked in zaid season as a wage labourer. Probe into the matter revealed that work availability for farm labour was not there throughout the year. July was the crucial month when no work was available for wage workers. Low work opportunity was also seen in the month of June and August. Work was easily available in the month of September to December.

Regarding time devoted in wage based activities per day and work days in a month table further depicts that more than half of the respondents (54.54%) devoted more than 8 hours in a day while more than one third of the respondents (36.36%) devoted 4-6 hours and few of the respondents (9.09%) devoted 2-4 hours in a day. Respondents working for less time in a day were usually found to work in fragments as and when called by the employer. Findings related to working days in a month reveals that 50 per cent respondents worked for 20-30 days in a month while more than one fourth respondents (27.27%) worked for 10-20 days. Some of the respondents (9.09%) worked for the whole month. Dependence on wage labour was much higher when food from their own lands was not available.

Table 4.20: Distribution of the respondents on the basis of annual income earned in wage based livelihood n=110

S. No.	Income Range (Rs.)	Primary Livelihood n=51		Secondary Livelihood n=59		Total n=110	
	Wage based	f	%	f	%	f	%
1.	10000-22500	3	5.88	25	42.37	28	25.45
2.	22501-35000	22	43.13	15	25.42	37	33.63
3.	35001-47500	23	45.09	10	16.94	33	30
4.	47501-60000	3	5.88	9	15.25	12	10.90

Data presented in Table 4.20 regarding the income earned by the respondents through wage as primary and secondary livelihood source reveal that nearly one third of the respondents had their income ranging between Rs.22501-35000 (33.63%) and Rs.35001-47500 (30%). One fourth of the respondents (25.45%) had their income between Rs.10000-22500 while some of the respondents (10.90%) earned Rs.47501-60000 annually working as a wage laborer so wage based livelihood provided them with considerable and continuous source of income.

4.2.1.5: Forest based livelihood

Tribal communities especially in southern Rajasthan have significant dependence on the forest and natural resources available in their neighbourhood. Almost entire supply of tribal household energy comes from fuel wood collected from the forest by local people. Between March and May of every year

(lean season in agriculture), the tribal families depend on forest products for their livelihood. Every early morning in the said period, groups of women go out to the forest. Individually they collect non timber products, which become raw material for making a number of items for the home, such as brooms, baskets, mats, rope and leaf plates. Some forest products are sold for a small cash income, for buying clothing, oil or spices. In a study on “Non wood forest produce (NWFPs) in improving the livelihood of tribal women: An explorative study”, Devika (2012) revealed that more than half of the tribal women (55.83%) were involved in non-wood forest product activity as main occupation and remaining 44.17 per cent practiced it as subsidiary occupation.

Table 4.21: Purpose of forest produce collection, season and forest produce collected by the respondents in forest based livelihood. n=79

S. No	Items	f	%
I	Purpose of forest produce collection		
a.	As laborer	9	11.39
b.	As right to collect forest produce	10	12.65
c.	Both	60	75.94
II	Season		
a.	Rabi	12	15.18
b.	Kharif	17	21.51
c.	Zaid	50	63.29
III	Forest produce collected		
a.	Honey	79	100
b.	Gum	50	63.29
c.	Wax	60	75.94
d.	Anola	79	100
e.	Custard apple	70	88.60
f.	Date palm	79	100
g.	Spine gourd (Kantola)	79	100
h.	Aritha	29	36.70
i.	Jatropha	49	62.02
j.	Dry and green fodder	79	100
k.	Fuel wood	79	100
l.	Tamarind	72	91.13

Table 4.22: Place of sale, storage and marketing methods practiced by the respondents in forest based livelihood n=79

S. No	Items	f	%
I	Place of sale		
a.	Local market	79	100
b.	City market	0	0
II	Place of storage		
a.	Household	79	100
b.	warehouses	0	0
III	Methods of marketing		
a.	Wholesale	19	24.05
b.	Retail	60	75.94

Data regarding storage, place of sale and methods of marketing followed by the respondents has been presented in Table 4.22. It can be seen from the table that all the respondents (100%) sold their produce like spine gourd, honey, aritha, jatropha, date palm, custard apple, honey, dry and green fodder, fuel wood, tamarind, aonla to other tribals in local market. Discussion with the respondents revealed that mostly women and children were engaged in collection of these produce from the nearby forests which were sold by them directly at lower rate without adding any value to it. The activity of non-timber forest produce collection is for very short duration but it helps in earning money during lean season. The collection areas generally lack in road connectivity; hence people have to walk 5 to 6 km into the forest. The tribals suffered a huge loss of income because restrictive laws and policies can be gauged from the mandis. Tribals were bound by the contractor to sell some of the forest produce only to them. Further information regarding the storage of forest produce depicts that all the respondents (100%) stored their items at their own home. It is evident from the table that majority of the respondents (75.94%) marketed the collected forest produce in retail while rest of the respondents (24.05%) sold on wholesale basis.

Table 4.23: Time use pattern among the respondents in forest based livelihood**n=79**

I	Time devoted	f	%
a.	Less than 2 Hours.	20	25.31
b.	2-4 Hours.	50	63.29
a.	4-6 Hours.	9	11.39
II	Work days in a month		
a.	Every day.	0	0
b.	1-10 Days	50	63.29
c.	10-20 Days.	29	36.70
b.	20-30 Days.	0	0

Perusal of Table 4.23 reveals the information regarding time devoted and working days in a month in forest based livelihood activity. It can be concluded from the table that more than half of respondents (63.29%) devoted 2-4 hours while 25.31 per cent respondents devoted less than 2 hours and some of the respondents (11.39%) spent 4-6 hours in a day. Findings related to working days in a month reveal that more than half of the respondents (63.29%) worked for 1-10 days while 36.70 per cent respondents worked for 10-20 days in a month. Such pattern of time devotion and working days in this forest based livelihood may be due to nature of activity and need for devoting time in other household and agriculture activities.

Table 4.24: Distribution of the respondents on the basis of annual income earned in forest based livelihood**n=79**

S. No.	Income Range (Rs.)	Primary Livelihood n=43		Secondary Livelihood n=36		Total n=79	
	Forest based	f	%	f	%	f	%
1.	10000-22500	7	16.27	6	16.66	13	16.45
2.	22501-35000	12	27.90	10	27.77	22	27.84
3.	35001-47500	16	37.20	10	27.77	26	32.91
4.	47501-60000	8	18.60	10	27.77	18	22.78

Data presented in Table 4.24 regarding the income earned by the respondents through forest collection as primary and secondary livelihood source show that 32.91 per cent respondents earned Rs.35,001-47,500 annually from forest collection while more than one fourth of respondents (27.84%) had their income ranging between Rs.22,501-35,000 income between Rs.47,501-60,000 was earned by 22.78 per cent respondents and 16.45 per cent respondents earned Rs.10,000-22,500 annually. The

findings of the present studies reveal that although there is high resource availability in the study area but due lack of awareness, scientific knowledge about various post-harvest and value addition methods with inadequate marketing channels and facilities, the income from the key non timber forest produce are very low. Forest produce collection in the area is a year round activity but tribal depends on it to sustain their livelihood needs instead of adopting it as an income generating activity.

4.2.1.5. Poultry based livelihood

Poultry is one of the important livelihoods of most of the tribal families. It has a strong potential as an income generation activity by sale of egg and chickens. The backyard poultry production is suitable to the needs of landless households as it requires low level inputs and low-skill investment from household and ensure regular income and livelihood of tribal. The investments in small- scale poultry farming generate handsome returns and contribute to poverty reduction and increased food security in regions where a large share of the population keeps some poultry birds. Findings in the previous section indicate that only 6.38 per cent respondents were doing poultry production as a primary means of livelihood (Table 4.5) while very few of the respondents (2.49%) opted poultry production as a secondary means of livelihood (Table 4.6). The reason for comparatively less adoption of this means of livelihood might be the high mortality rate of the birds due to lack of vaccination and low level of immunity and nutrition.

Table 4.25: Purpose of poultry production and poultry products in poultry based livelihood **n=32**

S. No	Items	f	%
I	Purpose of poultry production		
a.	Subsistence	10	31.25
b.	Commercial	2	6.25
c.	Both	20	62.5
II	Poultry products		
a.	Egg	20	62.5
b.	Meat	10	31.25
c.	Chicken manure	2	6.25

The data presented in Table 4.25 portray that majority of the respondents (62.5%) were involved in both subsistence and commercial poultry production, while 31.25 per cent respondents had only subsistence poultry production.

Table 4.26: Place of sale, storage and marketing methods practiced by the respondents in poultry based livelihood **n=32**

S. No	Items	f	%
I	Place of sale		
a.	Local market	32	100
b.	City market	0	0
II	Place of storage		
a.	Household	32	100
b.	warehouses	0	0
III	Methods of marketing		
a.	Wholesale	12	37.5
b.	Retail	20	62.5

Findings regarding place of sale, storage and methods of marketing followed by the respondents have been presented in Table 4.26 which depict that all the respondents (100%) sold their produce like egg and meat in local market. Regarding the storage of produce, all the respondents (100%) stored their poultry produce at their own home and none of them had warehouse facilities. It is evident from the table that majority of the respondents (62.5%) marketed the produce on retail basis while rest of the respondents (37.5%) sold on wholesale basis.

Table 4.27: Time use pattern among the respondents in poultry based livelihood

n=32

I	Time devoted	f	%
a.	Less than 2 Hours.	0	0
b.	2-4 Hours.	30	93.75
a.	4-6 Hours.	2	6.25
II	Work days in a month		
a.	Every day.	32	100
b.	1-10 Days.	0	0
c.	10-20 Days.	0	0
b.	20-30 Days.	0	0

Table 4.27 point out that majority of respondents (93.75%) devoted 2-4 hours and rest of the respondents (6.25%) devoted 4-6 hours in a day in poultry production activity. Findings related to working days in a month reveal that cent per cent of the respondents (100%) worked every day in a month due to nature of activity.

Table 4.28: Distribution of the respondents on the basis of annual income earned in poultry based livelihood n=32

S. No.	Income Range (Rs.)	Primary Livelihood n=23		Secondary Livelihood n=9		Total n=32	
	Poultry based	f	%	f	%	f	%
1.	10000-22500	2	8.69	2	22.22	4	12.05
2.	22501-35000	10	43.47	5	55.55	15	46.87
3.	35001-47500	10	43.47	2	22.22	12	37.05
4.	47501-60000	1	4.34	0	0	1	3.12

Data presented in Table 4.28 regarding the income earned by the respondents through poultry production activity as primary and secondary livelihood source. The table indicates that 46.87 per cent respondents earned Rs.22,501-35,000 annually from poultry production while more than one third of respondents (37.05%) had their income ranging between Rs.35,001-47,500 while some of the respondents (12.05%) earned Rs.10,000-22,500 and 3.12 per cent respondents earned Rs.47,501-60,000 annually. Here it is important to recognize the contribution of the back yard poultry farming in improving their livelihood in terms of food and cash.

4.2.1.6 Business based livelihood

Business based livelihood was followed 6.38 per cent respondents as primary means and very few of the respondents (0.54%) had business as a secondary means of livelihood (Table 4.5 & 4.6).

Selling of handmade items, fruit and vegetable, cloth and grocery items were found to be tribal's small scale business items like bamboo table mat, carpet, wall hangings, lampshades, trays, doormat, book shelves, bows, puppets and pottery, broom, baskets, fan, combs, bowls and toy were prepared by the tribal women. It was observed that the business had created employment opportunities for the landless tribals but they were unable to make high investment on these activities. They faced many constraints in running business based activities.

**Table 4.29: Type of business, place of storage and marketing method practices
by the respondents in business based livelihood n=25**

S. No	Items	f	%
I	Type of business		
a.	Individual	20	80
b.	Partnership business	5	20
II	Type of business items		
a.	Decorative items	6	24
b.	Wooden items	10	40
c.	Fruits and vegetables shops	6	24
d.	Cloth and grocery	3	12
III	Place of storage		
	Household	25	100
IV	Place of sale		
a.	Local market	25	100
b.	City market	0	0
V	Methods of marketing		
a.	Wholesale	0	0
b.	Retail	25	100

Table 4.29 depicts the distribution of the respondents by the type of business activity, season and business products. Information in Table 4.29 shows that majority of the respondents (80%) had individual business and 20 per cent of the respondents had business in partnership as a source of income. Further information was gathered regarding the type of business products made by the respondents. It can be seen from the table that 40 per cent of the respondents made wooden items for their business while 24 per cent of the respondents were engaged in selling hand-made decorative items and 24 per cent in fruits and vegetables shops and rest of the respondents (12%) were selling cloth and grocery items.

Further information regarding place of storage of produce depicts that all the respondents (100%) stored their items at their own home. It can be seen from the table that all the respondents (100%) marketed the products on retail basis.

Table 4.30: Time use pattern among the respondents in business based livelihood**n=25**

I	Time devoted	f	%
a.	Less than 2 Hours.	0	0
b.	2-4 Hours.	19	76
a.	4-6 Hours.	6	24
II	Work days in a month		
a.	Every day.	25	100
b.	1-10 Days.	0	0
c.	10-20 Days.	0	0
b.	20-30 Days.	0	0

Table 4.30 point out that majority of respondents (76%) devoted 2-4 hours and rest of them (24%) devoted 4-6 hours in a day in business based activity. Findings related to working days in a month reveal that cent per cent of the respondents (100%) worked every day in a month.

Table 4.31: Distribution of the respondents on the basis of annual income earned in business based livelihood**n=25**

S. No.	Income Range (Rs.)	Primary Livelihood n=23		Secondary Livelihood n=2		Total n=25	
	Business based	f	%	f	%	f	%
1.	10000-22500	3	13.04	0	0	3	12
2.	22501-35000	10	43.47	2	100	12	48
3.	35001-47500	10	43.47	0	0	10	40
4.	47501-60000	0	0	0	0	0	0

Data presented in Table 4.31 regarding the income earned by the respondents through business based activity as primary and secondary livelihood source indicates that 48 per cent tribal women earned Rs.22,501-35,000 annually from business while one fourth of the respondents (40%) had their income ranging between Rs.35,001-47,500 and 12 per cent respondents earned Rs.10,000-22,500 annually.

It can be concluded from the data pertaining to the different livelihood pattern of tribal families that there were seven major livelihood patterns such as; crop,

horticulture, animal husbandry, forest, wage, poultry and business based. Majority of the tribal families had crop based livelihood and they grew crop for subsistence and commercial purpose. Majority of the respondents sold their produce like cereals, pulses, fruits, vegetable, milk, egg and meat to other tribals and in local market. The findings show that majority of the respondents earned Rs.35,001-47,500 annually through different livelihood activities. Similar findings were revealed by Gouda *et al.* (2013) who concluded that majority of the respondents were engaged in crop production and considered it as their livelihood activity followed by wage earning (85.00%), dairy (33.33%), sheep/goat rearing (06.67%), backyard poultry (06.67%), business (05.00%) and others (06.67%). Whereas, in case of landless labours cent per cent were involved in wage earning followed by other (28.33%), sheep/goat rearing (13.33%), backyard poultry (13.33%) and business (10.00%).

4.3 ROLE OF TRIBAL WOMEN IN THE LIVELIHOOD SECURITY OF THE FAMILY

Tribal women constitute half of the work force among tribals in India. They play substantial and crucial role in their social, cultural, economic and religious ways of life and considered as an economic asset in their society. They are more important than in other social groups, because they work harder and the family economy and management depends on them. Even after industrialization and the resultant commercialization swamped the tribal economy, women continued to play a significant role.

The general perception about women's work reveals that women are primarily involved in works related to household and family responsibility, child care, family food security, caring cattle and supplementing family's subsistence economy. Land and forest, remain primary resources on which the tribal women depend for fulfilling most of such responsibilities. The tribal women work for about 8 to 10 hours per day in agriculture and allied activities. They collect the forest produce viz. anola, custard apple, aritha, date palm, jatropha, plant leaves, firewood, bamboo, gum, wax, honey, fodder, fruits, vegetables and sell these products in the local market and nearby villages and exchange the produce for their daily requirements through barter system. Besides engaging themselves in a variety of activities both on the farm and at home, the tribal women also contribute to the family income through their wage earnings.

This section presents the findings related to role of tribal women in different livelihood activities based on crop, horticulture, animal husbandry, forest, poultry, business, and wage. The response of the respondents' role was recorded in three categories i.e. independent role, joint with other family member and nil assigning 2, 1 and 0 scores respectively.

Table 4.32: Distribution of the respondents by their role in crop based livelihood activity

n=180

S. No	Activity	Role						
		Independent		Joint with other family members		Nil		MPS
		f	%	f	%	f	%	
1.	Land preparation	113	62.77	67	37.22	0	0	81.38
2.	Seed/variety selection	115	63.88	65	36.11	0	0	81.94
3.	Seed treatment	88	48.88	92	51.11	0	0	74.44
4.	Transplantation	80	44.44	100	55.55	0	0	72.22
5.	Engagement of labor	180	100	0	0	0	0	100
6.	Management of labor	180	100	0	0	0	0	100
7.	Insect and pest control through							
	a. Indigenous method	117	65	63	35	0	0	82.5
	b. Chemical application	24	13.33	156	86.66	0	0	56.66
8.	Irrigation/water management	95	52.77	85	47.22	0	0	76.38
9.	Weeding	84	46.66	96	53.33	0	0	73.33
10.	Application of manure and fertilizers	180	100	0	0	0	0	100
11.	Harvesting	120	66.66	60	33.33	0	0	83.33

12.	Post-harvest management							
i.	Threshing	37	20.55	143	79.44	0	0	60.27
ii.	Winnowing	40	22.22	140	77.77	0	0	61.11
iii.	Cleaning	180	100	0	0	0	0	100
iv.	Drying	180	100	0	0	0	0	100
v.	Post-harvesting processing of produce							
	a. Household level	36	20	144	80	0	0	60
	b. Commercial level	56	31.11	124	68.88	0	0	65.55
vi	Retention for							
	a. Consumption	52	28.88	128	71.11	0	0	64.44
	b. Seed	46	25.55	134	74.44	0	0	62.77
	c. Sale	44	24.44	136	75.55	0	0	62.22
13.	Storage	100	55.55	80	44.44	0	0	77.77
14.	Marketing of produce	67	37.22	113	62.77	0	0	68.61
15.	Credit/loan	36	20	144	80	0	0	60
16.	Management of cash earned	46	25.55	134	74.44	0	0	62.77
	Pooled MPS							
								75.51

Findings regarding the role of tribal women in crop based livelihood activity have been presented in Table 4.32. Data show that all the respondents independently participated in engagement and management of labor, application of manure and fertilizers, cleaning and drying in post-harvest management (100%). Majority of the respondents independently participated in harvesting (66.66%), insect and pest control through indigenous method (65%), seed/variety selection (63.88%) and land preparation (62.77%). Majority of the respondents participated jointly with family members in insect and pest control through chemical application (86.66%), household level post-harvesting processing of produce (80%), credit/loan (80%), threshing (79.44%), winnowing (77.77%), retention for sale (75.55%), management of cash earned from sale of produce (74.44%), retention for seed (74.44%) and consumption (71.11%). Table further reveals that more than half of the respondents were involved jointly with family in transplantation (55.55%), weeding (53.33%) and seed treatment (51.11%) with mean percent score ranging between 60-100. According to Mohanta (2017) tribal women were performing cleaning and drying of grains, harvesting, weeding and shifting produce to threshing floor with mean score 2.86, 2.85, 2.82 and 2.81 having rank position II, III, IV, & V respectively. Regarding farm activities the participation was maximum in backyard gardening with highest MPS 2.76 and rank position I followed by goatery and dairy farming with MPS 2.73 & 2.36 with rank position II & III respectively. Similar results were reported by Chayal and Dhaka, (2010) and Bihari *et al.* (2012) that tribal woman were involved in almost all type of work related to agriculture.

Kalash *et al.* (2012) also studied the role of tribal women in agriculture related task and found that the majority of the respondents performed storage of grain (74.17%), seed grading (73.33%), planting (46.67%), harvesting (38.33%) and application of manure and fertilizers (35.83%) whereas plant protection (76.67%), land application (72.50%), seed treatment (65.83%), seed sowing (35%) and harvesting (22.50%) were performed by male members of the family while, farm women and men jointly performed seed sowing (56.67%), threshing (45.83%), harvesting (39.17%), planting (35.83%) and seed treatment (27.50%).

Table 4.33: Distribution of the respondents by their role in horticulture based livelihood activity

n=77

S. No.	Activity	Role						
		Independent		Joint with other family members		Nil		MPS
		f	%	f	%	f	%	
1.	Selection of land	30	38.96	47	61.03	0	0	69.48
2.	Land preparation	32	41.55	45	58.44	0	0	70.77
3.	Nursery bed preparation	38	49.35	39	50.64	0	0	74.67
4.	Seed sowing	40	51.94	37	48.05	0	0	75.97
5.	Cutting/budding/grafting	50	64.93	27	35.06	0	0	82.46
6.	Engagement of labor	77	100	0	0	0	0	100
7.	Soil treatment	17	22.07	60	77.92	0	0	61.03
8.	Maintenance of seedling	17	22.07	60	77.92	0	0	61.03
9.	Transplanting of seedling	10	12.98	67	87.01	0	0	56.49
10.	Irrigation	27	35.06	50	64.93	0	0	67.53
11.	Application of manure & fertilizers	77	100	0	0	0	0	100
12.	Plant protection	37	48.05	40	51.94	0	0	74.02

13.	Harvesting	0	0	77	100	0	0	50
14.	Post-harvest management							
i.	Grading	38	49.35	39	50.64	0	0	74.67
ii.	Retention for					0	0	
	a. Consumption	37	48.05	40	51.94	0	0	74.02
	b. Commercial purpose	27	35.06	50	64.93	0	0	67.53
iii.	Processing of produce	77	100	0	0	0	0	100
iv	Packaging	38	49.35	39	50.64	0	0	74.67
15.	Storage	60	77.92	17	22.07	0	0	88.96
16.	Marketing of produce	0	0	77	100	0	0	100
17.	Credit/loan	40	51.94	37	48.05	0	0	75.97
18.	Management of cash earned	30	38.96	47	61.03	0	0	69.48
	Pooled MPS							75.85

Data regarding the role of tribal women in horticulture based livelihood activity in Table 4.33 indicate that cent per cent respondents participated independently in engagement of labor, application of manure & fertilizers and processing of produce. Cent per cent of the respondents participated jointly with family members in harvesting and marketing. Further data in table clearly shows that majority of the respondents were jointly involved in transplanting of seedling (87.01%), soil treatment (77.92%), maintenance of seedling (77.92%), irrigation and retention for commercial purpose (64.93%), selection of land and management of cash earned from sale of produce (61.03%). Table further reveals that more than half of the respondents were jointly engaged in land preparation (58.44%), plant protection and retention for consumption (51.94%), nursery bed preparation, grading and packaging (50.64%). Mean percent scores, ranging between 50-100 indicates greater involvement of tribal women in horticulture based activity.

The findings are in conformity with Chauhan (2011) who also revealed that highest participation of tribal women was observed in sowing, transplanting followed by stubble collection, clod crushing, manuring and seedbed nursery preparation. The highest participation was observed in weeding followed by gap filling, application of fertilizer, bird scaring, irrigation, budding and hoeing with hand.

Livestock play an important role for the economic upliftment of the tribal families. The tribal women rear the cattle and the major work is being carried out by the women only. The Table 4.34 regarding role of tribal women in animal husbandry based livelihood activity depicts that all the respondents (100 MPS) were engaged independently in raising fodder, fodder storage, feed of animal, care of sick animal and excreta management. Majority of the respondents participated independently in management of labor (70%), cattle shed management (67%), procuring fodder (65%) and milking of the animals (51%) with mean percent scores ranging between 51 to 83.5. It is evident from the table that majority of the respondents were jointly involved in management of cash earned (80%), breeding of animal (70%) and credit/loan (70%). The mean percent score for role of the respondents ranged between 55-100 which indicates considerable involvement of tribal women in animal husbandry activity. According to Arshad et al. (2010) women are playing leading role in livestock sector and they are responsible for 60 to 80 per cent of the feeding and milking of cattle. They take responsibility for cutting fodder, cleaning sheds, milking dairy animals, processing animal products and looking after the health of the herd. Livestock management has always been considered to be the sole responsibility of women. Study by Prajapati et al. (2010) concluded that highest involvement of tribal women in feeding of animals with (MWS-2.76) followed by milking (MWS-2.76), watering animals (MWS-2.60), care taking of animals (MWS-2.40), marketing of milk/curd/ghee (MWS-2.00), curd making (MWS-1.64), ghee making (MWS-1.44) , grazing (MWS-1.20) and cow dung cake preparation (MWS-1.16).

Table 4.34 Distribution of the respondents by their role in animal husbandry based livelihood activity

n=100

S. No.	Activity	Role						MPS
		Independent		Joint with other family members		Nil		
		f	%	f	%	f	%	
1.	Fodder management							
	a. Raising fodder	100	100	0	0	0	0	100
	b. Procuring fodder	65	65	35	35	0	0	77.5
	c. Fodder storage	100	100	0	0	0	0	100
	d. Feed of animal	100	100	0	0	0	0	100
2.	Care of livestock	100	100	0	0	0	0	100
3.	Cattle shed management	67	67	33	33	0	0	83.5
4.	Management of labor	70	70	25	25	5	5	82.5
5.	Care of sick animal	100	100	0	0	0	0	100
6.	Breeding of animal	20	20	70	70	10	10	55
7.	Excreta management	100	100	0	0	0	0	100
8.	Milking of the animals	51	51	40	40	9	9	71
9.	Marketing of produce	30	30	58	58	12	12	59
10.	Credit/loan	20	20	70	70	10	10	55
11.	Management of cash earned	15	15	80	80	5	5	55
	Pooled MPS							81.32

The findings are in conformity with Jain and Singhal (2012) who also observed that tribal women individually participated in activity for feeding of animals (62%), activities concerning care of livestock (56%), cattle shed (62%) and excreta management (66%), milk and milk processing (58%) and financial aspect (47.70%). In case of the tribal male farmers, they support the families in growing, procuring and storage of fodder (34.00 to 54.00%) care of sick animals (52 per cent).

Table 4.35 Distribution of the respondents by their role in wage based livelihood activity **n=110**

S. No	Activity	Role					
		Independent		Joint with other family members		Nil	MPS
		f	%	f	%	f (%)	
1.	Work selection	50	45.45	60	54.54	0	72.72
2.	Distribution of responsibilities	45	40.90	65	59.09	0	70.45
3.	Selection of working months	48	43.63	62	56.36	0	71.81
4.	Selection of working hours	35	31.81	75	68.18	0	65.90
5.	Selection of working place	45	40.90	65	59.09	0	70.45
6.	Working as labour	110	100	0	0	0	100
7.	Management of cash earned	48	43.63	62	56.36	0	71.81
	Pooled MPS						74.74

Regarding role of tribal women in different activities related to wage based livelihood, Table 4.35 depict that the 31.81-48 per cent of the respondents were performing different activities independently. Majority of the respondents jointly did

selection of working hours (68.18%), distribution of responsibilities such as looking after the household work in their absence (59.09%) and selection of working place (59.09%). More than half of the respondents were jointly engaged in selection of working months and utilization of income (56.36%) and work selection (54.54%). Mean percent score of the respondents for these activities ranged between 65.90 to 72.72 which indicates the active role of tribal women in wage based livelihood activities.

Table 4.36 Distribution of the respondents by their role in forest based livelihood activity **n=79**

S. No	Activity	Role						MPS
		Independent		Joint with other family members		Nil		
		f	%	f	%	f	%	
1.	Assessment of forest resources	38	48.10	37	46.83	4	5.06	56.5
2.	Distribution of responsibilities	38	48.10	38	48.10	3	3.79	57
3.	Season of collection	59	74.68	20	25.31	0	0	69
4.	Method of collection	62	78.48	17	21.51	0	0	70.5
5.	Time of collection	46	58.22	30	37.97	3	3.79	61
6.	Collection of forest produce	47	59.49	32	40.50	0	0	63
7.	Use of forest produce for consumption	27	34.17	43	54.43	9	11.39	48.5
8.	Place of sale	30	37.97	49	62.02	0	0	54.5
9.	Sale rate of products	41	51.89	38	48.10	0	0	60
10.	Processing of produce	49	62.02	30	37.97	0	0	64
11.	Value addition	49	62.02	26	32.91	4	5.06	62
12.	Packaging	51	64.55	28	35.44	0	0	65
13.	Storage	59	74.68	20	25.31	0	0	69
14.	Marketing	31	39.24	48	60.75	0	0	55
15.	Credit/loan	27	34.17	52	65.82	0	0	53
16.	Management of cash earned	30	37.97	49	62.02	0	0	54.5
	Pooled MPS							76.14

Forest produce forms a major source of income in many tribal communities. Women and children are almost exclusively involved in collection of forest produce, processing, storage and marketing. They collect forest products viz. mahua flower, honey, gum, tamarind, roots, tubers, fuel, etc. Findings regarding the role of respondents in forest based livelihood activity have been presented in Table 4.36. It can be observed from the table that majority of the respondents participated independently in deciding method of collection (78.48%) and season of collection (74.68%), storage (74.68%), packaging (64.55%), value addition (62.02%) and processing of produce (62.02%). While majority of the respondents were jointly engaged in credit/loan (65.82%), place of sale (62.02%), management of cash earned (62.02%) and marketing (60.75%). Data in table further reveal that less than half of the respondents were engaged jointly in distribution of responsibilities and sale rate of products (48.10%) and assessment of forest resources (46.83%). In depth review of the table further reveals that majority of the respondents considerably participated in different activities with MPS ranging between 62-78.48.

Results are in conformity with Chandrasekhar (2011) who reported that 75 per cent of the female were engaged in procurement of forest produce collection while it is only 10 per cent in men, whereas majority of the respondents were involved in processing (84%) and in storage of the produce (80%) whereas 50 and 40 per cent men were involved in agriculture based activities respectively.

Table 4.37 Distribution of the respondents by their role in poultry based livelihood activity
n=32

S. No.	Activity	Role						
		Independent		Joint with other family members		Nil		MPS
		f	%	f	%	f	%	
1.	Selection of site	22	68.75	10	31.25	0	0	84.37
2.	Feed of chicks	30	93.75	2	6.25	0	0	96.87
3.	Poultry shed management	28	87.5	4	12.5	0	0	93.75

4.	Management of labor	25	78.12	7	21.87	0	0	89.06
5.	Care of sick chicks	29	90.62	3	9.37	0	0	95.31
6.	Manure management	26	81.25	6	18.75	0	0	90.62
7.	Cleaning of shed	31	96.87	1	3.12	0	0	98.43
8.	Purchasing of raw material	20	62.5	12	37.5	0	0	81.25
9.	Marketing	12	37.5	20	62.5	0	0	68.75
10.	Credit/loan	10	31.25	22	68.75	0	0	65.62
11.	Management of cash earned	10	31.25	22	68.75	0	0	65.62
	Pooled MPS							84.51

Poultry farming is of great importance in tribal communities as it not only generates income and employment opportunities to small farmers including women but also brings about desired socio-economic change in tribal areas. The unorganized sector also referred to as backyard poultry plays a key role in supplementary income generation and family nutrition to the poorest of the poor. Information was gathered regarding role of tribal women in poultry based livelihood activity and presented in Table 4.37. It can be seen that majority of the respondents participated independently in cleaning of shed (96.87%), feed of chicks (93.75%), care of sick chicks (90.62%), poultry shed management (87.5%), manure management (81.25%), management of labor (78.12%), selection of site (68.75%) and purchasing of raw material (62.5%) while majority of the respondents engaged jointly in management of cash earned from sale of products (68.75%), credit/loan (68.75%) and marketing (62.5%) with MPS ranging between 65.62 to 84.37. It was noticed that most of management practices viz., housing, feeding, breeding, health care, marketing and consumption practices were carried out by the women. Findings are in conformity with Motinet *et al.* (2014) who revealed that rural women's role in backyard poultry production has significant importance. They are performing most of the activities in backyard poultry rearing system with utmost care and interest.

Table 4.38 Distribution of the respondents by their role in business based livelihood activity **n=25**

S. No	Activity	Role					
		Independent		Joint with other family members		Nil	MPS
		f	%	f	%	f(%)	
1.	Selection of business activity	3	12	22	88	0	56
2.	Establishment of business	6	24	19	76	0	62
3.	Material planning	3	12	22	88	0	56
4.	Distribution of responsibilities	6	24	19	76	0	62
5.	Marketing	7	28	18	72	0	64
6.	Type of material to be sold out	5	20	20	80	0	60
7.	Involvement in purchase	5	20	20	80	0	60
8.	Sale rate of products	5	20	20	80	0	60
9.	Purchasing rate of products	6	24	19	76	0	62
10.	Source of finance	4	16	21	84	0	58
11.	Arrangement of fund	2	8	23	92	0	54
12.	Credit/loan	5	20	20	80	0	60
13.	Management of cash earned	5	20	20	80	0	60
	Pooled MPS						60.61

Data in Table 4.38 depict the role of tribal respondents such as selling of decorative items, wooden items, fruits and vegetables, cloths and grocery. It was observed that majority of the respondents were engaged jointly with other family members in arrangement of fund (92%), material planning (88%), source of finance (84%), involvement in trade work, type of material to be sold out, sale rate of products and management of cash earned from sale of produce (80%), establishment of business, distribution of responsibilities and purchasing rate of products (76%), marketing (72%), selection of business activity (64%). An overview of the data in table further indicate that majority of the respondents participated jointly with other family members in arranging credit/loan. The mean percent scores for role of tribal women in this activities ranged between 54-74. It can be said that most of the business activities

were performed by the respondents jointly with other family members (72-92%). Whereas 8 to 28 per cent of the respondents could perform activities independently on their own.

Table 4.39: Overall role of the respondents in different livelihood activities

S. No	Activity	Role	
		MPS	Rank
1.	Poultry based	84.51	I
2.	Animal husbandry	81.32	II
3.	Forest based	76.14	III
4.	Horticulture based	75.85	IV
5.	Crop based	75.51	V
6.	Wages based	74.74	VI
7.	Business based	60.61	VII

An effort was made to rank the overall role of the respondents in different livelihood activities on the basis of mean percent scores. It can be seen from Table 4.39 that highest involvement of tribal women was observed in poultry based livelihood with (84.51 MPS) I rank followed by animal husbandry at rank II with 81.32 MPS, forest based livelihood activity (Rank III) with 76.14 MPS, horticulture (Rank IV) and crop based livelihood activities (Rank V) with 75.85 MPS and 75.51 MPS respectively. Participation of tribal women in wage based livelihood activities was ranked VI followed by business at last rank with 60.61 MPS.(Fig. 4.3).

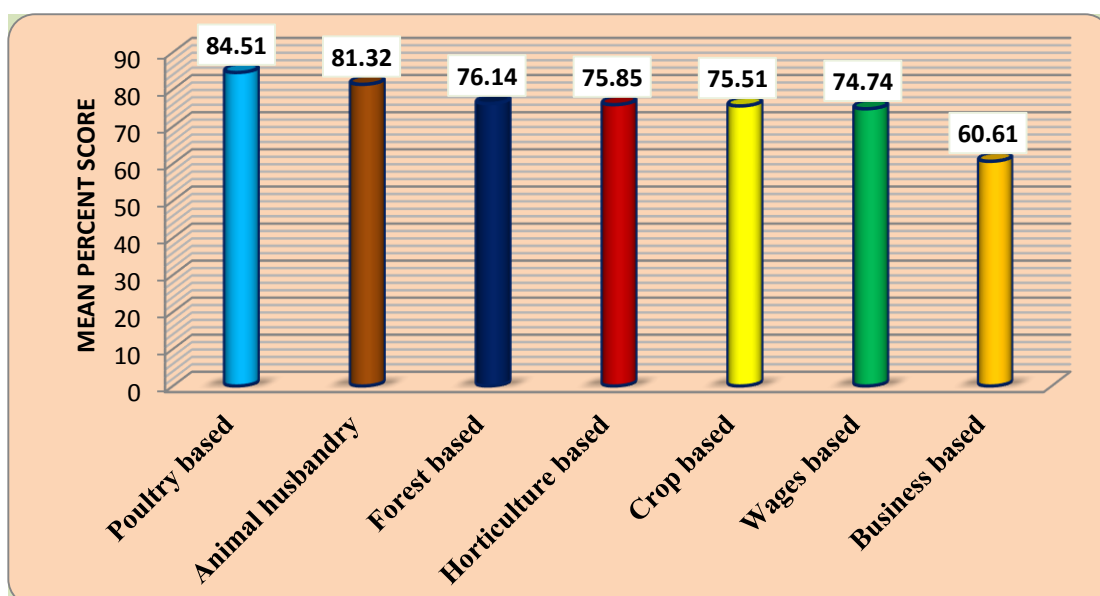


Fig. 4.3: Role of tribal women in different livelihood activities

The findings of the present study are in accordance with the findings of Borgohain and Akand (2011), Chauhan and Nikulsinh (2011), Singh (2010) and Patra, R (2018) who reported that tribal women play an important role in farm and non-farm livelihood activities. They are the main managers of household work and also play an important role in families livelihood security.

It can be inferred that they are performing most of the activities in agricultural and allied activities like land preparation, sowing, harvesting, knowledge and skill oriented activities like raising livestock and post-harvest activities, collection of minor forest produce, processing, storage and marketing. They have a major share in contributing to the family income. The study reveals that the women were jointly involved in use of income, selling and purchasing of items with men whereas daily family expenses and their personal needs were generally taken independently by women. Tribal families are more orthodox and traditional taboos are creating lots of problems but women manage everything very smoothly in the household as well as outside household work. They always work harder for earning livelihood for their family and in taking care of children, and working inside home.

Tribal women play a vital role in their social, cultural, economic and religious ways of life and are considered as an economic asset in their society. But they are still lagging far behind in the various walks of life like education, employment and good health. For growth and development of tribal women, there is need to educate and facilitate them to boost up their productivity which is not only important for their empowerment but for overall socio economic development of the tribal areas.

4.4 FACTORS AFFECTING LIVELIHOOD SECURITY OF THE FAMILY

There are various circumstances which may restrict the performance of an individual such as access to resources, technological information, information sources, market facility, regular income, risk factors, risk taking ability and decision making ability. An attempt was made to study the factor which may affect the livelihood security of the family through different livelihood activities. The response was recorded on three point continuum of complete, partial and not at all for the factor viz. access to resources (capital, input, labour, cash earned from sale of produce, credit and loan, storage facility and transportation facility) assigning 2, 1 and 0 score respectively. The response regarding access to technological information and information sources like extension contact, mass media exposure and electronic media response was recorded on three point continuum of regular, occasional and never assigning 2, 1 and 0 scores respectively. Similar the response regarding the access to regular income, market, risk factor and risk taking ability, was recorded on three point continuum of always, sometime and never assigning 2, 1 and 0 scores respectively. On the basis of scores obtained by the respondents mean per cent score were calculated to have uniformity of the data.

Also an attempt was made to study the association of factors affecting livelihood security and income of tribal families through selected livelihood activities. On the basis of the National Rural Livelihood Mission (NRLM) norms the population as divided into 3 categories – (i) Very Poor (family income less than Rs. 50,000 per annum) (ii) Poor (family income > 50,000 and less than 1 lakh per annum) & (iii) Non- Poor (family income greater than 1 lakh per annum). It was observed that none of the respondents was in non poor category and all the respondents fell into very poor and poor categories. Chi test (χ^2) was employed considering these two income categories and different factors affecting the livelihood security. The finding regarding factors affecting livelihood security of the family in different livelihood activities have been presented in this section.

4.4.1. Factors affecting crop based livelihood

An attempt was made to study the factors affecting crop based livelihood activity such as access to resources (Ownership of land, Irrigation water, capital, farm assets, input, insecticides / pesticides, Labour, cash earned from sale of produce, storage facility and transportation facility), access to technological information, market, regular income, risk factors, risk taking ability and decision making ability. The information related to these factors affecting crop based livelihood activity is presented in Table 4.40.

Access to resources: Data in Table 4.40 show that half of the respondents (50%) had partial access to land and 33.33 per cent respondents reported they were not having ownership of land which may be due to the reason that the tribal don't have land on their name because most of tribal live in forest and land is owned by the government. The findings are in conformity with Kumar *et al.* (2010) who mentioned that tribal, have poor access to land and forests. The per household land ownership among tribal households is extremely low at 1.12 acres per household. The situation of marginal ST households which constitute more than 50 per cent of tribal landowners is even more precarious, with their average landholding working out to only 0.44 acres. Given that land is most important source of tribal livelihoods, the extremely low holdings could be an important factor behind their extreme poverty as a social group. Some of the respondents got access to the land because there were only daughters in the family and they got it as gift from their parents with the relatively low MPS of 41.66. Regarding access to irrigation water it was found that more than half of the respondents (52.77%) had complete access as indicated by mean per cent score of 69.44.

Table further reveals that half of the respondents (50%) had partial access to loan and saving with mean per cent score 41.66 and 49.16. Regarding farm assets it can be seen that respondents had low access to tractor (13.88 MPS), tool and implements (34.72 MPS) as very few of the respondents (0 to 15.55%) had complete access to these assets. This may be due to the reason that they did not have proper knowledge about tool and implements and they could not afford to purchase these assets. Regarding inputs like planting material, more than one third of the respondents

(36.66%) had complete access whereas 31.11 per cent and 32.22 per cent partial and no access respectively. Regarding access to improved seed/ varieties and fertilizers about one fourth of the respondents (23.33 to 28.88%) had complete access whereas very few of them (6.66%) had complete access to machinery with MPS 28.33. Data in table also reveals that 54.44 per cent of the respondents had complete access to indigenous method of insecticides/pesticides. This may be due to the reason most of these substance are safe, low cost, biodegradable, less persistent, non-toxic, more dependable method of crop protection/technically feasible and easily available in and around their house tenements and land. Few of the respondents (12.77%) had complete access to chemical application with MPS 31.38 because most of tribal farmers did not have proper knowledge about chemical pesticides and it puts extra burden of costly on farmer.

Further an in-depth analysis of the data show that 43.33 per cent of the respondents had complete access of family labourer and 42.22 per cent respondents had only partial access to hired labourer. Regarding cash earned from sale of produce, more than half of the respondents (54.44%) did not have access this may be due to the reason that they totally depend on husband and other family member. Their most of decision related to money were taken by family male member. In case of storage facility (38.88%) and transportation facility (46.11%) the respondents had partial access with MPS ranging between 58.05-60.83. The tribal farmers are forced to dispose part of the food grain produced immediately after harvesting due to lack of storage facilities at lower prices. Later on they need to buy the food grain from the market at higher prices. There is the wide variation in food grain price, price are typically the lowest in the harvest season and the strongest before the harvest period. Without storage, these farmers eventually spend double the value of their food grain and often face a shortage of food. Regarding cash earned from sale of produce it can be seen that more than half of the respondents (54.44%) had no access which may be due to the reason that most of the economic activities in tribal families were male dominated. The results are in conformity with findings of Chauhan and Thakor (2010) and Chauhan and Nikulsinh (2011).

Access to technological information and information sources: Data in Table 4.40 highlight that few of the respondents (13.88%) had regular access to technological information regarding scientific farming methods which was due to the reason that most of tribal farmers are illiterate and have poor information regarding scientific farming and they were using traditional farming practices. Data in the table related to source of information reveals that majority of the respondents (72.77%) had occasional access to KVK personnel, while more than half of the respondents (66.66%) had access to NGOs personnel and State Department of Agriculture Personnel (53.33%) occasionally with MPS 46.94, 52.77 and 41.11 respectively. The findings get support from study by Dhakade (2020) who reported the agricultural extension contact and communicational activities are not that good because of lack of transportation facilities and communication networks, due to which most of the farmers have no access to technologies and current market information, especially in tribal area.

Further it can be seen from the table regarding mass media exposure that majority of the respondents had no access to magazine (72.22%) and newspaper (62.77%) This is mainly due to the high incidence of illiteracy and very low level of education among the tribal people whereas electronic media had greater access whereas more than half of the respondents had regular access to telephone (53.33%), television (52.77%) and radio (51.66%) with MPS ranging between 67.22-68.05. The probable reason is that the respondents were quite aware about the prevalent electronic media in the study area. The result conformity with Parmanand (2012) who mentioned that the highest per cent of the respondents (47.93%) reported a medium experience about mass media, and 37 per cent had low and 14 per cent had high experience of mass media. The findings get support from the study by Eqbal (2015) who concluded that more than half of the participants (56.25%) had moderate media exposure, whereas 35 and 7.92 per cent of the participants, respectively, reported low and high exposure to the mass media.

Table 4.40: Distribution of the respondents on the basis of factors affecting crop based livelihood

n=180

S. No	Factors	Complete		Partial		Not at all		MPS
		f	%	f	%	f	%	
A	Access to resources							
1.	Ownership of land	30	16.66	90	50	60	33.33	41.66
2.	Irrigation water	95	52.77	60	33.33	25	13.88	69.44
3.	Capital							
	a. Loan	30	16.66	90	50	60	33.33	41.66
	b. Saving	45	25	87	48.33	48	26.66	49.16
4.	Farm assets							
	a. Tractor	0	0	50	27.77	130	72.22	13.88
	b. Tools and implements	28	15.55	69	38.33	83	46.11	34.72
5.	Input							
	a. Planting material	66	36.66	56	31.11	58	32.22	52.22
	b. Improved seed/ varieties	52	28.88	85	47.22	43	23.88	52.5
	c. Fertilizers	42	23.33	74	41.11	64	35.55	43.88
	d. Machinery	12	6.66	78	43.33	90	50	28.33
6.	Pest management							
	a. Chemical application	23	12.77	67	37.22	90	50	31.38
	b. Indigenous method	98	54.44	76	42.22	6	3.33	75.55
7.	Labour							
	a. Family labourer	78	43.33	88	48.88	14	7.77	67.77
	b. Hired labourer	65	36.11	76	42.22	39	21.66	57.22
8.	Cash earned from sale of produce	42	23.33	40	22.22	98	54.44	34.44
9.	Storage facility	70	38.88	69	38.33	41	22.77	58.05
10.	Transportation facility	68	37.77	83	46.11	29	16.11	60.83

B	Access to technological information and information sources							
		Regular		Occasional		Never		
I.	Scientific farming methods	25	13.88	56	31.11	99	55	29.44
II.	Extension contact							
	a. State department of agriculture	26	14.44	96	53.33	58	32.22	41.11
	b. KVK personnel	19	10.55	131	72.77	30	16.66	46.94
	c. NGOs personnel	35	19.44	120	66.66	25	13.88	52.77
III.	Mass media exposure							
	Print media	10	5.55	57	31.66	113	62.77	21.38
	a. Newspaper							
	b. Magazine	0	0	50	27.77	130	72.22	13.88
IV.	Electronic media							
	a. Television	95	52.77	55	30.55	30	16.66	68.05
	b. Radio	93	51.66	60	33.33	27	15	68.33
	c. Telephone	96	53.33	50	27.77	34	18.88	67.22
C	Access to market	Always		Sometimes		Never		
	a. Constant demand	20	11.11	45	25	115	63.88	23.61
	b. Stable price	30	16.66	50	27.77	110	61.11	30.55
D	Access to regular income	28	15.55	58	32.22	94	52.22	31.66
E	Risk factors							
	a. Production risk	74	41.11	92	51.11	14	7.777	66.66
	b. Marketing risk	43	23.88	91	50.55	46	25.55	49.16
	c. Financial risk	46	25.55	93	51.66	41	22.77	51.38
F	Risk taking ability							
	a. Use improve methods and practices	61	33.88	88	48.88	31	17.22	58.33
	b. Take loan for livelihood activities	50	27.77	87	48.33	43	23.88	51.94
	c. Produce new products	40	22.22	89	49.44	51	28.33	46.94
G	Decision making ability							
	a. Selection of products	78	43.33	92	51.11	10	5.55	68.88
	b. Purchas of raw material	50	27.77	94	52.22	36	20	53.88
	c. Marketing of the produce	55	30.55	100	55.55	25	13.88	58.33

Access to market and regular income: Data in Table 4.40 reveal that more than half of the respondents (63.88 and 61.11 per cent) never had stable price and constant demand with mean per cent score of 23.61 to 30.55 respectively. It can be seen that more than half of the respondents (52.22%) never had access to regular income with 31.66 MPS. They were able sell their products in the regulated markets thereby earning less profit.

Risk factors and risk taking ability: Risk taking ability is the quality of an individual that tells about the degree of taking shots in grabbing new opportunity. Data in table regarding risk factors affecting the respondents depict that more than half of the respondents had financial risk (51.66%) followed by production risk (51.11%) and marketing risk (50.55%) with mean per cent score ranging between 49.16-66.66. Regarding risk taking ability, less than half of the respondents sometimes only produced new products (49.44%), used improve methods and practices (48.88%) and took loan for carrying out livelihood pattern (48.33%) with MPS 46.94, 51.94 and 58.33.

Decision making ability: A decision can be defined as a course of action purposely chosen from a set of alternatives to achieve day to day objectives or goals. Data furnished in Table 4.40 highlight that more than half of the respondents sometimes took decision regarding marketing of the produce (55.55%) followed by purchasing of raw material (52.22%) and selection of products (51.11%) with mean per cent score ranging between 53.88-68.88. Findings are in conformity with Sharma (2013) who revealed that important decision related to farm and livestock were taken by male members whereas women respondents were involved jointly in some decisions although final say was of men only.

Table 4.41: Association of different factors with livelihood security of the respondents in crop based livelihood

S. No	Factors	χ^2 value
1.	Access to resources	11.84**
2.	Access to technological information and sources	45.47**
3.	Access to market	29.24**
4.	Access to regular income	11.42**
5.	Risk factors	11.28**
6.	Risk taking ability	20.64**
7.	Decision making ability	18.72**

** Significant at 1 per cent level of significance

To study the association of livelihood security of family with different factors chi square was employed. Data presented in Table 4.41 point out that there was highly significant association between all the factors and livelihood security of the respondents as the calculated chi-square values were greater than the tabulated values. This indicates that the livelihood security of the respondents was associated with all the factors i.e. access to resources, access to technological information, market and regular income, risk factors, risk taking ability and decision making ability. It can be inferred that all these factors affected the livelihood security of the tribal families with crop based livelihood.

4.4.2. Factors affecting horticulture based livelihood

An attempt was made to study the factors affecting horticulture based livelihood such as access to resources (capital, farm assets, input, insecticides / pesticides, labour, cash earned from sale of produce, storage facility and transportation facility), access to technological information, market and regular income, risk factors, risk taking ability and decision making ability. The information related to these factors affecting horticulture based livelihood activity is presented in Table 4.42.

Access to resources: It can be seen from the table that half of the respondents (50%) had partial access to ownership of land with MPS 41.66 as their husband were having the land ownership. Some of the respondents (16.66%) had land on their name because they were the single daughter of parents or single widow of their family. Results are in conformity with Bhati (2018) who mentioned that it was disheartening to see that none of the respondents had any land on their name and only 7.5 per cent had productive assets (such as cattle, agricultural tools, sewing machines) on their own. Data in table further reveal that 64.93 and 57.14 per cent of the respondents had partial access to capital loan and saving with MPS 79.87 and 76.62 respectively. Regarding farm assets more than majority of the respondents (64.93%) had no access to tractor and tools and implements (77.92%). Table also reveals that majority of the respondents had complete access to input related to improved seed/ varieties (64.93%), fertilizers (62.33%), machinery (58.44%) and planting material (51.94%) with MPS ranging between 69.48-75.32. Regarding indigenous insecticides / pesticides, 61.03 per cent had complete access with MPS 76.62, whereas 48.05 per cent of the respondents had complete access to chemical application with MPS 67.53.

In case of access to labour, 50.64 per cent were having family labour and 51.94 per cent had access to hired labourer. Data in table further depicts that more than half of the respondents were having storage facility (54.54%) as they were using traditional methods of storage. The readily available and low cost items like ash, sand, salt, camphor and neem leaves, etc. were being used by the tribal peoples for storage because such practices are user-friendly. More than half of the respondents had complete access to transportation facility (53.24%) and cash earned from sale of produce (50.64%) and rest of them were not able to use money as they wanted to use it.

Access to technological information and information sources: Observation of Table 4.42 highlights that majority of the respondents (77.92%) were not having access to technological information related to scientific farming methods due to lack of education and limited exposure. It can be seen from the table that more than half of the respondents had occasional access to personnel of KVK (54.54%) and State Department of Agriculture with MPS 61.03 and 72.72 respectively. Respondents, regarding print media exposure reported that majority of them had no access to newspaper (84.41%) and magazine (74.02%). This may be due to the reason that majority of the respondents were illiterate. Data in table further reveal that majority of the respondents had regular access to radio (75.32%), telephone (74.02%) and television (66.23%) with MPS ranging between 77.27-87.01.

Access to market and regular income: Table 4.42 represents the access to market and regular income by the respondents. It can be clearly seen from the table that more than half of the respondents never had stable price (55.84%) and constant demand for their produce (51.94%) with MPS 37.66 and 43.50 respectively. Regarding access to regular income, more than half of the respondents (54.54%) never had regular income with MPS 35.71. This may be due to the reason that most of the tribal women had poor information regarding economic sources and market information and they were usually selling their products in local market only.

Table 4.42: Distribution of the respondents on the basis of factors affecting horticulture based livelihood

n=77

S. No	Factors	Complete		Partial		Not at all		MPS
		f	%	f	%	f	%	
A	Access to resources							
1.	Ownership of land	30	16.66	90	50	60	33.33	41.66
2.	Irrigation water	50	64.93	12	15.58	15	19.48	72.72
3.	Capital							
	a. Loan	49	63.63	25	32.46	3	3.89	79.87
	b. Saving	44	57.14	30	38.96	3	3.89	76.62
4.	Farm assets							
	a. Tractor	0	0	50	64.93	27	35.06	32.46
	b. Tools and implements	7	9.09	10	12.98	60	77.92	15.58
5.	Input							
	a. Planting material	40	51.94	27	35.06	10	12.98	69.48
	b. Improved seed/ varieties	50	64.93	19	24.67	8	10.38	77.27
	c. Fertilizers	48	62.33	23	29.87	6	7.79	77.27
	d. Machinery	45	58.44	26	33.76	6	7.79	75.32
6.	Insecticides / pesticides							
	a. Chemical application	37	48.05	30	38.96	10	12.98	67.53
	b. Indigenous method	47	61.03	24	31.16	6	7.79	76.62
7.	Labour							
	a. Family labourer	39	50.64	24	31.16	14	18.18	66.23
	b. Hired labourer	40	51.94	31	40.25	6	7.79	72.07
8.	Cash earned from sale of produce	39	50.64	34	44.15	4	5.19	72.72
9.	Storage facility	42	54.54	25	32.46	10	12.98	70.77
10.	Transportation facility	41	53.24	28	36.36	8	10.38	71.42

B	Access to technological information and information sources							
		Regular		Occasional		Never		
I.	Scientific farming methods	7	9.09	10	12.98	60	77.92	15.58
II.	Extension contact							
	a. State department of agriculture	27	35.06	40	51.94	10	12.98	61.03
	b. KVK personnel	35	45.45	42	54.54	0	0	72.72
	c. NGOs personnel	23	29.87	27	35.06	27	35.06	47.40
III.	Mass media exposure							
	Print media	7	9.09	5	6.49	65	84.41	12.33
	a. Newspaper							
	b. Magazine	10	12.98	10	12.98	57	74.02	19.48
IV.	Electronic media							
	a. Television	51	66.23	17	22.07	9	11.68	77.27
	b. Radio	58	75.32	18	23.37	1	1.29	87.01
	c. Telephone	57	74.02	18	23.37	2	2.59	85.71
C	Access to market	Always		Sometimes		Never		
	a. Constant demand	30	38.96	7	9.09	40	51.94	43.50
	b. Stable price	24	31.16	10	12.98	43	55.84	37.66
D	Access to regular income	20	25.97	15	19.48	42	54.54	35.71
C	Risk factors							
	a. Production risk	25	32.46	40	51.94	12	15.58	58.44
	b. Marketing risk	20	25.97	45	58.44	12	15.58	55.19
	c. Financial risk	27	35.06	40	51.94	10	12.98	61.03
F	Risk taking ability							
	a. Use improve methods and practices	20	25.97	8	10.38	49	63.63	31.16
	b. Take loan for livelihood activities	20	25.97	10	12.98	47	61.03	32.46
	c. Produce new products	20	25.97	17	22.07	40	51.94	37.01
G	Decision making ability							
	a. Selection of products	30	38.96	8	10.38	39	50.64	44.15
	b. Purchase of raw material	30	38.96	8	10.38	39	50.64	44.15
	c. Marketing of the produce	22	28.57	15	19.48	40	51.94	38.31

Risk factors and risk taking ability: Data in Table 4.42 reveal that more than half of the respondents (58.44%) sometimes faced market risk and production and finance related risk (51.94%) as there were fluctuations in price, high taxes on raw material, competition and challenges in selling of products in nearby market and village. Regarding risk taking ability the respondents never used improved methods and practices (63.63%), took loan for livelihood activities (61.03%) and produced new products (51.94%). This may be due to the reason that tribal women lacked confidence and knowledge about new tool and technologies as they did not get training regarding scientific farming methods and practices.

Decision making ability: Decision making ability on the part of tribal women is their participation to take day to day decisions related to various economic matters. Data furnished in Table 4.42 highlight the activities on which decision were taken by the respondents. Table highlights that more than half of the respondents (51.94%) were not able to take decision related to marketing of the produce, selection of products (50.64%) and purchase of raw material (50.64%).

Table 4.43: Association of different factors with livelihood security of the respondents in horticulture based livelihood

S. No	Factors	χ^2 value
1.	Access to resources	21.84**
2.	Access to technological information and sources	35.37**
3.	Access to market	19.77**
4.	Access to regular income	18.82**
5.	Risk factors	23.18**
6.	Risk taking ability	17.77**
7.	Decision making ability	15.93**

** Significant at 1 per cent level of significance

Data in Table 4.43 highlight that there was highly significant association between all the factors and livelihood security of the respondents as the calculated chi-square values greater than the tabulated values. This indicates that the livelihood security of the respondents was associated with all the factors i.e. access to resources, access to technological information, market and regular income, risk factors, risk taking ability

and decision making ability. It can be inferred that these factors play an important role in livelihood security of the tribal family. Resources help to improve work capacity and quality in respective field and are important in securing the production.

4.4.3. Factors affecting animal husbandry based livelihood

An attempt was made to study the factors affecting animal husbandry based livelihood activity such as access to resources (capital, input, excreta management, management of produce at commercial level, labour, cash earned from sale of produce, credit and loan, storage facility and transportation facility), access to technological information and sources, access to market, access to regular income, risk factors, risk taking ability and decision making ability. The information related to these factors affecting animal husbandry based livelihood activity is presented in Table 4.44.

Access to resources: It can be observed from the table that more than half of the respondents (56%) had complete access to sale and purchase of livestock whereas more than half of the respondent (52%) had complete access to selection of animal breed with MPS 76 and 77.5 respectively. Regarding fodder management, nearly two third of the respondents had complete access to feed of animal (66%) and storage of fodder (63%). More than half of the respondents were procuring fodder (59%), raising fodder (58%) and purchasing cattle feed (57%). This may be due to the reason that tribal women were actively involved in management of livestock and spending many hours a week taking care of livestock. It can be seen from the table that majority of the respondents were not at all having access to capital loan (63%) and saving (68%) with MPS 27.5 and 25.5 respectively. Regarding input, majority of the respondents had complete access to cleaning equipment (70%) drying shed (68%) and cattle shed (60%). More than half of the respondents had complete access to machinery (58%) and milking utensil (56%). In case of access to excreta management, majority of the respondents were managing fresh excreta (65%) and processed excreta (60%) with MPS 80 and 82.5 respectively. Response related to labour revealed that 52 per cent were having complete access to family labour whereas cent per cent of the respondents (100%) were not at all having access to hired labourer. This may be due to the reason that most of tribal were having small herd size and tribal women themselves managed the livestock. Women performed indoor activities and other family members were also engaged in related activities so they did not require any hired labourer. Data in table further depicts that majority of the respondents were

having storage facility (60%) and they stored their products at household level using indigenous methods. Majority of the respondents (60%) were not at all having access to transportation facility as they were remotely inhabited and couldn't afford their own vehicles. Less than half of the respondents (45%) had complete access to cash earned from sale of produce as male member of the family dominated the use of income.

Access to technological information and information sources: Visualization of Table 4.44 indicates that more than half of the respondents (52%) had regular access to scientific livestock methods related to fodder preservation whereas occasional access to cattle immunization and vaccination (56%), improved breed (54%) and advance milking methods (52%). Data in table reveal that more than half of the respondents (52%) were not having access to State Department of Agriculture and NGOs personnel whereas half of the respondent (50%) had occasional access to personnel of KVK with MPS ranging between 36.5 to 55 respectively. Respondents, regarding print media exposure reported that cent per cent of the respondents did not have access to newspaper and magazine. This may be due to the reason that most of the respondents were uneducated and they lived in remote area which affected the print media exposure. Data in table further reveal that majority of the respondents had regular access to television (70%), telephone (62%) and radio (60%) with MPS ranging between 75-80.

Access to market and regular income: Table 4.44 clearly depicts that sometimes less than half of the respondents (45%) had stable price and constant demand for their produce with MPS 56.5 and 60.5 respectively. This may be due to weather changes. Regarding access to regular income, less than half of the respondents (43%) sometimes had profit from the products with MPS 64.

Table 4.44: Distribution of the respondents on the basis of factors affecting animal husbandry based livelihood

n=100

S. No	Factors	Complete		Partial		Not at all		MPS
		f	%	f	%	f	%	
A	Access to resources							
1.	Sale and purchase of livestock	56	56	43	43	1	1	77.5
	a. No. of animals be purchased / sold							
	b. Selection of animal breed	52	52	48	48	0	0	76
2.	Fodder management							
	a. Procuring fodder	59	59	41	41	0	0	79.5
	b. Raising fodder	58	58	42	42	0	0	79
	c. Storage of fodder	63	63	36	36	1	1	81
	d. Feed of animal	66	66	34	34	0	0	83
	e. Purchase of cattle feed	57	57	43	43	0	0	78.5
3.	Capital							
	a. Loan	18	18	19	19	63	63	27.5
	b. Saving	19	19	13	13	68	68	25.55
4.	Input							
	a. Cattle shed	60	60	40	40	0	0	80
	b. Machinery	58	58	42	42	0	0	79
	c. Milking utensil	56	56	44	44	0	0	78
	d. Cleaning equipment	70	70	30	30	0	0	85
	e. Drying shed	68	68	32	32	0	0	84
5.	Excreta management							
	a. Fresh excreta	65	65	35	35	0	0	82.5

	b. Processed excreta	60	60	40	40	0	0	80
6.	Labour							
	a. Family labourer	52	52	40	40	8	8	72
	b. Hired labourer	0	0	0	0	100	100	0
7.	Storage facility	60	60	40	40	0	0	80
8.	Transportation facility	20	20	20	20	60	60	30
9.	Cash earned from sale of produce	45	45	49	49	6	6	69.5
B	Access to technological information and information sources							
I.	Scientific livestock methods	Regular		Occasional		Never		
	a. Fodder preservation methods	52	52	38	38	10	10	71
	b. Improved breed	40	40	54	54	6	6	67
	c. Advance milking methods	38	38	52	52	10	10	64
	d. Cattle immunization and vaccination	30	30	56	56	14	14	58
II.	Extension contact							
	a. State department of agriculture	25	25	23	23	52	52	36.5
	b. KVK personnel	30	30	50	50	20	20	55
	c. NGOs personnel	28	28	20	20	52	52	38
III.	Mass media exposure							
	Print media							
	a. Newspaper	0	0	0	0	100	100	0
	b. Magazine	0	0	0	0	100	100	0
IV.	Electronic media							
	a. Television	70	70	20	20	10	10	80
	b. Radio	60	60	30	30	10	10	75
	c. Telephone	62	62	30	30	8	8	77

C	Access to market	Always		Sometimes		Never		
	a. Constant demand	34	34	45	45	21	21	56.5
	a. Stable price	38	38	45	45	17	17	60.5
D	Access to regular income	43	43	42	42	15	15	64
E	Risk factors							
	a. Production risk	43	43	34	34	23	23	60
	b. Marketing risk	34	34	44	44	22	22	56
	c. Financial risk	23	23	43	43	34	34	44.5
F	Risk taking ability							
	a. Use improve methods and practices	41	41	40	40	19	19	61
	b. Take loan for livelihood activities	23	23	43	43	34	34	44.5
	c. Produce new products	26	26	45	45	29	29	48.5
G	Decision making ability							
	a. Selection of products	38	38	43	43	19	19	59.5
	b. Purchasing of raw material	35	35	42	42	23	23	56
	c. Marketing of the produce	21	21	45	45	34	34	43.5

Risk factors and risk taking ability: Data in table reveal that less than half of the respondents always faced risk related to production (43%) market (44%) and finance (43%). Regarding risk taking ability less than half of the respondents sometimes produced new products (45%), took loan for livelihood activities (43%) and used improve methods and practices (41%) with MPS ranging between 44.5-61.

Decision making ability: Data furnished in Table 4.44 highlight the activities on which decision were taken by the respondents. It can be seen from the table that less than half of the respondents (45%) were able to take decision related to marketing of the produce, selection of products (43%) and purchase of raw material (42%).

Table 4.45: Association of different factors with livelihood security of the respondents in animal husbandry based livelihood

S. No	Factors	χ^2 value
1.	Access to resources	25.80**
2.	Access to technological information and sources	15.17**
3.	Access to market	29.24**
4.	Access to regular income	15.62**
5.	Risk factors	19.88**
6.	Risk taking ability	30.74**
7.	Decision making ability	34.55**

** Significant at 1 per cent level of significance

Data presented in Table 4.45 point out that there was highly significant association between all the factors and livelihood security of the respondents as the calculated chi-square values were greater than the tabulated values. This indicates that the livelihood security of the respondents was associated with all the factors i.e. access to resources, access to technological information, market facility and economic sources, risk factors, risk taking ability and decision making ability. Gelaneh (2014) also mentioned that sources of information and extension contact have significant relationship with livelihood of small farmers. This implies that the small holder farmers were significantly influenced by these factors to sustain the status of their livelihood. It can be inferred that these factors play an important role in animal husbandry based livelihood of the tribal family. Resources help to improve work

capacity and quality in animal husbandry. Tribal women have poor knowledge of the improved technologies in the field of animal husbandry which should be improved to make the tribal women secure.

4.4.4. Factors affecting wage based livelihood

An attempt was made to study the factors affecting wage based livelihood activity such as access to resources (capital, transportation facility and utilization of income), access to information sources, access to market, access to regular income, risk factors, risk taking ability and decision making ability. The information related to these factors affecting wage based livelihood activity is presented in Table 4.46.

Access to resources: It can be seen from the table that less than half of the respondents were not at all having access to capital loan (46.36%) and saving (47.27%) with MPS 39.54 and 43.63 respectively. Less than half of the respondents had partial access to transportation facility (45.45%) and utilization of income (45.45%).

Access to information sources: Data presented in Table 4.46 show that the more than half of the respondents (52.72%) had occasional access to NGO personnel whereas half of the respondent (50%) had access to State Department of Agriculture and less than half of the respondents (46.36%) had access to personnel of KVK with MPS ranging between 56.36-67.72. Respondents, regarding print media exposure reported that cent per cent of the respondents did not have access to newspaper and magazine as most of tribal were illiterate. Data in table further reveal that majority of the respondents had regular access to radio (63.63%), telephone (62.72%) and television (61.81%) with MPS ranging between 75.45-79.09 as now a days electronic media have become popular due to reduced costs.

Access to market and regular income: An overview of the data in table further indicate that sometime more than half of the respondents had stable wages (52.72%) and constant demand for labour (41.81%) with MPS 52.72 and 55.45 respectively. Regarding access to regular income more than half of the respondents (53.63%) had sometimes income from the extra wage earning in peak season with MPS 35.90.

Table 4.46: Distribution of the respondents on the basis of factors affecting wage based livelihood

n=110

S. No	Factors	Complete		Partial		Not at all		MPS
		f	%	f	%	f	%	
A	Access to resources							
1.	Capital							
	a. Loan	28	25.45	31	28.18	51	46.36	39.54
	b. Saving	38	34.54	20	18.18	52	47.27	43.63
2.	Transportation facility	40	36.36	50	45.45	20	18.18	59.09
3.	Utilization of income	40	36.36	50	45.45	20	18.18	59.09
B	Access to information sources							
I.	Extension contact	Regular		Occasional		Never		
	a. State department of agriculture	34	30.90	56	50	20	18.18	56.36
	a. KVK personnel	49	44.54	51	46.36	10	9.09	67.72
	b. NGOs personnel	42	38.18	58	52.72	10	9.09	64.54
II.	Mass media exposure							
	Print media							
	a. Newspaper	0	0	0	0	110	100	0
	b. Magazine	0	0	0	0	110	100	0

III.	Electronic media							
	a. Television	68	61.81	30	27.27	12	10.90	75.45
	b. Radio	70	63.63	34	30.90	6	5.45	79.09
	c. Telephone	69	62.72	36	32.72	5	4.54	79.09
C	Access to market	Always		Sometimes		Never		
	a. Constant demand	35	31.81	46	41.81	29	26.36	52.72
	a. Stable wages	32	29.09	58	52.72	20	18.18	55.45
D	Access to regular income	10	9.09	59	53.63	41	37.27	35.90
E	Risk factors							
	a. Occupational health hazards	35	31.81	65	59.09	10	9.09	61.36
	b. Financial risk	40	36.36	60	54.54	10	9.09	63.63
F	Risk taking ability							
	a. Take loan for livelihood activities	38	34.54	56	50.90	16	14.54	60
G	Decision making ability							
	a. Selection of working place	43	39.09	44	40	23	20.90	59.09
	b. Selection of working months	34	30.90	54	49.09	22	20	55.45
	c. Selection of working hours	23	20.90	53	48.18	34	30.90	45

Risk factors and risk taking ability: Table 4.46 shows that less than half of the respondents sometimes faced occupation health hazards (59.9%) and finance risks (54.54%) with MPS 61.36 and 63.63 respectively. The respondents mentioned that the payment for the labour work was not done regularly. Regarding risk taking ability half of the respondents sometimes took loan for livelihood activities with MPS 60.

Decision making ability: Decision making is the process by which individuals and groups identify, combine and integrate information in order to choose one of several possible courses of action. The data contained in the table shows that less than half of the respondents (49.09%) were able to take decision related to selection of working months as wage labourer, selection of working hours (48.18%) and selection of working place (40%).

Table 4.47: Association of different factors with livelihood security of the respondents in wage based livelihood

S. No	Factors	χ^2 value
1.	Access to resources	27.64**
2.	Access to information sources	23.43**
3.	Access to market	39.21**
4.	Access to regular income	35.67**
5.	Risk factors	45.24**
6.	Risk taking ability	42.84**
7.	Decision making ability	38.16**

** Significant at 1 per cent level of significance

The data presented Table 4.47 portrays that there was highly significant association between all the factors and livelihood security of the respondents as the calculated chi-square values were higher than the tabulated values. It can be concluded that the livelihood security of the respondents was associated with all the factors i.e. access to resources, access to information sources, access to income, risk factors, risk taking ability and decision making ability. It can be inferred that these factors play an important role in wage based livelihood of the tribal family. In tribal area majority of

the respondents were not having proper source of income and they will dependent on daily wage earning for their livelihood.

4.4.5. Factors affecting forest based livelihood activity

An effort was made to study the factors affecting forest based livelihood activity such as access to resources (forest area, forest produce, input, labour, transportation facility and utilization of income), access to information sources, access to market, access to regular income, risk factors, risk taking ability and decision making ability. The information related to these factors affecting forest based livelihood activity is presented in Table 4.48.

Access to resources: It is clear from Table 4.48 that more than half of the respondents had partial access to forest area (53.16%) and forest produce (56.96%) with MPS 62.02-66.45 respectively. Regarding inputs less than half of the respondents were not at all having access to machinery (45.56%) and collecting equipment (48.10%). Data in table further reveal information related to access to labour, where 50.63 per cent were having family labour and 74.68 per cent were not at all having access to hired labourer. In case of access to credit and loan, 37.97 per cent of the respondents had partial access with MPS 44.30. Data in table further depicts that more than half of the respondents were having storage facility (50.63%) as they were using traditional methods of storage for different forest produce. They were using wooden boxes and jute bags. Less than half of the respondents had partial access to transportation facility (49.36%) and cash earned from sale of produce (48.10%) and rest of them were dependent on family and husband.

Access to information sources: Perusal of Table 4.48 clearly shows that less than half of the respondents had occasional access to personnel of KVK (49.36%), NGO personnel (45.56%) and State Department of Agriculture (44.30%) with MPS ranging between 43.03-62.65. It is evident from table that respondents, regarding print media exposure reported that majority of the respondents did not have access to newspaper (83.54%) and magazine (93.67%). Data in table further reveal that more than half of the respondents had regular access to radio (60.75%), television (58.22%) and telephone (50.63%) with MPS ranging between 69.62-77.84.

Table 4.48: Distribution of the respondents on the basis of factors affecting forest based livelihood

n=79

S. No	Factors	Complete		Partial		Not at all		MPS
		f	%	f	%	f	%	
A	Access to resources							
1.	Forest area	28	35.44	42	53.16	9	11.39	62.02
2.	Forest produce	30	37.97	45	56.96	4	5.06	66.45
3.	Input							
a.	Collecting equipment	19	24.05	22	27.84	38	48.10	37.97
b.	Machinery	21	26.58	22	27.84	36	45.56	40.50
4.	Labour							
a.	Family labourer	31	39.24	40	50.63	8	10.12	64.55
b.	Hired labourer	10	12.65	10	12.65	59	74.68	18.98
5.	Credit and loan	20	25.31	30	37.97	29	36.76	44.30
6.	Storage facility	30	37.97	40	50.63	9	11.39	63.29
8.	Transportation facility	25	31.64	39	49.36	15	18.98	56.32
9.	Cash earned from sale of produce	32	40.50	38	48.10	9	11.39	64.55
B	Access to information sources							
I.	Extension contact	Regular		Occasional		Never		
a.	State department of agriculture	25	31.64	35	44.30	19	24.05	53.79
b.	KVK personnel	30	37.97	39	49.36	10	12.65	62.65
c.	NGOs personnel	16	20.25	36	45.56	27	34.17	43.03
II.	Mass media exposure (Print media)							

a.	Newspaper	5	6.32	8	10.12	66	83.54	11.39
b.	Magazine	3	3.79	2	2.53	74	93.67	5.063
III.	Electronic media							
a.	Television	46	58.22	30	37.97	3	3.79	77.21
b.	Radio	48	60.75	27	34.17	4	5.06	77.84
c.	Telephone	40	50.63	30	37.97	9	11.39	69.62
C	Access to market	Always		Sometimes		Never		
a.	Constant demand	22	27.84	40	50.63	17	21.51	53.16
b.	Stable price	15	18.98	45	56.96	19	24.05	47.46
D	Access to regular income	22	27.84	48	60.75	9	11.39	58.22
E	Risk factors							
a.	Marketing risk	18	22.78	46	58.22	15	18.98	51.89
b.	Finance risk	14	17.72	44	55.69	21	26.58	45.56
F	Risk taking ability							
a.	Take loan for livelihood activities	20	25.31	40	50.63	19	24.05	50.63
G	Decision making ability							
	a. Selection of products	22	27.84	46	58.22	11	13.92	56.96
	b. Selection of working hours	18	22.78	41	51.89	20	25.31	48.73
	c. Marketing of the products	19	24.05	45	56.96	15	18.98	52.53

Access to market and regular income: A look into the Table 4.48 reveals that sometimes more than half of the respondents (56.96%) had stable price and constant demand their produce (50.63%) with MPS 47.46 and 53.16 respectively. Regarding access to regular income, majority of the respondents (60.75%) had sometimes profit from the products with MPS 58.22.

Risk factors and risk taking ability: It can be observed from the table that more than half of the respondents sometimes faced risk related to market (58.22%) and finance (55.69%). Regarding risk taking ability, half of the respondents sometimes took loan for livelihood activities (50.63%) with MPS 50.63.

Decision making ability: Data presented in the Table 4.48 provide an overview of different aspects on which decision were taken. It can be concluded that more than half of the respondents (58.22%) were able to take decision related to selection of products, marketing of the products (56.96%) and selection of working hours (51.89%) with MPS ranging between 48.73 to 56.96.

Table 4.49: Association of different factors with livelihood security of the respondents in forest based livelihood

S. No	Factors	χ^2 value
1.	Access to resources	38.66**
2.	Access to information sources	51.71**
3.	Access to market	43.36**
4.	Access to regular income	14.67**
5.	Risk factors	17.48**
6.	Risk taking ability	21.56**
7.	Decision making ability	36.57**

** Significant at 1 per cent level of significance

A glance of the Table 4.49 reveal that there was highly significant association between all the factors and livelihood security of the respondents as the calculated chi-square values were higher than the tabulated values. It can be concluded that the livelihood security of the respondents was associated with all the factors i.e. access to resources, access to information sources, market and regular income, risk factors, risk taking ability and decision making ability. It can be observed that these factors play an important role in forest based livelihood of the tribal family. It is in line with

theoretical point of view that such resources have a direct positive relationship with the status of livelihood of the tribal families. In addition if the tribals have these resources, they will get the opportunity of being innovative and diversify their working pattern for better livelihood security of the family.

4.4.6. Factors affecting poultry based livelihood

An effort was made to study the factors affecting poultry based livelihood activity such as access to resources (land, capital, Labour, cash earned from sale of produce, credit and loan, storage facility and transportation facility), access to information sources, access to market, access to income, risk factors, risk taking ability and decision making ability. The information related to these factors affecting poultry based livelihood activity is presented in Table 4.50.

Access to resources: It is evident from Table 4.50 that more than half of the respondents (53.12%) were not having ownership of land with MPS 31.25. Data in table further reveal that 78.12 and 84.37 per cent of the respondents had partial access to capital loan and saving with MPS 54.68 and 57.81 respectively. Table also reveals that majority of the respondents had partial access to input related to tool and machinery (84.37%), improved poultry breeds (68.75%) and poultry feed (68.75%) with MPS ranging between 46.87-50. In case of access to labour, 46.87 per cent were having family labour and 50 per cent had access to hired labourer. Data in table further indicate that majority of the respondents were having storage facility (78.12%) and they were using cold storage for eggs and poultry feed to store at room temperature. Majority of the respondents had partial access to transportation facility (84.37%) and cash earned from sale of produce (eggs and poultry manure) (81.25%) with MPS 59.37.

Access to technological information and information sources: Visualization of Table 4.50 indicates that majority of the respondents had occasional access to scientific poultry methods related to feeding (62.5%), breeding (68.75%) and health management (71.87%). Regarding extension contact, data in table show that majority of the respondents had occasional access to NGO personnel (78.12%), personnel of KVK (75%) and State Department of Agriculture (65.62%) with MPS ranging between 45.31-54.68. Further analysis of data regarding print media exposure reported that majority of them had no access to magazine (78.12%) and newspaper (71.87%). Data in table further reveal that majority of the respondents had regular access to radio (84.37%), telephone (81.25%) and television (81.25%) with MPS 90.62 and 92.18 respectively.

Table 4.50: Distribution of the respondents on the basis of factors affecting poultry based livelihood

n=32

S. No	Factors	Complete		Partial		Not at all		MPS
		f	%	f	%	f	%	
A	Access to resources							
1.	Ownership of land	5	15.62	10	31.25	17	53.12	31.25
2.	Capital							
	Loan	5	15.62	25	78.12	2	6.25	54.68
	Saving	5	15.62	27	84.37	0	0	57.81
3.	Input							
	a. Improved poultry breeds	5	15.62	22	68.75	5	15.62	50
	b. Poultry feed	4	12.5	22	68.75	6	18.75	46.87
	c. Tool and machinery	2	6.25	27	84.37	3	9.37	48.43
4.	Labour							
	a. Family labourer	10	31.25	15	46.87	7	21.87	54.68
	b. Hired labourer	10	31.25	16	50	6	18.75	56.25
5.	Storage facility	25	78.12	7	21.87	0	0	89.06
6.	Transportation facility	5	15.62	27	84.37	0	0	57.81
7.	Cash earned from sale of products	6	18.75	26	81.25	0	0	59.37
B	Access to technological information and information sources							
I.	Scientific poultry methods	Regular		Occasional		Never		
	a. Breeding	6	18.75	22	68.75	4	12.5	53.12
	b. Feeding	12	37.5	20	62.5	0	0	68.75
	c. Health management	4	12.5	23	71.87	5	15.62	48.43
II.	Extension contact							
	a. State department of agriculture	7	21.87	21	65.62	4	12.5	54.68
	b. KVK personnel	5	15.62	24	75	3	9.37	53.12
	c. NGOs personnel	2	6.25	25	78.12	5	15.62	45.31

III.	Mass media exposure							
	Print media	4	12.5	5	15.62	23	71.87	20.31
	a. Newspaper							
	b. Magazine	2	6.25	5	15.62	25	78.12	14.06
IV.	Electronic media							
	a. Television	26	81.25	6	18.75	0	0	90.62
	b. Radio	27	84.37	5	15.62	0	0	92.18
	c. Telephone	26	81.25	6	18.75	0	0	90.62
C	Access to market	Always		Sometimes		Never		
	a. Constant demand	12	37.5	20	62.5	0	0	68.75
	b. Stable price	6	18.75	24	75	2	6.25	56.25
D	Access to regular income	4	12.5	23	71.87	5	15.62	48.43
E	Risk factors							
	a. Production risk	7	21.87	23	71.87	2	6.25	57.81
	b. Marketing risk	2	6.25	24	75	6	18.75	43.75
	c. Finance risk	6	18.75	22	68.75	4	12.5	53.12
F	Risk taking ability							
	a. Use improve methods and practices	2	6.25	24	75	6	18.75	43.75
	b. Take loan for livelihood activities	3	9.37	19	59.37	10	31.25	39.06
	c. Produce new products	2	6.25	22	68.75	8	25	40.62
G	Decision making ability							
	a. Selection of products	6	18.75	10	31.25	16	50	34.37
	b. Purchasing of raw material	7	21.87	10	31.25	15	46.87	37.5
	c. Marketing of the produce	5	15.62	9	28.12	18	56.25	29.68

Access to market and regular income: A close observation of data in Table 4.50 indicates that majority of the respondents sometimes had stable price (75%) and constant demand of their produce (62.5%) with MPS 56.25 and 68.75 respectively. Majority of the respondents (71.87%) had access only sometimes to regular income with MPS 48.43. Lack of proper market and road connectivity may be the reason behind such findings. Majority of tribal were selling their products in local market and they did not get right price of their products.

Risk factors and risk taking ability: Data in the table further depict that majority of the respondents sometime face risk related to market (75%), production (71.87%) and finance (68.75%) with MPS ranging between 43.75-57.81. Regarding risk taking ability the respondents sometimes used improved methods and practices (75%), produced new products (68.75%) and took loan for livelihood activities (59.37%).

Decision making ability: Data furnished in Table 4.50 highlight the activities on which decision were taken by the respondents. More than half of the respondents (56.25%) were not able to take decision related to marketing of the produce, selection of products (50%) and purchase of raw material (46.87%) with MPS ranging between 29.68-37.5.

Table 4.51: Association of different factors with livelihood security of the respondents in poultry based livelihood

S. No	Factors	χ^2 value
1.	Access to resources	22.54**
2.	Access to technological information and sources	51.05**
3.	Access to market	27.12**
4.	Access to regular income	37.46**
5.	Risk factors	43.19**
6.	Risk taking ability	57.55**
7.	Decision making ability	55.83**

** Significant at 1 per cent level of significance

It is evident from the Table 4.51 that there was strong significant association between all the factors and livelihood security of the respondents as the calculated chi-square values were greater than the tabulated values. It can be reported that the livelihood security of the respondents was associated with all the factors such as access to

resources, access to technological information and sources, market and regular income, risk factors, risk taking ability and decision making ability. The backyard poultry generates self-employment, provides supplementary income with protein rich food at relatively low cost and availability of the resources help to provide good returns with minimum investment.

4.4.6. Factors affecting business based livelihood

An effort was made to study the factors affecting business based livelihood such as access to resources (ownership of land, capital, input, labour, storage facility, transportation facility and cash earned from sale of products), access to information sources, access to market and regular income, risk factors, risk taking ability and decision making ability. The information related to these factors affecting business based livelihood activity is presented in Table 4.52.

Access to resources: Data presented in Table 4.52 point out that majority of the respondents (72%) were not having access to ownership of land or shop with MPS 18. This may be due to the reason that they did not have any land on their name and they used rented shop. It can be seen from the table that majority of the respondents were not at all having access to capital loan (60%) and saving (68%) with MPS 50 and 54 respectively. Regarding input, majority of the respondents had partial access to machinery (68%) equipment (64%) and infrastructure (60%). In case of access to labour, 64 per cent were having family labour and 60 per cent had access to hired labourer with MPS 68 and 74 respectively. Data in table further depicts that majority of the respondents were having storage facility (64%) and they stored their products at household level. Majority of them (80%) had access to transportation facility as they were using vehicles for selling and purchasing their products on shared basis. Majority of the respondents (64%) had partial access to cash earned from sale of produce with MPS 56.

Access to information sources: A close study of the table further shows that majority of the respondents did not have access to print media such as newspaper (64%) and magazine (68%) as poor educational background was the stumbling block. Data in table further reveal that majority of the respondents had regular access to television (76%), telephone (72%) and radio (72%) with MPS ranging between 82-88 as these media was liked by them.

Table 4.52: Distribution of the respondents on the basis of factors affecting business based livelihood

n=25

S. No	Factors	Complete		Partial		Not at all		MPS
		f	%	f	%	f	%	
A	Access to resources							
1.	Ownership of shop/ land	2	8	5	20	18	72	18
2.	Capital							
	a. Loan	5	20	15	60	5	20	50
	b. Saving	5	20	17	68	3	12	54
3.	Input							
	a. Infrastructure	8	32	15	60	2	8	62
	b. Equipment	6	24	16	64	3	12	56
	c. Machinery	4	16	17	68	4	16	50
4.	Labour							
	a. Family labourer	16	64	5	20	4	16	74
	b. Hired labourer	15	60	4	16	6	24	68
5.	Storage facility	16	64	5	20	4	16	74
6.	Transportation facility	4	16	20	80	1	4	56
7.	Cash earned from sale of products	6	24	16	64	3	12	56
B	Access to information sources							
		Regular		Occasional		Never		
I.	Mass media exposure Print media	4	16	5	20	16	64	26
	a. Newspaper							

	b. Magazine	3	12	5	20	17	68	22
II.	Electronic media	19	76	6	24	0	0	88
	a. Television							
	b. Radio	18	72	6	24	1	4	84
	c. Telephone	18	72	5	20	2	8	82
C	Access to market	Always		Sometimes		Never		
	a. Constant demand	5	20	14	56	6	24	48
	b. Remunerative price	6	24	16	64	3	12	56
D	Access to regular income	5	20	14	56	6	24	48
E	Risk factors							
	a. Marketing risk	5	20	14	56	6	24	48
	b. Finance risk	6	24	13	52	6	24	50
F	Risk taking ability							
	a. Use improve methods and practices	2	8	16	64	7	28	40
	b. Take loan for livelihood activities	3	12	18	72	4	16	48
	c. Produce new products	2	8	17	68	6	24	42
G	Decision making ability							
	a. Selection of products	6	24	10	40	9	36	44
	b. Purchasing of raw material	7	28	13	52	5	20	54
	c. Marketing of the produce	5	20	17	68	3	12	54

Access to market and regular income: Table 4.52 point out that majority of the respondents (64%) had remunerative price and constant demand their produce (56%) sometimes only with MPS 48 and 56 respectively. Regarding access to regular income, more than half of the respondents (56%) had sometimes income from sale of products with MPS 48.

Risk factors and risk taking ability: It is evident from Table 4.52 that more than half of the respondents sometime faced risk related to market (56%), production and finance (52%) with MPS 48 and 50 respectively. Regarding risk taking ability, data in table reveal that majority of the respondents used improved methods and practices (64%), produced new products (68%) and took loan for livelihood activities (72%). This may be due to the reason that tribal women lacked confidence and knowledge about new tool and technologies.

Decision making ability: Data in the table further depicts that majority of the respondents (68%) were able to take decision related to marketing of the produce, purchase of raw material (52%) and selection of products (40%).

Table 4.53: Association of different factors with livelihood security of the respondents in business based livelihood

S. No	Factors	χ^2 value
1.	Access to resources	29.54**
2.	Access to information sources	61.27**
3.	Access to market	26.81**
4.	Access to regular income	33.29**
5.	Risk factors	58.46**
6.	Risk taking ability	46.78**
7.	Decision making ability	49.36**

** Significant at 1 per cent level of significance

An overview of the data in Table 4.53 further indicate that there was significant association between all the factors and livelihood security of the respondents as the calculated chi-square values were higher than the tabulated values. This indicates that the livelihood security of the respondents was associated with all the factors i.e. access to resources, access to information sources, market and regular

income, risk factors, risk taking ability and decision making ability. It can be observed that these factors play an important role in business based livelihood of the tribal family. Tribal women have poor economic status and they need more support and motivation for initiating new business activities.

It can be concluded that poor access to land and low land holdings could be an important factor behind their poor economic status. They have also poor access to technological information and sources. This may be due to their shy nature as they do not like to have contact with outsiders, wish to remain in isolation from the outsiders and are neglected by other community. Also less contact of KVK and NGO personnel, illiteracy and less exposure to training programmes and low social participation they have less access to inputs and other specialized tools. Utilization of appropriate technologies by tribal farm women depends upon the effective sources of information and channels to which they are generally exposed directly or indirectly. Due to poor access to market, tribal farmers are not getting remunerative price for their produce as they do not know various marketing opportunities and marketing pattern to sell their produce. They also have less risk taking ability, poor access to capital loan and saving, tool and machinery, lack of road connectivity and transportation facilities which further makes the situation worse. Due to lack of knowledge and literacy tribal women have not utilized their available resources optimally. In order to increase income and contribution of tribal women in development of tribal area, it is imperative that they are trained in scientific practices and improved technologies by keeping them abreast with the latest innovations. Access to resources, technological information and institutional support can enable, strengthen and empower the long deprived tribal community and enhance tribal livelihood.

4.5 CONSTRAINTS FACED BY TRIBAL WOMEN IN LIVELIHOOD SECURITY OF THE FAMILY

Tribal women play a very significant role in their natural, social, cultural, economic and religious ways of life and they are considered as a development factor in their family as well as society. Tribal women face many problems and challenges in getting a sustainable livelihood and a decent life due to environmental degradation and the interference of outsiders (Talavar and Nagindrappa 2014). The term constraint means the problems or barriers which were perceived by respondents in livelihood security of the family. Constraints perceived by the respondents were categorized as personal, technical, operational and economic constraints. The response was recorded on three point continuum i.e. to a great extent, to some extent and not at all, assigning scores 2, 1 and 0 respectively. The finding regarding constraints faced by the respondents in different livelihood activities viz. crop, horticulture, animal husbandry, forest, poultry, business, and wage have been presented in this section.

4.5.1. Constraints faced by tribal women in crop based livelihood

Agriculture is the most important sector of economy in tribal communities as it provides food and livelihood security. Tribal agriculture is characterized by low technology and low input resources and therefore, the nature of agricultural productivity of various crops in the tribal areas is not high as it faces many constraints and challenges. Constraints faced by tribal women in crop based livelihood activity have been presented in this subsection covering personal, technical, operational and economic constraints.

Personal constraints: Data in Table 4.54 regarding personal constraints faced by respondents depict that lack of education was considered as the most important constraint by the majority of the respondents (88.88%) with mean per cent score of 93.05. The reason for lack of education might be the lack of schools in tribal area and negative attitude of parents towards girls education. Lack of motivation (77.22%), lack of scientific orientation (73.88%), no risk bearing capacity (72.22%), non-cooperation of family members and excess of social responsibilities were also identified as major constraints by respondents with MPS ranging between 80.55-85.55. Health problems, lack of decision making capabilities, heavy workload and lack of enthusiasm to adopt new technology related to crop production were also expressed as major constraints by the respondents with MPS ranging between 74.44 to 77.77. Shamna *et al.* (2018) also reported that the tribal women of West Bengal faced lack of education, knowledge, skill and motivation, heavy workload, lack of child care facilities, low income derived from agriculture, etc. as the major constraints.

Table 4.54 Distribution of the respondents on the basis of constraints faced in crop based livelihood

n=180

S. No	Constraints	Extent of constraint					
		To a great extent		To some extent		Not at all	MPS
A	Personal constraints	f	%	f	%	f	
1.	Lack of education	160	88.88	15	8.33	0	93.05
2.	Lack of motivation	139	77.22	30	16.66	0	85.55
3.	Lack of scientific orientation	133	73.88	40	22.22	0	85
4.	No risk bearing capacity	130	72.22	40	22.22	0	83.33
5.	Non-cooperation of family members	114	63.33	66	36.66	0	81.66
6.	Excess of social responsibilities	110	61.11	70	38.88	0	80.55
7.	Health problems	120	66.66	40	22.22	0	77.77
8.	Lack of decision making capabilities	109	60.55	59	32.77	0	76.94
9.	Heavy workload	107	59.44	56	31.11	0	75
10.	Lack of enthusiasm to adopt new technology related to crop production	110	61.11	48	26.66	0	74.44
	Pooled MPS						73.93
B	Technical constraints						
1.	Lack of technical guidance	162	90	18	10	0	95
2.	Lack of knowledge regarding latest technology	150	83.33	25	13.88	0	90.27
3.	Lack of timely technical inputs	147	81.66	30	16.66	0	90
4.	Unavailability of improved varieties	132	73.33	40	22.22	0	84.44

5.	Lack of proper training about tools and implements	120	66.66	40	22.22	0	77.77
	Pooled MPS						87.05
C	Operational constraints						
1.	Lack of transportation facilities	170	94.44	10	5.55	0	97.22
2.	Long distance of the market	140	77.77	40	22.22	0	88.88
3.	Inefficient arrangement for marketing & sale	126	70	54	30	0	85
4.	High fluctuation in demands of produce	121	67.22	59	32.77	0	83.61
5.	Unavailability of tools	139	77.22	20	11.11	0	82.77
6.	Long unproductive period	129	71.66	40	22.22	0	82.77
	Pooled MPS						86.71
D	Economic constraints						
1.	High rates of interest on loans	180	100	0	0	0	100
2.	Low credibility of source of purchasing	172	95.55	8	4.44	0	97.77
3.	Lack of loan facilities	170	94.44	10	5.55	0	97.22
4.	Poor production	160	88.88	20	11.11	0	94.44
5.	More price of tools after subsidized rates	160	88.88	20	11.11	0	94.44
6.	Lack of market information	137	76.11	43	23.88	0	88.05
	Pooled MPS						95.32

Technical constraints: It can be seen from the table that lack of technical guidance (90%), lack of knowledge regarding latest technology (83.33%) and lack of timely technical inputs (81.66%) were the commonly faced technical constraints by the respondents with MPS ranging between 90-95. It may be due to the reason that majority of the respondents were not very well educated and the information related to new technologies was difficult to understand. Unavailability of improved varieties (73.33%) with mean percent score 84.44 and lack of proper training about tools and implements (66.66%) with 77.77 MPS were also mentioned by the respondents.

Operational constraints: The result furnished in Table 4.54 regarding operational constraints in crop based activity indicate that lack of transportation facilities with mean percent score of 97.22 was the top most constraints identified by the majority of the respondents (94.44%). Reason behind this may be that road connectivity was not proper in the area and transportation was costly. Long distance of the market (77.77%), inefficient arrangement for marketing and sale (70%), high fluctuation in demands of produce (67.22%), unavailability of tools (77.22%) and long unproductive period (71.66%) were also perceived as major constraints by the respondents with MPS 82.77 to 88.88. Uma et al (2015) also mentioned that tribal well-being is hindered because of a lack of marketing and communication. They are exploited by the middlemen while selling their produce. Since they are ignorant of the value of their produce, they are not in a position to bargain.

Economic constraints: Data in the table further reveal that high rates of interest on loans was the top most economic constraint expressed by the cent per cent of the respondents with MPS 100 as they used non institutional sources of credit. Low-credibility of source of purchasing (95.55%), lack of loan facilities (94.44%), more price of tools after subsidized rates and poor production (88.88%) were the economic constraints expressed by majority of the respondents with mean percent score ranging between 88.05 to 97.77. This may be due to the reason that they are still pursuing primitive methods of production which have resulted in low production on their farm. Lack of market information was also mentioned as constraint by the majority of the respondents (76.11%) with MPS 88.05. The results are in consonance with the results of Pawar, (2016) who reported that most of the respondents felt economic constraints like low-credibility of source of purchasing, lack of knowledge about government crop price and non-availability of mandis and high rates of interest on loans. Kalyani

et al. (2013) also reported that the tribal women could not get the benefits through loans from the banking system. Even in the modern world, tribal women are living in a harsh environment and they are unable to access the facilities provided by Government.

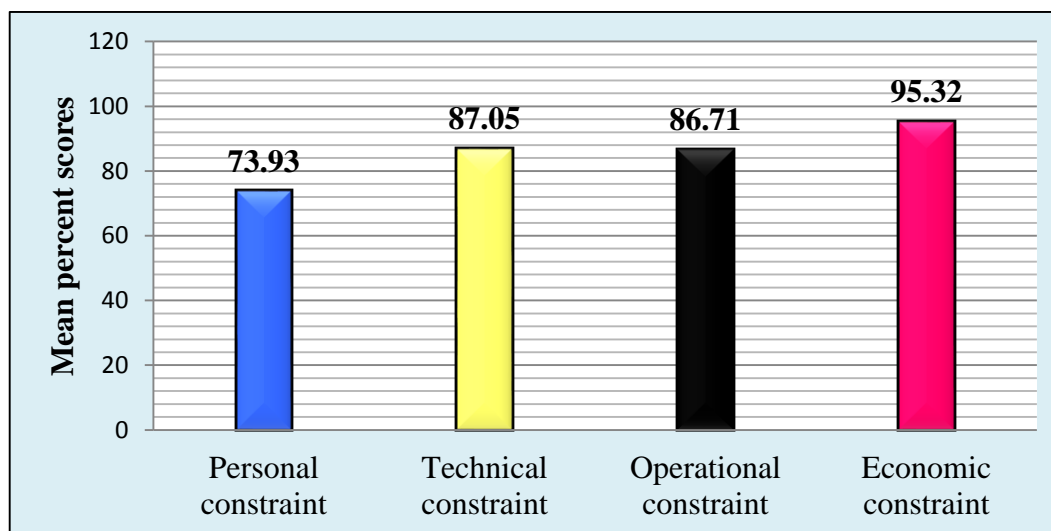


Fig. 4.4 Overall constraints faced by the respondents in crop based livelihood

Information related to overall constraints faced by tribal women in crop based livelihood activities presented in Fig. 4.4 show that majority of the respondents felt economic constraint as major constraint as crop productions requires much more expenditure than any other agro based activity from beginning to end, to purchase seeds, fertilizers, chemicals for pest management etc. Other major constraints faced by the respondent were technical constraint (87.05 MPS), operational constraint (86.71 MPS) and personal constraint (73.93 MPS). Reason behind this may be that they were dependent on canal irrigation and on rains so it was risky to grow crop in all the season. Also they faced financial problems due to lack of any formal government support and fund shortage for taking up new equipment and tools for scientific farming. Majority of the respondents faced technical and operational constraints due to reason that majority of the respondents were not very well educated and the information about pest management and other crop related new practices was difficult to understand so they were not friendly with the new technologies and could not improve their production by adopting these technologies. In a study by Dhakade (2020), out of six constraints perceived by them, rank I was assign to the lack of awareness of appropriate technologies and technical knowledge to improve crop productivity (48.17 MPS) followed by lack of proper guidance/ training workers

before any new initiative (36.90 MPS) at rank II, lack of information on scientific crop management practices (33.10 MPS) at rank III, lack of awareness about the schemes/subsidy for agribusiness (29.44 MPS) at rank IV. The last but not least technical constraints faced by the respondents were non-availability of agricultural machinery and equipment (25.61 MPS) at rank V.

A study by Naranyarao (2011) mentioned lack of technical knowledge (71.70%) and lack of information about the source of availability of resources to solve the problem (70.80%). More than half of the respondents (65%) did not get proper guidance and government agriculture programs and schemes were not effectively implemented in tribal areas (59.20%). Nearly half of the respondents (51.70%) expressed illiteracy as a major problem which limits their participation in agricultural development.

4.5.2. Constraints faced by tribal women in horticulture based livelihood

Horticulture covers a wide range of fruits, nuts, vegetables, flowers, medicinal and aromatic plants, plantation crops, spices, mushrooms and honey. Horticulture makes more efficient use of small land holdings, scarce water resources and can take full advantage of family labour. Expanding the scale of horticultural production is often complicated by substantial problems. The present subsection focus on constraints faced by tribal women in horticulture based livelihood activity.

Personal constraints: Constraints faced by the respondents in horticulture based activity have been presented in Table 4.55. Perusal of the table indicates that non-cooperation of family members (92.20%) with MPS 96.10 and health problem (87.01%) MPS 93.50 were the main personal constraints reported by the respondents to great extent. Reason behind this may be that they were fully dependent on male and other family members. They were not conscious of keeping good health because of ignorance and were not aware of government health facilities and dependent only on home remedy during illness. Other major constraints faced by the respondents were no risk bearing capacity (81.81%), lack of experience (80.51%), excess of social responsibilities (77.92%), heavy workload (77.92%), lack of education (64.93%), lack of decision making capabilities and lack of motivation (64.93%) with MPS ranging between 82.46-90.90. Lack of enthusiasm to adopt new technology related to horticulture production and lack of scientific orientation (75.97 MPS) were also mentioned by the respondents.

Table 4.55 Distribution of the respondents on the basis of constraints faced in horticulture based livelihood

n=77

S. No	Constraints	Extent of constraint					
		To a great extent		To some extent		Not at all	MPS
A	Personal constraints	f	%	f	%	f	
1.	Non-cooperation of family members	71	92.20	06	7.79	0	96.10
2.	Health problem	67	87.01	10	12.98	0	93.50
3.	No risk bearing capacity	63	81.81	14	18.18	0	90.90
4.	Lack of experience	62	80.51	15	19.48	0	90.25
5.	Excess of social responsibilities	60	77.92	17	22.07	0	88.96
6.	Heavy workload	60	77.92	17	22.07	0	88.96
7.	Lack of education	60	77.92	17	22.07	0	88.96
8.	Lack of decision making capabilities	50	64.93	27	35.06	0	82.46
9.	Lack of motivation	50	64.93	27	35.06	0	82.46
10.	Lack of enthusiasm to adopt new technology related to horticulture production	40	51.94	37	48.05	0	75.97
11.	Lack of scientific orientation	40	51.94	37	48.05	0	75.97
	Pooled MPS						95.45
B	Technical constraints						
1.	Lack of technical guidance	60	77.92	17	22.07	0	88.96
2.	Lack of timely technical inputs	57	74.02	20	25.97	0	87.01

3.	Lack of proper training about tools and implements	57	74.02	20	25.97	0	87.01
4.	Lack of knowledge regarding latest technology	47	61.03	30	38.96	0	80.51
5.	Unavailability of improved varieties	37	48.05	40	51.94	0	74.02
	Pooled MPS						83.50
C	Operational constraints						
1.	Long unproductive period	67	87.01	10	12.98	0	93.50
2.	Unavailability of tools	60	77.92	17	22.07	0	88.96
3.	Long distance of the market	55	71.42	22	28.57	0	85.71
4.	Inefficient arrangement for marketing & sale	50	64.93	27	35.06	0	82.46
5.	Lack of transportation facilities	50	64.93	27	35.06	0	82.46
6.	High fluctuation in demands of produce	37	48.05	40	51.94	0	74.02
	Pooled MPS						84.52
D	Economic constraints						
1.	High rates of interest on loans	67	87.01	10	12.98	0	93.50
2.	Lack of market information	60	77.92	17	22.07	0	88.96
3.	Low-credibility of source of purchasing	55	71.42	22	28.57	0	85.71
4.	More price of tools after subsidized rates	50	64.93	27	35.06	0	82.46
5.	Poor production	50	64.93	27	35.06	0	82.46
6.	Lack of loan facilities	37	48.05	40	51.94	0	74.02
	Pooled MPS						84.52

Technical constraints: It can be observed from the table that majority of the respondents (77.92%) lack of technical guidance (88.96 MPS). Lack of timely technical inputs (74.02%), lack of proper training about tools and implements (74.025) and lack of knowledge regarding latest technology (61.03%) were also major constraints expressed by the respondents with mean percent score ranging between 80.51 to 87.01. Nearly half of the respondent (48.05%) also mentioned unavailability of improved varieties.

Operational constraints: It is evident from Table 4.55 that long unproductive period (93.50 MPS) was the major operational constraint to a great extent by the majority of the respondents (87.01%) due to the dependence on rains. Unavailability of tools (77.92%), long distance of the market (71.42%), inefficient arrangement for marketing and lack of transportation facilities (64.93%) in the area were the commonly faced operational constraints by the respondents with MPS ranging between 82.46-88.96. Data in table further reveal that high fluctuation in demands of produce was also experienced to some extent by more than half of the respondents (51.94%) with 74.02 MPS. The findings get support from study by Devarajaiah (2010) who reported that majority of the respondents identified major constraint as lack of marketing facilities for the products (rank I) and lack of storage facilities (rank II).

Economic constraints: Data in the table further depicts that high rate of interest on loans (93.50 MPS) was one of the most important constraints expressed by the majority of the respondents (87.01%). Reason behind this may be that they don't have proper knowledge about government schemes and benefits regarding institutional credit. Lack of market information (88.96 MPS), low-credibility of source of purchasing (85.71 MPS), more price of tools after subsidized rates (82.46 MPS), poor production (82.46 MPS) and lack of loan facilities (74.02 MPS) were also the other constraints mentioned by the respondents to a great extent. It may be due to the reason that they were fully dependent on canal irrigation and rains so it was risky to grow crops and vegetables. Also tribal women were residing in remote areas and they are unable to access the facilities provided by the government due to various reasons like illiteracy and lack of awareness on various schemes. The findings get support from study by Mandavkaret *al.* (2013) who concluded that cent per cent of the respondents reported higher prices of improved seed material followed by lack of knowledge

regarding plant protection (88.73%), low market price for horticulture produce (79.41%). No financial support from credit & subsidies and lack of information regarding government schemes were the constraints expressed by 58.82 and 52.94 per cent of the respondents, respectively.

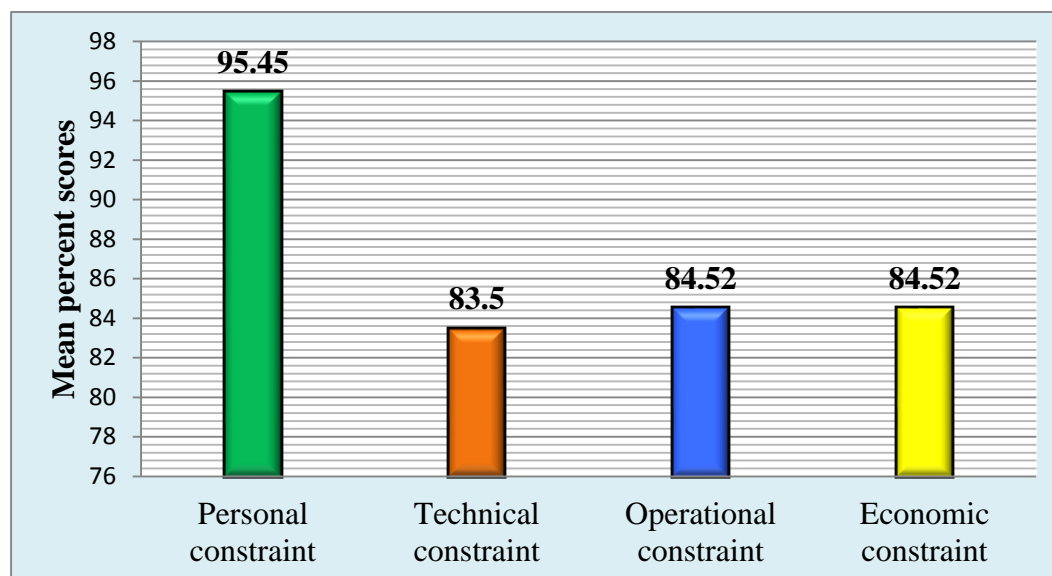


Fig. 4.5 Overall constraints faced by the respondents in horticulture based livelihood

Fig.4.5 depicts the overall constraints experienced by the respondents in horticulture based livelihood activities. Figure portrays that majority of the respondents faced personal constraint as a major constraint with highest mean percent score of 95.45. This may be due to the reason that most of tribal families follow traditional value and customs. Cultural factors and traditional customs have a major influence on tribal women even in the twenty first century. They totally depend on husband and other family members. Results are in conformity with Mareeswaran *et al.* (2017) who mentioned that many constraints were faced by tribal women in secured livelihood. They remain backward due to traditional values, illiteracy superstition and many other social and cultural factors. Figure 4.2 further reveals that operational, economic and technical constraints were also experienced by majority of the respondents with 83.5 MPS. In a study on “Constraints analysis in adoption of vegetable production technologies for livelihood perspective of tribal farmers in North Sikkim”, Mohanty *et al.* (2013) observed that significant percentage of the respondents (56.67%) faced the medium level of constraints in respect of all the three sectors of major constraints viz., technical, economic and organizational.

4.5.3. Constraints faced by tribal women in animal husbandry based livelihood

Animal husbandry is generally considered as a job of women where numbers of activities are performed by them viz. chopping of fodder, feeding, cleaning and milking of animals etc. In spite of active involvement of women in different animal husbandry activities, lack of exposure and access to new technology and many other constraints have restricted women to show their full potential for the growth of livestock sector. In this subsection, constraint faced by tribal women viz. personal, technical, operational and economic constraints have been presented.

Personal constraints: The results furnished in Table 4.56 regarding constraints in animal husbandry based activities indicate that no risk bearing capacity and lack of decision making capabilities were expressed to a great extent by the majority of the respondent (70%) with 84 MPS. Excess of social responsibilities (70%), lack of scientific orientation (62%), lack of enthusiasm to adopt new technology related to horticulture production (60%) and lack of motivation (57%) were also perceived as major constraints by the respondents with MPS ranging between 77 to 82.5. Heavy workload, health problem, non-cooperation of family members, lack of education and lack of experience were also mentioned by the respondents as the personal constraints with MPS ranging between 70 to 76.

Table 4.56 Distribution of the respondents on the basis of constraints faced in animal husbandry based livelihood

n=100

S. No	Constraints	Extent of constraint						
		To a great extent		To some extent		Not at all		MPS
A	Personal constraints	f	%	f	%	f	%	
1.	No risk bearing capacity	70	70	28	28	2	2	84
2.	Lack of decision making capabilities	70	70	28	28	2	2	84
3.	Excess of social responsibilities	70	70	25	25	5	5	82.5
4.	Lack of scientific orientation	62	62	33	33	5	5	78.5
5.	Lack of enthusiasm to adopt new technology related to horticulture production	60	60	35	35	5	5	77.5
6.	Lack of motivation	57	57	40	40	3	3	77
7.	Heavy workload	56	56	40	40	4	4	76
8.	Health problem	60	60	32	32	8	8	76
9.	Non-cooperation of family members	60	60	30	30	10	10	75
10.	Lack of education	55	55	40	40	5	5	75
11.	Lack of experience	50	50	40	40	10	10	70
	Pooled MPS							77.77
B	Technical constraints							
1.	Lack of information about government programmes and facilities provided for cattle keepers	80	80	20	20	0	0	90
2.	Insufficient knowledge of the important management practices like deworming, castration	75	75	20	20	5	5	85
3.	Lack of knowledge about scientific method of milking	72	72	20	20	8	8	82
4.	Lack of knowledge about cattle diseases and their control	65	65	30	30	5	5	80

5.	Inadequate knowledge of breeding practices	60	60	30	30	10	10	75
6.	Lack of knowledge regarding dairy innovations	50	50	50	50	0	0	75
	Pooled MPS							81.16
C	Operational constraints							
1.	Non availability of improved fodder seed	85	85	10	10	5	5	92.5
2.	Lack of retail fodder shop	80	80	20	20	0	0	90
3.	Non availability of improved fodder seed	73	73	27	27	0	0	86.5
4.	Unavailability of land for green fodder production	70	70	29	29	1	1	85.5
5.	Long distance of the market	70	70	30	30	0	0	85
6.	Lack of transportation facilities	70	70	30	30	0	0	85
7.	Distance and location of veterinary centres	68	68	32	32	0	0	84
8.	Lack of educational programme on cattle rearing	68	68	32	32	0	0	84
9.	Lack of veterinary hospital and health centres	60	60	40	40	0	0	80
10.	Inefficient arrangement for marketing & sale	60	60	40	40	0	0	80
	Pooled MPS							84.09
D	Economic constraints							
1.	Lack of credit facilities for purchase of cattle feed and mineral mixture	82	82	18	18	0	0	91
2.	High cost of concentration	71	71	29	29	0	0	85.5
3.	High cost of veterinary medicines	58	58	42	42	0	0	79
4.	High fluctuation in demands of produce	59	59	41	41	0	0	79.5
5.	High cost of cross bred cattle	55	55	45	45	0	0	77.5
6.	Unavailability of bank facilities for loan	53	53	47	47	0	0	76.5
	Pooled MPS							81.05

Technical constraints: Data in Table 4.56 regarding technical constraints faced by respondents depict that lack of information about government programmes and facilities provided for cattle keepers (90 MPS) was the major constraint reported by the majority of the respondents (80%). Regarding insufficient knowledge of the important management practices like deworming, castration (75%), lack of knowledge about scientific method of milking (72%) and lack of knowledge about cattle diseases and their control (65%) were the technical constraints perceived by the respondents with MPS ranging between 80 to 85. Inadequate knowledge of breeding practices (75 MPS) and lack of knowledge regarding dairy innovations (75 MPS) were also mentioned by the 60 and 50 per cent respondents respectively. Similar findings were revealed by Tailor *et al.* (2012) who mentioned that the major constraints faced by respondents were in milking, production and health management of milch animals. Inadequate knowledge about proper/scientific feeding of dairy animals, non-availability deworming, castration practices and government schemes related to cattle management, low milk productivity of animals and lack of scientific housing were the major constraints.

Operational constraints: Findings regarding operational constraints faced by the respondents reveal that non availability of improved fodder seed was reported to a great extent by the majority of the respondent (85%) with 92.5 MPS. Lack of retail fodder shop (80%), non-availability of improved fodder seed (73%), unavailability of land for green fodder production (70%), long distance of the market (70%) and lack of transportation facilities (70%) were perceived as important constraints by the respondents with mean percent score between 85 to 90. Thammi *et al.* (2010) also mentioned non-availability of green fodder. Data in the table further reveal that distance and location of veterinary centres (68%), lack of educational programme on cattle rearing (68%), lack of veterinary hospital and health centres (60%) and inefficient arrangement for marketing and sale (60%) were also expressed to a great extent with MPS ranging between 80 to 84. This may be due to the reason that most of respondents were residing in villages and regular transportation facilities were not available for purchase of inputs and sale of produce. Tribal respondents being the weaker section in the society and having no organized platform were the main target of the market operators for exploitation.

Economic constraints: It can be observed from Table 4.56 that lack of credit facilities for purchase of cattle feed and mineral mixture (91 MPS) was the main economic constraint reported by majority of the respondents (82%). Regarding high

cost of concentration (72%), high cost of veterinary medicines and high fluctuation in demands of produce were major constraints expressed by the respondents with MPS ranging between 79.05 to 85.05. The reason might be that there were huge areas requiring government intervention for the welfare of livestock. Further lack of milk cooperatives, less training on scientific dairying definitely needed extension intervention on regular basis. High cost of cross bred cattle (77.05 MPS) and unavailability of bank facilities for loan (76.05 MPS) were also mentioned by the respondents. The results are in conformity with the findings of Lawania and Gupta (2015) who reported the major constraints faced by the tribal women were economic problems, lack of credit facilities for purchase of cattle feed and mineral mixture, non-availability of green fodder, less profit from domesticated animals, high cost of cross bred cattle, lack of easy accesses to veterinarians, etc.

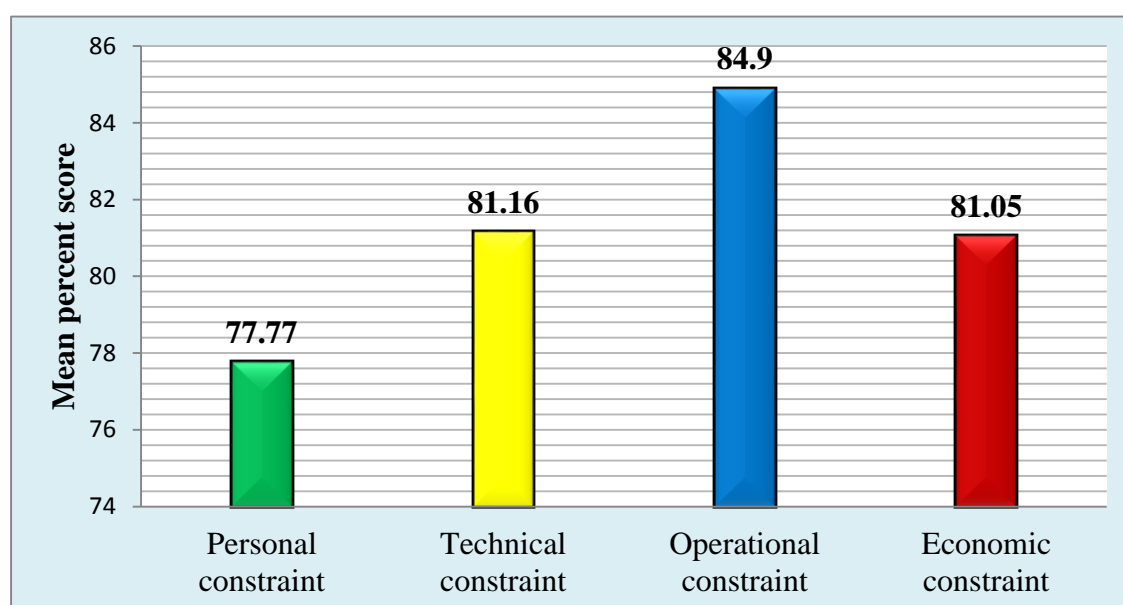


Fig. 4.6 Overall constraints faced by the respondents in animal husbandry based livelihood

It is evident from Fig. 4.6 that major constraints faced by the respondents in animal husbandry were operational constraints (84.9 MPS), followed by technical (81.16 MPS), economic (81.05 MPS) and personal constraints (77.77 MPS). This may be due to the reason that most of the respondents did not have proper transportation facilities and there was no proper arrangement of market at village level. Poor storage facility for storing milk as milk is perishable in nature due to which they sold their produce to the middle man and did not get the remunerative price of milk. Result are in conformity with Singh (2017) who mentioned the constraints expressed by respondent in animal husbandry and goat farming. Lack of knowledge about scientific goat

rearing practices, poor quality breeds and lack of availability of improved breeds within the reach of poor farmers were reported by the respondents. In dairy, low milk production due to non-descript poor quality animals, unavailability of optimum quantity of green fodder, breeding and health management in dairy animals leading to poor quality and low milk production per animal, reproduction problems were the constraints faced respectively.

In a study on “Constraint faced by the tribal farmers in dairy farming in Udaipur district” Tailor *et al.* (2012) mentioned the major constraints faced by respondents were in feeding, production and health management of milch animals. They observed no availability of green fodder throughout the year, inadequate knowledge about proper/scientific feeding of dairy animals, repeated breeding of animals, low milk productivity of animals and lack of scientific housing.

4.5.4. Constraints faced by tribal women in wage based livelihood

Wage labourers can play a significant role in generating income and sustaining millions of labour households. Tribal labours are engaged in agriculture and non-agricultural sectors like mining, manufacturing, construction, commerce, transportation and all kinds of services. The findings regarding constraints faced by the tribal women in wage based livelihood activity has been presented in this subsection.

Personal constraints: The data presented in Table 4.57 regarding personal constraints depict that lack of experience, lack of decision making capabilities and excess of social responsibilities (72.72%) were found as major personal constraints by the majority of the respondent with MPS 85.45, 85.45 and 84.09 respectively. Lack of motivation (69.90%), health problem (63.63%), non-cooperation of family members (63.63%), lack of education (59.09%) and lack of scientific orientation (56.36%) were also felt to greater extent with mean per cent score ranging between 75.90-79.09. The respondents also mentioned heavy workload and no risk bearing capacity as important constraints with 73.63 and 72.72 MPS. The findings of the present study are in accordance with the finding of Nisha and Asokhan (2015) who reported that majority of the tribal women (83.33%) have faced more prevalence of social taboos, superstitions and traditions followed by indebtedness (67.50%), lack of awareness about the tribal development schemes (60.83%), fear of social security (60.00%), lack of adequate communication skills (60.00%) inadequate motivation from family members(50.00%), lack of self-motivation (48.33%), suppression due to the dependable nature of women (42.50%) and lack of adequate training facilities (33.33%) as the major constraints reported by the tribal women.

Table 4.57 Distribution of the respondents on the basis of constraints faced in wage based livelihood

n=110

S. No	Constraints	Extent of constraint						
		To a great extent		To some extent		Not at all		MPS
A	Personal constraints	f	%	f	%	f	%	
1.	Lack of experience	80	72.72	28	25.45	2	1.81	85.45
2.	Lack of decision making capabilities	80	72.72	28	25.45	2	1.81	85.45
3.	Excess of social responsibilities	80	72.72	25	22.72	5	4.54	84.09
4.	Lack of motivation	67	60.90	40	36.36	3	2.72	79.09
5.	Health problem	70	63.63	32	29.09	8	7.27	78.18
6.	Non-cooperation of family members	70	63.63	30	27.27	10	9.09	77.27
7.	Lack of education	65	59.09	40	36.36	5	4.54	77.27
8.	Lack of scientific orientation	62	56.36	43	39.09	5	4.54	75.90
9.	Heavy workload	56	50.90	50	45.45	4	3.63	73.63
10.	No risk bearing capacity	60	54.54	40	36.36	10	9.09	72.72
	Pooled MPS							78.90
B	Technical constraints							
1.	Lack of information about government programmes and facilities	90	81.81	20	18.18	0	0	90.90
2.	Lack of knowledge about wages	82	74.54	20	18.18	8	7.27	83.63
3.	Lack of knowledge about labour schemes and rights	75	68.18	30	27.27	5	4.54	81.81

4.	Inadequate knowledge of working place	70	63.63	30	27.27	10	9.09	77.27
5.	Lack of knowledge regarding health insurance schemes	60	54.54	50	45.45	0	0	77.27
	Pooled MPS							82.18
C	Operational constraints							
1.	Lack of transportation facilities	90	81.81	30	27.27	0	0	95.45
2.	Long distance of work place	80	72.72	30	27.27	0	0	86.36
3.	Discrimination at workplace	85	77.27	20	18.18	5	4.54	86.36
4.	Lack of maternity leaves	82	74.54	20	18.18	8	7.27	83.63
5.	Lack of hospital and health centres around the working place	70	63.63	40	36.36	0	0	81.81
6.	Job insecurity	75	68.18	30	27.27	5	4.54	81.81
7.	Lack of child care facility at work place	60	54.54	50	45.45	0	0	77.27
	Pooled MPS							84.67
D	Economic constraints							
1.	Lack of credit facilities	92	83.63	18	16.36	0	0	91
2.	Fluctuation in salary and daily wages	69	62.72	41	37.27	0	0	79.5
3.	High cost of medical treatments	68	61.81	42	38.18	0	0	79
	Pooled MPS							84.69

Technical constraints: Data in Table 4.57 highlight the technical constraints faced by the tribal women. Lack of information about government programmes and facilities was reported as the most important constraint as nearly 81.81 per cent of the respondents faced this constraint to great extent with mean per cent score 90.90. Lack of knowledge about wages (74.54%), lack of knowledge about labour schemes and rights (68.18%), inadequate knowledge of working place (63.63%) and lack of knowledge regarding health insurance schemes (54.54%) were also the major constraints faced by the respondents with MPS ranging between 77.27-83.63.

Operational constraints: Data presented in table show that lack of transportation facilities was the most important constraint identified by the majority of the respondents (81.81%) with MPS 95.45. Long distance of work place (72.72%), discrimination at workplace (77.27%), lack of maternity leaves (74.54%), lack of hospital and health centres around the working place (63.63%) and job insecurity (68.18%) were also reported as the constraints by the most of the respondents with MPS ranging between 81.81-86.36. Lack of child care facility at work place was also mentioned by more than half of the respondents (60%) with MPS 77.27.

Economic constraints: Data in the table further reveal that lack of credit facilities was perceived to be the most important constraint as majority of the respondents (83.63%) faced it to great extent with mean per cent score 91. Other constraints such as fluctuation in salary and daily wages (79.5 MPS) and high cost of medical treatment (79 MPS) were also identified as major constraints by the more than half of the respondents 62.72% and 61.81%. Similar results were reported by Dhanasree *et al.* (2014) who reported that majority of the respondents (71.11% to 82.11%) working on daily wages faced lack of credit facilities, illiteracy, exploitation of money lenders, poor connectivity and accessibility to nearby markets. Less than 20 per cent of the respondents faced limited social participation and unavailability of bank facilities for loan were the constraints.

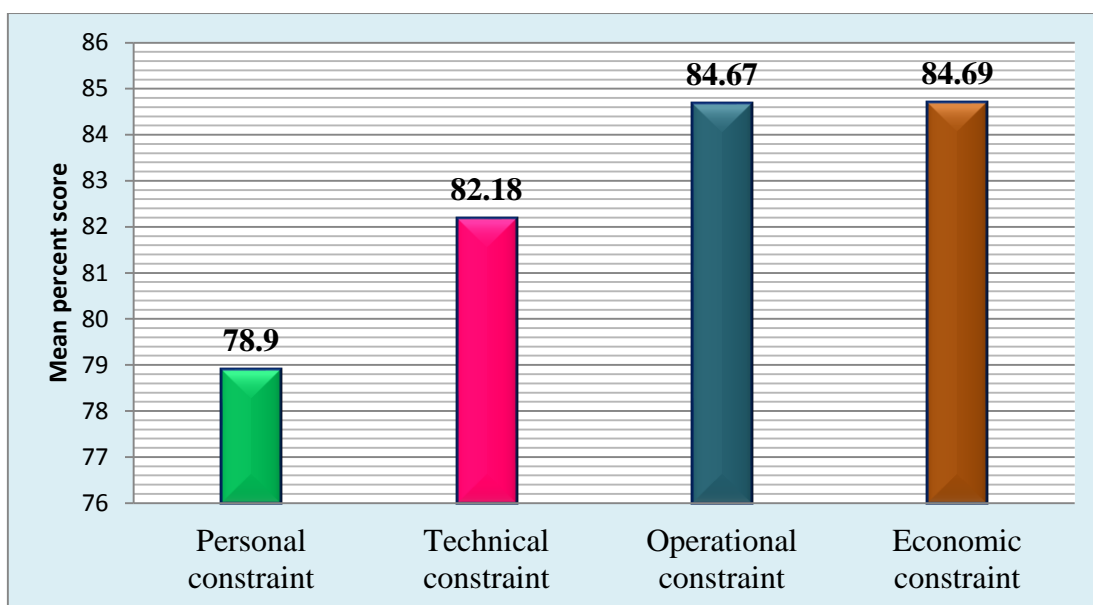


Fig. 4.7 Overall constraints faced by the respondents in wage based livelihood

Information regarding overall constraints faced by the respondents in wage based livelihood activities, presented in Fig. 4.7 depicts that majority of the respondents faced economic constraints as major constraints with mean percent score 84.69. This may be due to the reason that they did not devote full time in wage based activities because apart from this they have to do the household work also which has doubled their burden. During the discussion it was found that due to long distance between the work place and home they had to pay high cost of transportation. Operational constraints were also faced by majority of the respondents with 84.67 MPS followed by technical constraints (MPS 82.18) and personal constraints (MPS 78.9).

4.5.5. Constraints faced by tribal women in forest based livelihood

Forests and forest resources play an important role in the viability and survival of tribal household. Collecting and processing of the forest produce are economically significant activities for forest dependents tribals. They collect a large variety of forest produce like spine gourd, honey, aritha, jatropha, date palm, custard apple, honey, dry and green fodder, fuel wood, tamarind, aonla. This subsection present the constraints faced by the respondents in forest based livelihood activity.

Personal constraints: The results furnished in the Table 4.58 regarding constraints in forest based livelihood activity indicate that lack of experience was found as major personal constraint perceived by the respondents with 94.30 MPS. Lack of scientific orientation, excess of social responsibilities, non-cooperation of family members, heavy workload, lack of education and health problem were also identified as major

constraints with MPS ranging between 79.74-87.97. Lack of enthusiasm to adopt new technology was also reported by majority of the respondents to great extent with MPS 79.74 and they were using indigenous tools and implements. Lack of motivation, no risk bearing capacity and lack of decision making capabilities were also perceived as constraint with MPS ranging between 68.98-79.74.

Technical constraints: Data in Table 4.58 regarding constraints faced by respondents depict that lack of knowledge about scientific method of collection was the major constraints expressed by the majority of the respondents (82.27%) with MPS 88.60. Lack of knowledge regarding new technology in forest produce collection and inadequate knowledge of value addition practices were also identified as major technical constraints by the majority of the respondents with MPS 77.84 and 77.21 MPS. This may be due to the reason that most tribal people are often poorly informed and awareness about the government programmes and linkages among the tribals is crucial for successful forest based livelihood.

Operational constraints: The data presented in Table 4.58 regarding operational constraints depict that long distance and location of forest was considered as the most important constraint by the majority of the respondents (86.07%) with mean per cent score of 92.40. Lack of transportation facilities was observed to be the second major constraint as majority of the respondents (75.94%) reported the severity of this constraint to great extent with mean per cent score 82.91. The reason being that majority of the respondents did not own any transport asset and had to hire vehicle in case they need to carry the forest products to town or nearby village for selling. Other constraints such as forest animal attack (65.82%), non-availability of tool and machinery for collecting forest products (65.82%), lack of market facilities in/around the village (63.29%), non-availability of storage facilities and processing unit and inefficient arrangement for selling & purchasing were also felt to greater extent with mean per cent scores ranging between 68.98-80.37. The findings can be further supported by the study conducted by Moshin (2010) who stated that tribal farmers do not use high level of technology as they cannot afford to bear the cost of new technology. Similar findings were reported by Devikaet *al.* (2013) who revealed that 82.50 per cent of women faced wild animal attack followed by marketing problems (69.16%), lack of capital to carry out the processing (66.67%) and storage problem (55%).

Table 4.58 Distribution of the respondents on the basis of constraints faced in forest based livelihood

n=79

S. No	Constraints	Extent of constraint						
		To a great extent		To some extent		Not at all		MPS
A	Personal constraints	f	%	f	%	f	%	
1.	Lack of experience	70	88.60	9	11.39	0	0	94.30
2.	Lack of scientific orientation	60	75.94	19	24.05	0	0	87.97
3.	Excess of social responsibilities	65	82.27	9	11.39	5	6.32	87.97
4.	Non-cooperation of family members	60	75.94	10	12.65	9	11.39	82.27
5.	Heavy workload	55	69.62	20	25.31	4	5.06	82.27
6.	Lack of education	55	69.62	20	25.31	4	5.063	82.27
7.	Health problem	50	63.29	26	32.91	3	3.79	79.74
8.	Lack of enthusiasm to adopt new technology	53	67.08	20	25.31	6	7.59	79.74
9.	Lack of motivation	50	63.29	26	32.91	3	3.79	79.74
10.	No risk bearing capacity	50	63.29	20	25.31	9	11.39	75.94
11.	Lack of decision making capabilities	40	50.63	29	36.70	10	12.65	68.98
	Pooled MPS							81.93
B	Technical constraints							
1.	Lack of knowledge about scientific method of collection	65	82.27	10	12.65	4	5.06	88.60
2.	Lack of knowledge regarding new technology in forest produce collection	50	63.29	23	29.11	6	7.59	77.84
3.	Inadequate knowledge of value addition practices	50	63.29	22	27.84	7	8.86	77.21
	Pooled MPS							81.21

C	Operational constraints							
1.	Long distance and location of forest	68	86.07	10	12.65	1	1.265	92.40
2.	Lack of transportation facilities	60	75.94	11	13.92	8	10.12	82.91
3.	Forest animal attack	52	65.82	23	29.11	4	5.06	80.37
4.	Non availability of tool and machinery for collecting forest products	52	65.82	20	25.31	7	8.86	78.48
5.	Lack of market facilities in/around the village	50	63.29	24	30.37	5	6.32	78.48
6.	Non availability of storage facilities	50	63.29	20	25.31	9	11.39	75.94
7.	Non availability of processing unit	40	50.63	30	37.97	9	11.39	69.62
8.	Inefficient arrangement for selling & purchasing	40	50.63	29	36.70	10	12.65	68.98
	Pooled MPS							78.40
D	Economic constraints							
1.	High commission of middle men	71	89.87	8	10.12	0	0	94.93
2.	High fluctuation in demands of produce	54	68.35	20	25.31	5	6.32	81.01
3.	Lack of credit and loan facilities	55	69.62	15	18.98	9	11.39	79.11
4.	Fluctuation in selling price of products	50	63.29	20	25.31	9	11.39	75.94
5.	Unavailability of bank facilities for loan	50	63.29	20	25.31	9	11.39	75.94
6.	High transportation cost	40	50.63	30	37.97	9	11.39	69.62
	Pooled MPS							79.43

Economic constraints: Data in Table 4.58 highlight the economic constraints faced by the tribal women. High commission of middle men was reported as the most important constraint as nearly 89.87 per cent of the respondents faced this constraint to great extent with MPS 94.93. High fluctuation in demands of produce (68.35%), lack of credit and loan facilities (69.62%), fluctuation in selling price of products (63.29%) and unavailability of bank facilities for loan (63.29%) were also the major constraints perceived by majority of the respondents with MPS ranging between 75.94-81.01. High transportation cost was also felt to a great extent with 69.62 MPS. The reason might be that for selling the forest produce, market was not available at local level and as there was lack of regular transportation so they have to pay more to take their produce to city market.

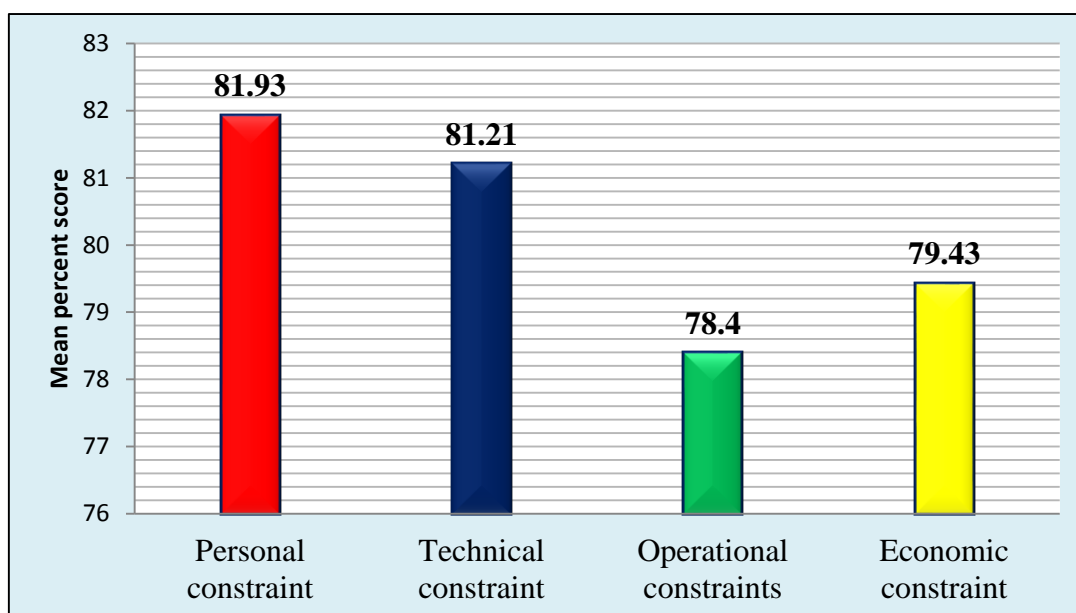


Fig. 4.8 Overall constraints faced by the respondents in forest based livelihood

The information regarding the overall constraints faced by the respondents in forest based livelihood activities presented in Fig 4.8 reveal that personal constraints were faced by the majority of the respondents with mean percent score 81.93. This may be due to the dependable nature of women also they followed many social taboos and traditions and they were afraid of social security. Most of time they did not get support from family members. From the findings it can be concluded that technical constraints (MPS 81.21), economic constraints (MPS 79.43) and operational constraints (MPS 78.4) were also faced by majority of the respondents. During the discussion it was found that due to absence of proper market facility in their village, tribal women were bound to sell their forest produce to the middlemen by which they were not getting the remunerative price for their produce. Many time they faced

animal attack in forest so they felt fear in working in the forest for more time. Also there was fluctuation in demands of produce in different seasons and majority of the respondents were not having the proper storage facility for storing the forest produce.

4.5.6. Constraints faced by tribal women in poultry based livelihood

Tribal backyard poultry generates self-employment, provides supplementary income with protein rich food at relatively low cost. The tribal women have maintained local desi strains because taste of desi poultry was largely accepted which created more demand in the market. The respondents were facing constraints in poultry production as a livelihood activity which have been presented in the following subsection.

Personal constraints: Perusal of the personal constraints in Table 4.59 reveals that lack of education was perceived to be the most important constraint as majority of the respondents (96.87%) faced it to great extent with mean per cent score 98.43. Excess of social responsibilities (93.75%), lack of experience (90.62%), heavy workload (87.5%) and no risk bearing capacity (81.25%) were also identified as the most important constraint ranging between 90.62-96.87 MPS. The table further shows that health problem, non-cooperation of family members, lack of decision making capabilities and lack of enthusiasm to adopt new technology related to poultry production were perceived to great extent as constraints by most of the respondents with MPS ranging between 68.75-89.06 MPS. Respondents also reported lack of scientific orientation (68.75%) and lack of motivation (68.75%) to considerable extent (65.62 MPS) as personal constraints.

Technical constraints: As is evident from table, that lack of information about government programmes and facilities provided for poultry production was the main constraint reported with mean per cent score 92.18. Lack of knowledge about identification of improved poultry breeds (81.25%) and lack of technical guidance (62.5%) were perceived as major constraint as majority of the respondents faced it to great extent with MPS 90.62 and 78.12 respectively. Constraints related to lack of knowledge about poultry production was also perceived as important technical constraints with MPS 70.31. Dekaet *al.* (2013) also reported that constraints of backyard poultry farming among tribal community such as high incidence of poultry disease, lack of technical knowledge, lack of feeding supply, attack by predators, poor economic condition of the respondents and market linkage were most serious constraints faced by the respondents.

Table 4.59 Distribution of the respondents on the basis of constraints faced in poultry based livelihood

n=32

S. No	Constraints	Extent of constraint						
		To a great extent		To some extent		Not at all		MPS
A	Personal constraints	f	%	f	%	f	%	
1.	Lack of education	31	96.87	1	3.12	0	0	98.43
2.	Excess of social responsibilities	30	93.75	2	6.25	0	0	96.87
3.	Lack of experience	29	90.62	3	9.37	0	0	95.31
4.	Heavy workload	28	87.5	4	12.5	0	0	93.75
5.	No risk bearing capacity	26	81.25	6	18.75	0	0	90.62
6.	Health problem	25	78.12	7	21.87	0	0	89.06
7.	Non-cooperation of family members	22	68.75	10	31.25	0	0	84.37
8.	Lack of decision making capabilities	20	62.5	12	37.5	0	0	81.25
9.	Lack of enthusiasm to adopt new technology	12	37.5	20	62.5	0	0	68.75
10.	Lack of scientific orientation	10	31.25	22	68.75	0	0	65.62
11.	Lack of motivation	10	31.25	22	68.75	0	0	65.62
	Pooled MPS							84.51
B	Technical constraints							
1.	Lack of information about government programmes and facilities for poultry production	27	84.37	5	15.62	0	0	92.18
2.	Lack of knowledge about identification of improved poultry breeds	26	81.25	6	18.75	0	0	90.62

3.	Lack of technical guidance	20	62.5	10	31.25	2	6.25	78.12
4.	Lack of knowledge about poultry production	15	46.87	15	46.87	2	6.25	70.31
	Pooled MPS							82.81
C	Operational constraints							
1.	High mortality of chicks	30	93.75	2	6.25	0	0	96.87
2.	Difficulty in taking care of poultry unit	29	90.62	3	9.37	0	0	95.31
3.	Time consuming activity	28	87.5	4	12.5	0	0	93.75
4.	Non availability of market at local level	28	87.5	4	12.5	0	0	93.75
5.	Creates bad smell in surrounding area	27	84.37	5	15.62	0	0	92.18
6.	Non availability of qualitative poultry feed	26	81.25	6	18.75	0	0	90.62
7.	Lack of space	25	78.12	7	21.87	0	0	89.06
8.	Breaking of eggs	23	71.87	7	21.87	2	6.25	82.81
9.	Lack of regular transportation facility	22	68.75	8	25	2	6.25	81.25
10.	Difficult to protect from diseases in rainy season	20	62.5	10	31.25	2	6.25	78.12
	Pooled MPS							89.37
D	Economic constraints							
1.	Fluctuation in prices of poultry products	30	93.75	2	6.25	0	0	96.87
2.	Unavailability of bank facilities for loan	26	81.25	4	12.5	2	6.25	87.5
3.	High cost of transportation	25	78.12	5	15.62	2	6.25	85.93
4.	High cost of electricity	22	68.75	5	15.62	5	15.62	76.56
5.	Costly technology	20	62.5	7	21.87	5	15.62	73.43
	Pooled MPS							84.06

Operational constraints: Data in the table further reveals that high mortality of chicks (93.75%), difficulty in taking care of poultry unit (90.62%), time consuming activity (87.5%), non availability of market at local level and bad smell in surrounding area (84.37%) were the major operational constraints as identified by the respondents (92.18-96.87 MPS). Non availability of qualitative poultry feed (90.62 MPS), lack of space (89.06 MPS), breaking eggs (82.81 MPS), lack of regular transportation facility (81.25 MPS) and difficulty to protect from diseases in rainy season (78.12 MPS) were also reported as constraints by more than half of the respondents (62.5%). Findings are in conformity with Nikita *et al.* (2018) who revealed that major constraints faced by poultry producers were high cost of feed followed by cost of day old chicks, medicine and veterinary charges in MPUAT service area and in case of Ajmer district high disease incidence was identified as most important constraint followed by high fluctuations in selling prices, high rate of mortality, high cost of variable inputs, high cost of establishment, non-availability of government policies and subsidies and non availability of resources.

Economic constraints: Data presented in table show that fluctuation in prices of poultry products (93.75%) i.e. low egg and chicks price during summer season, unavailability of bank facilities for loan (81.25%) and high cost of transportation (78.12%) were most important economic constraints identified by the respondents with 96.87, 87.05 and 85.93 MPS respectively. High cost of electricity (76.56 MPS) and costly technology (73.43 MPS) were also mentioned as economic constraints by more than half of the respondents (68.75 and 62.5% respectively). The findings of the present study are in accordance with the findings of Patel *et al.* (2019) who reported that majority of the respondents (98.57%) stated that high cost of feed is major constraint followed by high charge of electricity (88.57%), non-availability of labour (7.14%), risk and uncertainty (82.86%), inability to pay constant attention (78.57%), lack of man power (78.57%), difficulty in getting electricity (74.29%), lack of finance (70.00%), difficulty in getting loan (64.29%), marketing problem (58.57%) and high price of medicines (54.29%).

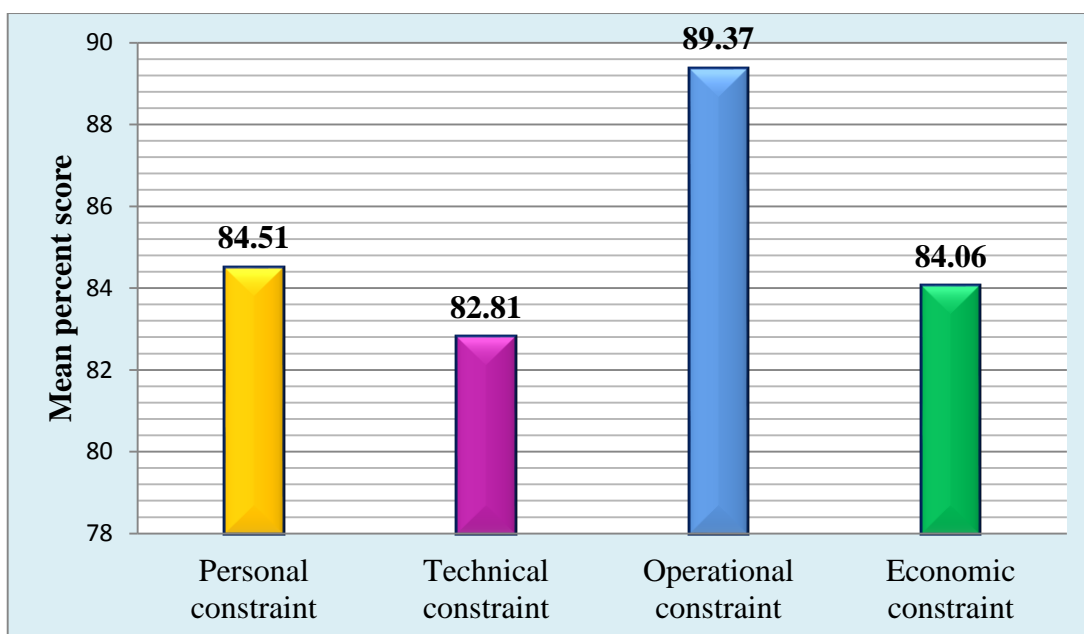


Fig. 4.9 Overall constraints faced by the respondents in poultry based livelihood

Information pertaining to the constraints perceived by the tribal women in poultry based livelihood activities in Fig 4.9 depicts that the operational constraints were reported as major constraints by the respondents with mean percent score 89.37 followed by personal constraints (MPS 84.51), economic constraints (MPS 84.06) and technical constraints (MPS 82.81). Respondents reported that there were lot of challenges and risk with poultry production due to which respondents did not feel secured while doing poultry. Economic constraints were faced by the tribal women due to high fluctuation in prices of poultry products as chicken is largely consumable meat by the people and at the time of flu its demand decreased. Respondents also reported that they were not having the proper transportation facility for exporting the chicken and egg.

4.5.7. Constraints faced by tribal women in business based livelihood

Sale of handmade items, fruit and vegetable, cloth and grocery items were found to be tribal's small scale business. Items like bamboo table mat, carpet, wall hangings, trays, doormat, book shelves bows, puppets and pottery, broom, baskets, fan, combs, bowls and toy were prepared by the tribal women but they were also facing many constraints in securing livelihood through this activities. In this subsection constraints faced by tribal women viz. personal, technical, operational and economic constraints have been presented.

Personal constraints: Constraints faced by the respondents in business based livelihood activity have been presented in Table 4.60. Perusal of the table indicates that lack of experience (96 MPS) heavy workload (94 MPS) and health problem (92 MPS) were the main personal constraints reported by the majority of the respondents followed by no risk bearing capacity and lack of scientific orientation (90 MPS). Lack of motivation and education, excess of social responsibilities, lack of decision making capabilities and non-cooperation of family members were also felt to greater extent with mean per cent scores ranging between 82-88 MPS. Findings are in conformity with Chatterjee (2014) who revealed that absence of any fixed livelihood, lack of access to education, low decision making ability and poor condition of health were the main constraints faced by the respondents.

Technical constraints: It can be seen from the table that majority of the respondents felt technical constraints as major constraints. Business activity requires much more expenditure and money from beginning to end, to purchase raw material, arrangement of work place and storage facilities. Respondents mentioned lack of knowledge about new business license and lack of guidance in the area were the important constraint faced by majority of the respondents with MPS 90 and 80 respectively.

Operational constraints: Data in Table 4.60 highlight the operational constraints faced by the respondents. High fluctuation in demands of product, inefficient arrangement for marketing & sale, lack of space, interruption in power supply, long distance of the market, lack of transportation facilities and lack of organized and regular market were expressed as the most important constraint faced by the respondents to great extent with mean per cent score ranging between 94-98. Shortage of raw materials (90 MPS) and poor storage facilities (90 MPS) were also identified as major constraints by majority of the respondents. Findings are in conformity with Saha and Bahal (2012) who revealed lack of marketing facilities for the product (mean score-1.75) and absence of storage facilities (mean score-1.60) were the severe constraints. In case of social constraints inadequate or no experience on new occupation (mean score-1.70) and shyness in doing socially under estimated work (mean score-1.48) were regarded as main constraints. Sannidhi, M.H. (2015) also reported that all the respondents expressed that inadequate means of transport facilities (61.11%) and poor marketing facilities (32.22%).

Table 4.60 Distribution of the respondents on the basis of constraints faced in business based livelihood

n=25

S. No	Constraints	Extent of constraint						
		To a great extent		To some extent		Not at all		MPS
A	Personal constraints	f	%	f	%	f	%	
1.	Lack of experience	23	92	2	8	0	0	96
2.	Heavy workload	22	88	3	12	0	0	94
3.	Health problem	21	84	4	16	0	0	92
4.	No risk bearing capacity	20	80	5	20	0	0	90
5.	Lack of scientific orientation	20	80	5	20	0	0	90
6.	Lack of motivation	19	76	6	24	0	0	88
7.	Lack of education	19	76	6	24	0	0	88
8.	Excess of social responsibilities	19	76	6	24	0	0	88
9.	Lack of decision making capabilities	18	72	7	28	0	0	86
10.	Non-cooperation of family members	16	64	9	36	0	0	82
	Pooled MPS							89.4
B	Technical constraints							
1.	Lack of knowledge about new business license	20	80	5	20	0	0	90
2.	Lack of guidance	15	60	10	40	0	0	80
	Pooled MPS							85

C	Operational constraints							
1.	High fluctuation in demands of produce	24	96	1	4	0	0	98
2.	Inefficient arrangement for marketing & sale	24	96	1	4	0	0	98
3.	Lack of space	23	92	2	8	0	0	96
4.	Interruption in power supply	23	92	2	8	0	0	96
5.	Long distance of the market	22	88	3	12	0	0	94
6.	Lack of transportation facilities	22	88	3	12	0	0	94
7.	Lack of organized and regular market	22	88	3	12	0	0	94
8.	Shortage of raw materials	20	80	5	20	0	0	90
9.	Poor storage facilities	20	80	5	20	0	0	90
	Pooled MPS							94.44
D	Economic constraints							
1.	Poor returns to investment	23	92	2	8	0	0	96
2.	High cost of transportation	23	92	2	8	0	0	96
3.	High cost of electricity	22	88	3	12	0	0	94
4.	High investment	20	80	5	20	0	0	90
5.	Unavailability of bank facilities for loan	20	80	5	20	0	0	90
	Pooled MPS							93.2

Economic constraints: Table 4.60 clearly depicts poor returns to investment (96 MPS) and high cost of transportation (96 MPS) as the mainly faced constraints by the majority of the respondents. Difficulties in transportation were faced more in rainy season which resulted in high cost. High cost of electricity, high investment and unavailability of bank facilities for loan were also identified as the major constraints by majority of the respondents with MPS ranging between 90-94. Sannidhi, M.H.(2015) also mentioned that in case of economic constraints, most of the tribal families (96.67%) always faced a problem of inadequate government assistance and complicated procedure to available loan (3.33%).

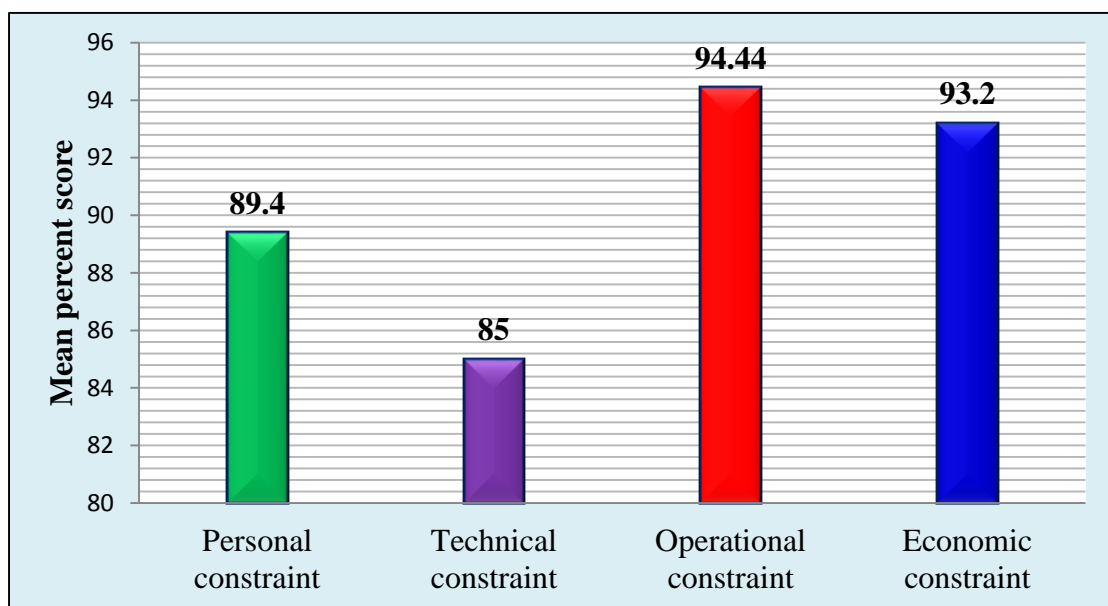


Fig. 4.10 Overall constraints faced by the respondents in business based livelihood

Data presented in Fig 4.10 point out the overall constraints faced by the respondents in business based livelihood activities. Operational constraints were found major constraint by most of the respondents with mean percent score 99.44 due to the reason that respondents had shortage of finance at the time of establishment of the business. Respondents also mentioned that purchasing cost of item in business was high and return to the investment was low so they did not get profit. Tribal women had many problems in business i.e. proper market facilities, transportation and storage facilities as they lived in remote area and they did not get government loan, schemes and training related to business activity. Similar findings were revealed by Dave (2019) who mentioned that financial constraints were most important constraints ranked I

with 85.34 MPS followed by operational constraints, ranked II with 70.97 MPS, marketing constraints ranked III with 67.12 MPS and personal constraints were ranked IV with 61.38 MPS.

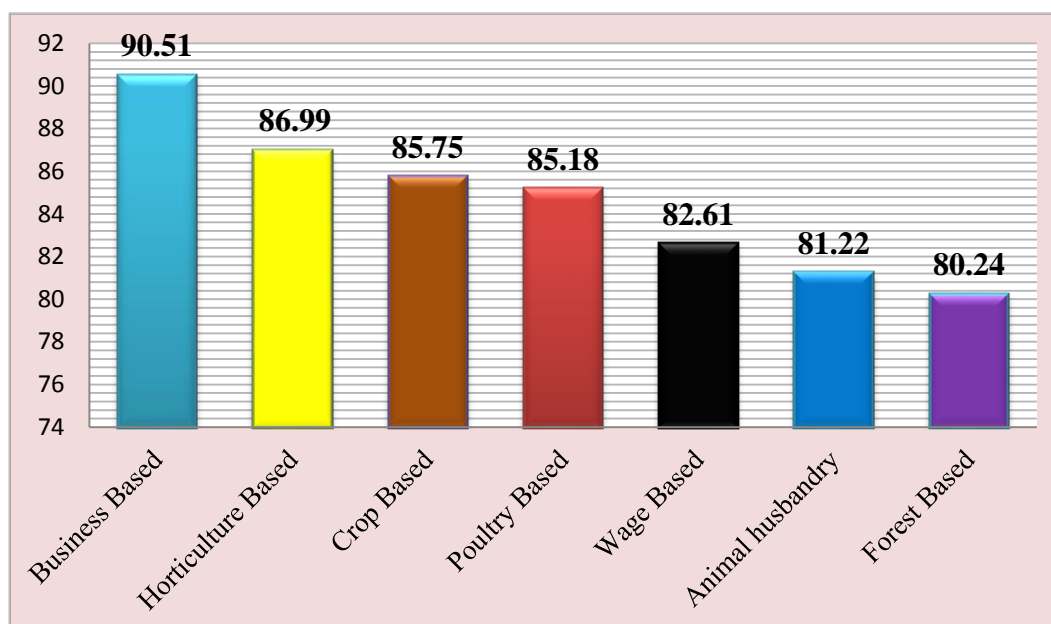


Fig.4.11: Overall constraints faced by respondents in different livelihood

A glance of the Fig. 4.11 depicts the overall constraints expressed by the respondents in different livelihood activities. It is clearly evident from the table that the respondents faced constraints to a greater extent in all the livelihood activities. A close look the table depicts that in case of business based livelihood activity to a greater extent of constraints with MPS 90.51 stood at I rank this may be due to the reason that nature of the activity and they faced difficulty in selling and purchasing items for business due to lack of market information and this activity needs long time for working and tribal women don't have much time because they are caring children and working at field as well as home.

The respondents reported crop based constraints were second with MPS 87.14 (ranked II). Reason behind this may be that the agriculture was subsistence in nature they were fully dependent on canal irrigation and on rains so it was risky to grow crops. Second main reason was they were still pursuing primitive methods of production which have resulted in low productivity on their farm. Followed by horticulture (MPS 86.99) and poultry (MPS 85.18) stood at III and IV rank. Main reason of the poultry production constraints that they have purchase day old chicks and feed regularly for running the poultry unit. Also the mortality rate is high in poultry therefore once

chicks die then they have to purchase again to run these units on credit which is taken at high interest rates. Other major reason that in rainy season it is very difficult to protect poultry birds from diseases because very poor facility available in nearly village and there is lack of storage facilities for eggs. From the findings it can be concluded that almost similarly respondents perceived wage (82.61 MPS), animal husbandry (81.22 MPS) and forest based constraints (80.24 MPS) at V, VI and VII rank respectively. This may be due to the reason that most of the respondents having small size of landholding and they did not have proper knowledge about government loan and schemes so they did not get benefits government of schemes. The results are in strong conformity with the findings of Mega Nathan (2010), Singh (2012), Patel *et al.* (2015) and Kowsalya, K.S. (2016).

The results of analysis for different constraints reveal that all the enlisted constraints were important in one way or other. To ensure the security of any livelihood activity, personal and economic constraints play a significant role. However, still those related to the operational and technical aspects had a major role in creating obstacles to livelihood security. There is need to make efforts for minimizing and overcoming the constraints which are coming on the way. For this the state government, agriculture department, extension agencies, non-governmental organizations which are involved in tribals welfare need to give more emphasis and focus on livelihood activities related trainings, technology transfer and adoption of the scientific practices which may lead to improve their income.

SUMMARY

The tribal population is identified as the aboriginal inhabitants of our country. For centuries, they have been living a simple life based on the natural environment and have developed cultural patterns congenial to their physical and social environment. Rajasthan has one of the largest concentrations of SC (17.15%) and ST (12.56%) population in the country. As per the 2011 Census, the Scheduled Tribe population of Rajasthan state is 9,238,534. Based on the Census of India, 2011 and Directorate of Census Operations, Rajasthan, the District wise distribution of tribal population shows that they have their highest concentration in Banswara district (81.3 per cent), followed by 74.4 per cent and 60.3 per cent in Dungarpur and Udaipur districts respectively. Nagaur has the lowest share of tribal population (0.2 per cent) in the total population than Bikaner (0.4 per cent).

Tribals in Rajasthan can be described as the poorest among the poor. On the one side they might have had a wonderful past but their present status is miserable. The probable reason might be that the tribal community mainly resides in forests and depend on forests for livelihood and they are being uprooted along with jungles. Almost 90 percent of tribal population in Rajasthan was depending upon the land for their survival. Expectedly, the main source of tribal livelihood is agriculture, livestock, horticulture, fisheries, animal resources, sericulture and several microenterprises like medicinal and aromatic extracts, vermiculture, poultry, bee keeping, rabbit farming etc. Several factors like geographical location, ethnical, educational qualification and availability of resource, infrastructures along with social, cultural, ecological, economic and political factors determine livelihood patterns of tribal communities.(Haldankar, 2016; Kumar, 2009; Haan & Zoomers, 2002; Surayya, et al., Oraon, 2012).

The tribal women, constitute as in any other social group, about half of the total population. However, the importance of women in the tribal society is more important than in other social groups in India, because of the fact that the tribal women works harder and the family economy and management depends on her own responsibility. They play a vital role in agricultural management and production activities in addition to her responsibilities at home. Besides routine household work, the tribal women work in the agricultural fields, forests for long hours. The overall

output if seen in terms of number of hours of work is low. Their schedule of long working hours continues even during pregnancy, natal and postnatal stages. They have a negative energy balance, high morbidity rate, and low child survival rate. Role of tribal women in farm sector and factors like access to resources, technological information, market facility, risk, economic and financial sources that are affecting the livelihood security of the family. As women are major stakeholder of family, it is also equally important to work out gender specific role in livelihood security. With the loss of traditional forests, there is a change in occupation therefore, how new generation is managing the family income with new enterprise and what are the problems they faced in livelihood, needed to be workout. Presented study was conducted with the following specific objectives:

- To study the livelihood pattern among tribal women of Southern Rajasthan.
- To study the role of tribal women in the livelihood security of the family.
- To identify the factors affecting livelihood security of the family.
- To study the constraints faced by tribal women in livelihood security of the family.

METHODOLOGY

The present investigation was conducted in Southern Rajasthan. The operational area of MPUAT, Udaipur includes seven districts of Rajasthan state i.e. Udaipur, Rajsamand, Bhilwara, Chittorgarh, Banswara, Pratapgarh and Dungarpur. Out of these, three districts namely Banswara, Dungarpur and Udaipur were selected purposively having high concentration of tribal population (Census, 2011). Two panchayat samities were randomly selected from each district. Thus, from total six panchayat samities and there were total 12 villages, where 2 villages were randomly selected from each panchayat samities. A village wise list of tribal families was prepared with the help of gram panchayat officials. From the list, 30 families from each village were selected randomly. From each family, one active woman was included in the sample. Thus, there were 120 tribal women from each district constituting a sample of 360 tribal women from the three districts. To fulfill the objectives of the study, the interview schedule was developed. Interview technique was used for data collection from tribal women. Frequency, percentage, mean percent scores and chi square test were used to analyze the data.

MAJOR FINDINGS

1. Background information of the respondents

- I. With regard to personal variables, less than half of the respondents (44.72%) were of the age group of 31-45 years and 51.94 per cent were married. Majority of the respondents (73.05%) were illiterate and farming was the main occupation of majority of the respondents (61.94 per cent respondents).
- II. Regarding social variables, cent per cent of the respondents was under the SC/ST category. Majority of the respondents (73.33%) were from nuclear family. One third of the respondents (33.33%) had large family size and none of the respondents were member of any organization.
- III. Findings related to economic variables revealed that more than half of the respondents (51.65%) had 1.0 to 2.5 acres land, whereas 48.33 per cent respondents were having no land. Less than half of the respondents (48.33%) had mixed house whereas 37.77 per cent had kutcha house and only 13.88 per cent respondents had pucca house. Majority of the respondents (87.50%) had small herd size whereas rest of the respondents (12.50 %) was having medium herd size. Further 72.22 per cent respondents had kutcha dwellings and 27.77 per cent had pucca dwelling for their livestock. Information regarding media ownership indicated that less than half of the respondents had television sets (48.61%) and mobile phones and radio sets was possessed by 30.55 and 20.83 per cent respondents respectively.
- IV. Findings regarding socio-economic status of the respondents majority of the respondents (81.66%) were from low socio-economic status whereas 18.33 per cent of the respondents had medium and none of the respondents belonged to high socio economic status.

2. Livelihood pattern among tribal women of Southern Rajasthan

- I. Crop based livelihood was accounted as the primary source of income for half of the respondents (50%). It was followed by wage based (14.16%), forest based (11.94%) and animal husbandry based livelihood (8.61%). Some of the respondents had poultry based (6.38%), business based (6.38%) and horticulture based livelihood activities (2.50%).

II. Information related to the engagement of the respondents in secondary livelihood activities indicated that 16.38 per cent respondents had wage earning as a secondary source of income, where wage based livelihood was combined with primary livelihood like crop production (8.33%), animal husbandry (12.90%), forest based (53.48%), business based (52.17%) and poultry based livelihoods (21.73%). Further 19.61 per cent respondents had animal husbandry as secondary source of income, where it was combined with crop production (36.11%) and horticulture (44.44%). It was closely followed by horticulture based livelihood (18.88%) where it was combined only with crop production (37.77%). 9.99 per cent had forest based livelihood pattern and it was combined with animal husbandry (64.51%) and crop production (8.88%). Poultry and business were also followed by 2.49 per cent and 0.54 per cent respondents respectively as secondary means of livelihood. None of the respondents opted crop production as a secondary source of livelihood.

A. Crop based livelihood activity

- Majority of the respondents (83.33%) had both subsistence and commercial agriculture.
- All the respondents were cultivating rabi and kharif based crops whereas half of the respondents (50%) were growing zaid based crops.
- All the respondents cultivated wheat as a major cereal crop followed by maize (97.77%), pearl millet (61.11%), and sorghum (50%). In case of pulses, most of the respondents grew bengal gram (98.88%) followed by red lentil (81.11%), green gram (77.22%) and pigeon peas (66.66%) Relatively less number of the respondents were cultivating groundnut (22.22%) and soybean (17.77%).
- Majority of the respondents (94.44%) stored their items at their own home.
- Majority of the respondents (93.33%) sold their produce in local market.
- Majority of the respondents (77.77%) marketed the produce in retail while rest of the respondents (22.22%) sold on wholesale basis.
- More than half of respondents (57.77%) devoted 2-4 hours and 42.22 per cent of the respondents worked for 10-20 days in a month.

- Less than half of the respondents (44.44%) earned Rs. 10000-22500 annually. Nearly one third of respondents (30.55%) earned Rs. 22501-35000 annually while few of the respondents (13.88%) also earned Rs. 35001-47500 and while 13.88 per cent and 11.11 per cent respondents had their annual income ranging between Rs. 35001-47500 and 47501-60000 respectively.

B. Horticulture based livelihood activity

- Majority of the respondents ((74.02%) had both subsistence and commercial agriculture.
- Majority of the respondents (74.02%) were cultivating zaid based crops while some of the respondents (25.97%) were growing kharif based crops. None of the respondents cultivated horticulture crop in rabi season.
- All the respondents cultivated anola as a major fruit crop followed by ber (97.40%) and guava (92.20%).In case of vegetables, most of the respondents grew potato and onion (90.90%) followed by cauliflower (88.31%), cabbage (83.11%), tomato (79.22%), lemon (71.42%) and gourd (67.53%).
- All the respondents stored their items at their own home.
- Majority of the respondents (90.90 %) sold their produce in local market and all the respondents marketed the produce on retail basis.
- Majority of the respondents (77.92%) devoted 2-4 hours in a day and 38.96 per cent respondents worked for 10-20 days in a month.
- It was found that 41.55 per cent of the respondents earned Rs. 10000-22500 annually from horticulture while more than one fourth of respondents (27.27%) had their income ranging between 22501-35000 and 10.38 per cent respondents earned Rs. 475001-60000 annually.

C. Animal husbandry based livelihood

- Majority of the respondents (60%) practiced livestock for both subsistence and commercial purpose.
- Majority of tribal families (87%) owned cows followed by buffalo (62%), goat (38%) and sheep (24%) whereas majority of the respondents (92%) were milk producer while 78 per cent respondents were making ghee also.

- Majority of the respondents (60%) sold livestock products to the neighbors and all the respondents marketed the produce on retail basis.
- Majority of the respondents (74%) preferred selling of their ruminants in the village itself directly to other livestock owners. About 75 per cent of the respondents preferred purchase of animals from their own village followed by city/town market (15%) and animal fairs/mela (10%).
- Majority of respondents (82%) devoted 4-6 hours whereas cent per cent of the respondents (100%) worked every day in a month.
- Regarding income earned by the respondents, 40 per cent tribal women earned Rs. 10000-22500 from livestock activity followed by 24 per cent respondents earning Rs. 22501-35000 and Rs. 35001-47500 and small number of respondents (12%) were earning Rs. 47501-60000 annually by selling milk, ghee and animals etc.

D. Wage based livelihood

- More than half of the respondents (54.54%) were involved in non farm labour like brick kilns, construction work and 45.45 per cent were working as farm labour.
- Less than half of the respondents (45.45%) were working as a wage labour in rabi season while more than one third of the respondents (36.36%) in kharif season and some of the respondents (18.18%) worked in zaid season as a labourer on daily wages.
- More than half of the respondents (54.54%) devoted more than 8 hours in a day while more than one third of the respondents (36.36%) devoted 4-6 hours and few of the respondents (9.09%) devoted 2-4 hours in a day.
- Half of the respondents (50%) worked for 20-30 days in a month while more than one fourth respondents (27.27%) worked for 10-20 days. Some of the respondents (9.09%) worked for the whole month.
- In case of income earned by the respondents, nearly one third of the respondents had their income ranging between Rs. 22501-35000 (33.63%) and 35001-47500, (30%) and one fourth of the respondents (25.45%) had their

income between Rs. 10000-22500 while some of the respondents (10.90%) earned Rs. 47501-60000 annually working as a wage laborer.

E. Forest based livelihood

- Majority of the respondents (75.94%) followed forest produce collection both as laborer for others and for themselves as right to collect forest produce.
- More than half of respondents (63.29%) collected forest produce in zaid season as they were not taking zaid crop on their farms.
- All the respondents collected honey, anola, date palm, spine gourd, fuel wood and dry and green fodder as a major forest produce followed by tamarind (91.13%), custard apple (88.60%), wax (75.94%), gum (63.29%), jatropha (62.02%) and aritha (36.70%).
- All the respondents sold their produce in local market and stored their items at their own home.
- Majority of the respondents (75.94%) marketed the collected forest produce in retail while rest of the respondents (24.05%) sold on wholesale basis.
- More than half of respondents (63.29%) devoted 2-4 hours while 25.31 per cent respondents devoted less than 2 hours and some of the respondents (11.39%) spent 4-6 hours in a day.
- More than half of the respondents (63.29%) worked for 1-10 days while 36.70 per cent respondents worked for 10-20 days in a month.
- Regarding income earned by the respondents, 32.91 per cent respondents earned Rs. 35001-47500 annually from forest collection while more than one fourth of respondents (27.84%) had their income ranging between Rs. 22501-35000 while some of the respondents earned Rs. 47501-60000 (22.78%) and Rs. 10000-22500 (16.45%).

F. Poultry based livelihood

- Majority of the respondents (62.5%) were involved in both subsistence and commercial poultry production, while 31.25 per cent respondents had only subsistence poultry production.
- All the respondents sold their produce like egg and meat in local market.

- All the respondents stored their poultry produce at their own home and none of them had warehouse facilities.
- Majority of the respondents (62.5%) marketed the produce on retail basis while rest of the respondents (37.5%) sold on wholesale basis.
- Majority of respondents (93.75%) devoted 2-4 hours and rest of the respondents (6.25%) devoted 4-6 hours in a day in poultry production activity.
- All the respondents worked every day in a month.
- Less than half of the respondents (46.87%) earned Rs. 22501-35000 annually from poultry production while more than one third of respondents (37.05%) had their income ranging between Rs. 35001-47500 while some of the respondents (12.05%) earned Rs. 10000-22500 and 3.12 per cent respondents earned Rs. 47501-60000 annually.

G. Business based livelihood

- Majority of the respondents (80%) had their own and rest of them (20%) had business in partnership.
- The respondents (40%) made wooden items and sold while some of the respondents (24%) were engaged in hand-made decorative items and fruits and vegetables shops and rest of the respondents (12%) selling cloth and grocery items.
- All respondents sold their products in local market and stored their items at their own home.
- Majority of the respondents (80%) marketed the products on retail basis while some of the respondents (20%) were selling on wholesale basis.
- Majority of the respondents (76%) devoted 2-4 hours and rest of them (24%) devoted 4-6 hours in a day in business based activity.
- All the respondents worked every day in a month.
- Regarding income earned by the respondents, less than half of the respondents (48%) earned Rs. 22501-35000 annually from business while 40 per cent of the respondents had their income ranging between Rs. 35001-47500 and 12 per cent respondents earned Rs. 10000-22500 annually.

3. Role of tribal women in the livelihood security of the family

- Regarding role in different livelihood activities, highest participation of tribal women was found in poultry based livelihood (84.51 MPS) with rank I followed by animal husbandry (II rank) with MPS 81.32, forest based livelihood activity (III rank) with MPS 76.14, horticulture (IV rank) and crop based livelihood (V rank) with MPS 75.85 and MPS 75.51 respectively. Wage based livelihood activity has ranked sixth with MPS 74.74 and business was ranked last with MPS 60.61.

A. Crop based livelihood

- All the respondents independently participated in management of labor, application of manure and fertilizers, cleaning and drying in post-harvest management. Majority of the respondents independently participated in harvesting, insect and pest control through indigenous method, seed/variety selection and land preparation with MPS ranging between 56-73.33.
- Majority of the respondents participated jointly with family members in insect and pest control through chemical application, household level post-harvesting processing of produce, credit/loan, threshing, winnowing, retention for sale, management of cash earned from sale of produce, retention for seed and consumption.

B. Horticulture based livelihood

- All the respondents participated independently in engagement of labor, application of manure & fertilizers and processing of produce. Cent per cent of the respondents participated jointly with family members in harvesting and marketing.
- Majority of the respondents were jointly involved in transplanting of seedling, soil treatment, maintenance of seedling, irrigation, selection of land and management of cash earned from sale of produce, land preparation, plant protection and retention for consumption, nursery bed preparation, grading and packaging with mean percent scores, ranging between 56-74.67.

C. Animal husbandry based livelihood

- All the respondents (100 MPS) were engaged independently in raising fodder, fodder storage, feed of animal, care of sick animal and excreta management.
- Majority of the respondents were jointly involved in management of cash earned (80%), breeding of animal (70%) and credit/loan (70%).

D. Wage based livelihood

- Majority of the respondents were jointly involved in selection of working hours (68.18%), distribution of responsibilities and selection of working place (59.09%).
- More than half of the respondents were jointly engaged in selection of working months and utilization of income (56.36%) and work selection (54.54%) with mean percent score ranging between 65.90 to 72.72.

E. Forest based livelihood

- Majority of the respondents participated independently in deciding method of collection (78.48%) and season of collection (74.68%), storage (74.68%), packaging (64.55%), value addition (62.02%) and processing of produce (62.02%).
- Majority of the respondents were jointly engaged in credit/loan (65.82%), place of sale (62.02%), management of cash earned (62.02%) and marketing (60.75%) with MPS ranging between 62-78.48.

F. Poultry based livelihood

- Majority of the respondents participated independently in cleaning of shed (96.87%), feed of chicks (93.75%), care of sick chicks (90.62%), poultry shed management (87.5%), manure management (81.25%), labor (78.12%), selection of site (68.75%) and purchasing of raw material (62.5%).
- Majority of the respondents were engaged jointly in management of cash earned from sale of products (68.75%), credit/loan (68.75%) and marketing (62.5%) with MPS ranging between 65.62 to 84.37.

G. Business based livelihood

- Majority of the respondents were engaged jointly with other family members in arrangement of fund, material planning, source of finance, involvement in trade work, type of material to be sold out, sale rate of products and management of cash earned from sale of produce, establishment of business, distribution of responsibilities and purchasing rate of products, marketing, selection of business activity with MPS ranging between 54 to 62.

4. Factors affecting livelihood security of the family.

A. Crop based livelihood

- Findings revealed that majority of the respondents had low access to resources such as ownership of land, irrigation water, capital, farm assets, input, labour, cash earned from sale of produce, storage facility and transportation facility with MPS ranging between 41.66-67.77.
- In case of access to technological information and information sources some of the respondents had occasional access to extension contact such as State Department of Agriculture, KVK and NGOs personnel, print media such as newspaper and magazine and electronic media such as television, radio and telephone with mean percent score ranging between 46.94-67.22.
- The respondents had sometimes access to market (30.55 MPS) and regular income (31.66 MPS).
- Regarding risk factors and risk taking ability, majority of the respondents sometimes faced market, production and finance related risk with MPS ranging between 49.16-66.66.
- Majority of the respondents were not able to take decision related to marketing of the produce, selection of products and purchase of raw material with MPS ranging between 53.88-68.88.
- Highly significant association was found between all the factors and livelihood security of the respondents. Livelihood security of the respondents was affected by the factors such as access to resources, access to technological information and information sources, market and regular income, risk factors, risk taking ability and decision making ability.

B. Horticulture based livelihood

- Findings revealed that majority of the respondents had low access to resources such as ownership of land, irrigation water, capital, farm assets, input, labour, cash earned from sale of produce, storage facility and transportation facility with MPS ranging between 41.66-77.27.
- In case of access to technological information and information sources, the respondents had occasional access to extension contact such as State Department of Agriculture, KVK and NGOs personnel, print media such as newspaper and magazine and electronic media such as television, radio and telephone with mean percent score ranging between 46.40-87.01.
- The respondents had sometimes access to market (37.66 MPS) and regular income (35.71 MPS).
- Regarding risk factors and risk taking ability, majority of the respondents sometimes faced market, production and finance related risk with MPS ranging between 31.16-61.03.
- Majority of the respondents were not able to take decision related to marketing of the produce, selection of products and purchase of raw material with MPS ranging between 38.31-44.15.
- Highly significant association was found between all the factors and livelihood security of the respondents. Livelihood security of the respondents was affected by the factors such as access to resources, access to technological information and information sources, market and regular income, risk factors, risk taking ability and decision making ability.

C. Animal husbandry based livelihood

- Findings revealed that majority of the respondents had partial access to resources such as sale and purchase of animals, fodder management, capital, input, excreta management, management of produce at commercial level, labour, cash earned from sale of produce, credit and loan, storage facility and transportation facility with MPS ranging between 72-85.
- In case of technological information and information sources, the respondents had regular access to extension contact such as State Department of

Agriculture, KVK and NGOs personnel, print media such as newspaper and magazine and electronic media such as television, radio and telephone with mean percent score ranging between 55-80.

- The respondents sometimes had access to market (56.5 MPS) and regular income (64 MPS).
- Regarding risk factors and risk taking ability, majority of the respondents sometimes faced market, production and finance related risk with MPS ranging between 44.5-61.
- Majority of the respondents were not able to take decision related to marketing of the produce, selection of products and purchase of raw material with MPS ranging between 43.5-59.5.
- Highly significant association was found between livelihood security of the respondents and all the such as access to resources, access to technological information and information sources, market and regular income, risk factors, risk taking ability and decision making ability.

D. Wage based livelihood

- Findings revealed that majority of the respondents had partial access to resources such as capital, credit and loan, transportation facility and utilization of income with MPS ranging between 39.54-59.09
- Regarding access to information sources, some of the respondents had occasional access to extension contact such as State Department of Agriculture, KVK and NGOs personnel, print media such as newspaper and magazine and electronic media such as television, radio and telephone with mean percent score ranging between 56.36-79.09.
- Findings revealed that the respondents sometimes had access to market (55.45 MPS) and regular income (35.90 MPS).
- Regarding risk factors and risk taking ability, majority of the respondents sometimes faced market, production and finance related risk with MPS ranging between 60-63.63.

- Majority of the respondents were not able to take decision related to marketing of the produce, selection of products and purchase of raw material (45-59.5MPS).
- Regarding factor affecting livelihood security of the family, highly significant association was found between livelihood security of the respondents and the factors such as access to resources, access to information sources, market and regular income, risk factors, risk taking ability and decision making ability.

E. Forest based livelihood

- Findings revealed that majority of the respondents had partial access to resources such as forest area, forest produce, inputs, labour, credit and loan, storage facility, transportation facility and cash earned from sale of produce with MPS ranging between 44.30-66.45.
- Regarding access to information sources some of the respondents had occasional access to extension contact such as State Department of Agriculture, KVK and NGOs personnel, print media such as newspaper and magazine and electronic media such as television, radio and telephone with mean percent scores ranging between 43.03-77.21.
- Findings revealed that the respondents had sometimes access to market (47.46 MPS) and regular income (58.22 MPS).
- Regarding risk factors and risk taking ability majority of the respondents sometimes faced market, production and finance related risk with MPS ranging between 45.56-51.89.
- Majority of the respondents were sometimes able to take decision related to marketing of the produce, selection of products and purchase of raw material with MPS ranging between 48.73-56.96.
- Regarding factor affecting livelihood security of the family, highly significant association was found between livelihood security of the respondents and the factors such as access to resources, access to information sources, market and regular income, risk factors, risk taking ability and decision making ability.

F. Poultry based livelihood

- Findings revealed that majority of the respondents had partial access to resources such as ownership of land, capital, credit and loan, inputs, labour storage facility, transportation facility and cash earned from sale of produce with MPS ranging between 50-89.06.
- Regarding access to technological information and information sources some of the respondents had occasional access to scientific poultry methods, extension contacts, print and electronic media with mean percent score ranging between 68.75-90.
- The respondents sometimes had access to market (56.25 MPS) and regular income (48.43 MPS).
- Regarding risk factors and risk taking ability, majority of the respondents sometimes faced market, production and finance related risk with MPS ranging between 39.06-57.81.
- Majority of the respondents were able to take decision related to marketing of the produce, selection of products and purchase of raw material sometimes only with MPS ranging between 29.68-37.05.
- Regarding factor affecting livelihood security of the family, highly significant association was found between all the factors and livelihood security of the respondents. Livelihood security of the respondents was affected by the factors such as access to resources, access to information sources, market and regular income, risk factors, risk taking ability and decision making ability.

G. Business based livelihood

- Findings revealed that majority of the respondents had partial access to resources such as ownership of shop/land, credit and loan, inputs, labour storage facility, transportation facility and cash earned from sale of produce with MPS ranging between 56-74.
- Regarding access to information sources, some of the respondents had occasional access to print and electronic media with mean percent score ranging between 82-88.

- The respondents had sometimes access to market (56 MPS) and regular income (48 MPS).
 - Regarding risk factors and risk taking ability, majority of the respondents sometimes faced market, production and finance related risk with MPS ranging between 42-50.
 - Majority of the respondents were sometimes able to take decision related to marketing of the produce, selection of products and purchase of raw material with MPS ranging between 44-54.
 - Regarding factor affecting livelihood security of the family, highly significant association was found between all the factors and livelihood security of the respondents. Livelihood security of the respondents was affected by the factors such as access to resources, access to information sources, market and regular income, risk factors, risk taking ability and decision making ability.
5. **Constraints faced by tribal women in livelihood security of the family.**
- Major constraints were faced by the respondents in business based livelihood (90.51 MPS), followed by crop based (87.14 MPS), horticulture based (86.99 MPS), poultry based (85.18 MPS), wage based (82.61 MPS), animal husbandry based (81.01 MPS) and forest based livelihood (80.24 MPS).

CONCLUSION

- Majority of the respondents had low socio economic status.
- Crop based livelihood was accounted as the primary source of income for half of the respondents. It was followed by wage based, forest based and animal husbandry based livelihood. Some of the respondents had poultry based, business based and horticulture based livelihood activities.
- Regarding the role of the respondents in different livelihood activities, highest participation of tribal women was found in poultry based livelihood followed by animal husbandry based, forest based, horticulture based, crop based and wage based livelihood. Minimum role of tribal women was found in business based livelihood.

- Regarding factor affecting livelihood security of the family, highly significant association was found between all the factors and livelihood security of the respondents. Livelihood security of the respondents was affected by the factors such as access to resources, access to technological information, market facility and economic sources, risk factors, risk taking ability and decision making ability.
- Major constraints expressed by the respondents in different livelihood activities were lack of education, lack of knowledge regarding latest technology, fluctuating demand of the products in market and distance of market for selling product, poor storage facility, difficult loan procedures and high rates of interest on loans.

RECOMMENDATIONS

1. Findings revealed that all the respondents belonged to poor income category with the present livelihood activities, so alternative sustainable source of livelihood are required. Training should be provided for different livelihood activities like fish farming, poultry farming, mushroom cultivation, rearing of bees and value addition of agriculture produce.
2. There is need to have some source of regular income in the family for which tribal women can be further linked to MGNREGA and other employment generation programme, during the slack period in agriculture.
3. Tribal women should be motivated to participate in various extension activities viz. field trips, krishi vigyan mela, exhibitions, agri clinics etc. from time to time, organized by various organizations at district, state and national levels.
4. There is need to form and stabilize tribal co-operatives and farmer producer organizations to take up dairy, poultry, fisheries, handicrafts, horticulture, agro-food processing and post-harvest technologies based on locally available opportunities
5. Since the tribal were selling the agricultural produce to the local people/shopkeeper/middlemen and their by receiving inadequate return, therefore the government should make efforts to establish marketing centers at

the village or block levels to facilitate them. In order to ensure proper market facility to the tribal women, there is need to ensure proper backward and forward linkages with government and non-government organizations/agencies.

6. Proper transportation facility should be made available so that tribal people can sell their produce in nearby city markets for ensuring sustainability of their livelihood.
7. There is need to establish small scale processing units in the tribal villages on corporative basis. For this government and non government organizations should make efforts to develop required competence among the tribal people which will help in getting maximum benefit from the available resources and generate addition employment.
8. Findings revealed that the tribals were selling the forest produce collected by them such as honey, wax, gum, date palm, aritha, jatropha, aonla, and custard apple. There is need to help them prepare value added products to increase their income.
9. As the tribal women were facing the problem of unavailability of bank facilities therefore there is a need to expand rural credit facility for ensuring easy access to them.
10. Lack of knowledge regarding latest technology was found to be a major constraint in hindering the maximum output in term of production/income in various livelihood systems. Therefore, the efforts should be made to impart knowledge among the tribals by organizing specialized on campus and off campus training.
11. As the study revealed lesser extension contacts of tribals the public services extension personnel especially the officials of State Departments of Agriculture and Integrated Tribal Development Agency need to reorient its extension staff to make them accessible to the tribals and provide round the clock guidance.
12. Low literacy among tribal people becomes barriers in credit and skilled work opportunities. Tribal should be educated and made to understand the significance of the development initiatives. Launching of special and sustained

education initiatives in low literacy tribal pockets will be effective. Teaching to tribal people in their own language (at least in primary level) and selection of teachers of same community would be more beneficial.

SUGGESTED AREAS FOR FUTURE RESEARCH

- Similar studies can be conducted with tribal people in varied locations covering more number of blocks and districts on wider samples to draw generalization for the state.
- A comparative study can be conducted between various tribal blocks of the state.
- Comparative studies can be conducted among men and women involved in different livelihood activities.

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Title: “An Analytical Study on Livelihood Security among Tribal Women of Southern Rajasthan”

ABSTRACT

The present study was undertaken with the objectives to study the livelihood pattern among tribal women of southern Rajasthan, study the role of tribal women in the livelihood security of the family, identify the factors affecting livelihood security of the family and to study the constraints faced by tribal women in livelihood security of the family. The study was conducted in Southern Rajasthan. Three district viz. Dungarpur, Udaipur and Banswara were selected on the basis of highest concentration of tribal population. Two panchayat samities were randomly selected from each district. Thus, there were total six panchayat samities selected. After selecting the panchayat samities two villages from each panchayat samiti were selected randomly. Thus, there were total 12 villages were selected. For selection of the sample, a village wise list of tribal families was prepared with the help of gram panchayat officials. From the list, 30 families from each village were selected randomly. From each family, one active woman was included in the sample. Thus, there were 120 tribal women from each district constituting a sample of 360 tribal women from the three selected districts. Interview schedule were used to collect data. Frequency, percentage, mean percent scores and chi square test were used to analyze the data.

Findings regarding socio-economic status of the respondents reveal that majority of the respondents (81.66%) were from low socio-economic status whereas 18.33 per cent of the respondents had medium and none of the respondents belonged to high socio economic status. Regarding livelihood pattern among tribal women it was found that crop based livelihood was accounted as the primary source of income for half of the respondents. It was followed by wage based (14.16%), forest based (11.94%) and animal husbandry based livelihood (8.61%). Some of the respondents had poultry based (6.38%), business based (6.38%) and horticulture based livelihood activities (2.50%).

Animal husbandry was the secondary source of income to 19.61 per cent respondents followed by horticulture based livelihood (18.88%), wage based (16.38%) and forest based (9.99 %). Poultry and business were practiced by only 2.49 and 0.54 per cent respondents respectively as secondary means of livelihood. Regarding role of tribal women in different livelihood activities, highest participation of tribal women in poultry based livelihood was observed at I rank followed by animal husbandry (Rank II), forest based livelihood activity (Rank III), horticulture (IV) and crop based livelihood activities (Rank V). Participation of tribal women in wage based livelihood activities was ranked VI followed by business at last rank. Regarding factor affecting livelihood security of the family, highly significant association was found between all the factors and livelihood security of the respondents. It can be inferred from the findings of the study that the livelihood security of the respondents was affected by the factors such as access to resources, access to technological information, market facility and economic sources, risk factors, risk taking ability and decision making ability. Major constraints expressed by the respondents in different livelihood activities were lack of education, lack of knowledge regarding latest technology, fluctuating demand of the products in market and distance of market for selling product, poor storage facility, difficult loan procedures and high rates of interest on loans.

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प्रसार शिक्षा एवं संचार प्रबन्धन विभाग

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शोध शीर्षक : "दक्षिणी राजस्थान की जनजातीय महिलाओं की आजीविका सुरक्षा पर एक विश्लेषणात्मक अध्ययन"

अनुक्षेपण

वर्तमान अध्ययन दक्षिणी राजस्थान की आदिवासी महिलाओं के बीच आजीविका स्वरूप, परिवार की आजीविका सुरक्षा में आदिवासी महिलाओं की भूमिका, परिवार की आजीविका सुरक्षा को प्रभावित करने वाले कारकों की पहचान और उनके सामने आने वाली बाधाओं का अध्ययन करने के उद्देश्यों के साथ किया गया था। यह अध्ययन दक्षिणी राजस्थान में किया गया था। जनजातीय आबादी की अधिकतम संघनता के आधार पर तीन जिले अर्थात् डूंगरपुर, उदयपुर और बांसवाड़ा का चयन किया गया था। प्रत्येक जिले से दो पंचायत समितियों का यादृच्छिक रूप से चयन किया गया। इस प्रकार, कुल छह पंचायत समितियों का चयन किया गया। पंचायत समितियों का चयन करने के बाद प्रत्येक पंचायत समिति से दो गांवों का यादृच्छिक रूप से चयन किया गया। इस प्रकार, कुल 12 गांवों का चयन किया गया था। नमूने के चयन के लिए, ग्राम पंचायत अधिकारियों के सहयोग से आदिवासी परिवारों की ग्रामवार सूची तैयार की गई। उस सूची में से प्रत्येक गांव से 30 परिवारों को यादृच्छिक रूप से चुना गया था तथा प्रत्येक परिवार से एक सक्रिय महिला को नमूने में शामिल किया गया था। इस प्रकार, प्रत्येक जिले से 120 आदिवासी महिलाएं थीं। इस प्रकार तीन चयनित जिलों से 360 आदिवासी महिलाओं को सम्मिलित किया गया था। आंकड़े एकत्र करने के लिए साक्षात्कार अनुसूची का उपयोग किया गया। आँकड़ों का विश्लेषण करने के लिए बारंबारता, प्रतिशत, माध्य प्रतिशत अंक तथा काई स्क्वायर परीक्षण का प्रयोग किया गया।

उत्तरदाताओं की सामाजिक-आर्थिक स्थिति के संबंध में यह निष्कर्ष प्राप्त हुआ कि अधिकांश उत्तरदाताओं (81.66%) निम्न सामाजिक-आर्थिक स्थिति से थे जबकि 18.33 प्रतिशत उत्तरदाताओं के पास मध्यम और उत्तरदाताओं में से कोई भी उच्च सामाजिक आर्थिक स्थिति से संबंधित नहीं था। आदिवासी महिलाओं के बीच आजीविका प्रतिरूप के संबंध में यह पाया गया कि आधे उत्तरदाताओं के लिए फसल आधारित आजीविका को आय का प्राथमिक स्रोत माना गया। इसके बाद मजदूरी आधारित (14.16%), वन आधारित (11.94%) और पशुपालन आधारित आजीविका (8.61%) किया गया।

कुछ उत्तरदाताओं द्वारा मुर्गी पालन आधारित (6.38%), व्यापार आधारित (6.38%) और बागवानी आधारित (2.50%) आजीविका गतिविधियाँ को आय का स्रोत माना गया।

पशुपालन आधारित आजीविका 19.61 प्रतिशत उत्तरदाताओं की आय का द्वितीयक स्रोत था इसके बाद बागवानी आधारित आजीविका (18.88%), मजदूरी आधारित (16.38%) और वन आधारित (9.99%)। केवल 2.49 और 0.54 प्रतिशत उत्तरदाताओं द्वारा मुर्गी पालन और व्यवसाय किया जाता था। विभिन्न आजीविका गतिविधियों में आदिवासी महिलाओं की भूमिका के संबंध में मुर्गी पालन आधारित आजीविका में जनजातीय महिलाओं की सर्वाधिक भागीदारी प्रथम श्रेणी पर देखी गई। इसके बाद पशुपालन आधारित (श्रेणी II), वन आधारित (श्रेणी III), बागवानी आधारित (श्रेणी IV) और फसल आधारित आजीविका गतिविधियाँ (श्रेणी V)। मजदूरी आधारित आजीविका गतिविधियों में आदिवासी महिलाओं की भागीदारी छोटे स्थान पर थी और उसके बाद अंतिम श्रेणी पर व्यवसाय पाया गया। परिवार की आजीविका सुरक्षा को प्रभावित करने वाले कारक के संबंध में, सभी कारकों और उत्तरदाताओं की आजीविका सुरक्षा के बीच अत्यधिक महत्वपूर्ण संबंध पाया गया। अध्ययन के परिणामों से निष्कर्ष निकला जा सकता है कि उत्तरदाताओं की आजीविका सुरक्षा, संसाधनों तक पहुंच, तकनीकी जानकारी तक पहुंच, बाजार सुविधा और आर्थिक स्रोत, जोखिम कारक, जोखिम लेने की क्षमता और निर्णय लेने की क्षमता कारकों से प्रभावित थी। विभिन्न आजीविका गतिविधियों में उत्तरदाताओं द्वारा व्यक्त की जानेवाली प्रमुख बाधाएं शिक्षा की कमी, नवीनतम तकनीक के बारे में ज्ञान की कमी, बाजार में उत्पादों की मांग में उतार-चढ़ाव और उत्पाद बेचने के लिए बाजार की दूरी, खराब भंडारण सुविधा, कठिन ऋण प्रक्रिया और ऋण पर ब्याज की उच्च दर थी।

डॉ. राजश्री उपाध्याय

मुख्य सलाहकार

आशा डागर

शोधकर्ता

SECTION I

General Background Information

1. Name and address of the respondent

W/o or D/o _____

Panchayat Samiti _____

Village _____

District _____

2. Age of the respondent

18 to 30 yrs.	31 to 45 yrs.	46 to 60 yrs.	Above 60 yrs.
(yung)	(lower middle)	(upper middle)	(old)
(1)	(2)	(3)	(4)

3. Marital status

Unmarried	Married	Widow	Divorced
(1)	(2)	(3)	(4)

4. Occupation

Non-wage Wage Earner	Wage Earner		
Earner	Farm labor	Farming	Service sector
(1)	(2)	(3)	(4)

Socio - Economic Background

A. SOCIAL FACTORS

1. Caste hierarchy

SC/ST 1.0	Backward caste 1.5	Upper-middle 2.5	Upper caste 3.5
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2. Family structure

a. Family type	Nuclear	1	
	Joint	2	
b. Family Size	Small (Up to 4 member)	0.5	
	Medium (5-8 members)	1.0	
	Large (8 and more)	1.5	

3. Family occupation

a. Main occupation	Farming (crop/dairy poultry/fish)	2.0	
	Business / Service	3.0	
	Artisan/Craftsman	1.5	
	Farm labour	1.0	
b. Subsidiary occupation	None	0	
	One only	1.0	
	Two or more	1.5	

4. Family Education

S. No.	Family members (Include respondent)	Level of Education						
		(0)	(0.5)	(1.0)	(1.5)	(2.0)	(2.5)	(3.5)
1.								
2.								
3.								
4.								
5.								
6.								

*Illiterate=0, Can read and write = 0.5, Primary school = 1.0 Middle School = 1.5, High school = 2.0, Post matric diploma = 2.5, Graduate and above = 3.5

5. Organization Membership

No Membership	0	
Member of a formal organization (Panchayat, cooperative, political etc.)	1.0	
Office bearer of formal organization	1.5	
Member of a non-formal organization (Religious, Mandalis)	1.0	
Office bearer of non-formal organization	1.5	

B. ECONOMIC FACTORS

6. Ownership of fixed assets

1.	Land holding	No land	0	
		1.0 to 2.5 acres	0.5	
		2.6 to 5.0 acres	1.0	
		5.1 to 10.0 acres	2.0	
		More than 10 acres	4.0	
2.	Housing	Kutcha house	0.5	
		Mixed house (Partially Kutcha + Pucca house)	1.0	
		Pucca house	1.5	
3.	Livestock ownership*	Small herd size	0.5	
		Medium herd size	1.0	
		Large herd size	1.5	
4.	Dwelling for livestock	Open/Nil	0	
		Thatched / Kutcha	0.5	
		Pucca	1.0	

*Livestock size: Small = 1 to 3 Milch animals or 10 small animals Medium = 4 to 6 milch animals and or 20 small animals Large= More than 6 milch animals and more than 21 small animals.

7. Farm assets

1.	Desi / Wooden plough	1.0	
2.	Improve disc plough / Bullock drawn tiller	1.0	
3.	Tractor tiller/farm machinery attachments	2.5	
4.	Land leveller/ patella	2.0	
5.	Pumpset	1.0	
6.	Hand tools	0.5	
7.	Sprayer / duster	1.0	
8.	Chaff cutter	1.0	
9.	Thresher	1.0	
10.	Winnower	1.0	
Total Score =			

8. Household assets

1.	Sanitary latrine	1.5	
2.	Biogas	2.0	
3.	Grain storage bin/improvised structure	0.5	
4.	Hand pump/water tap	1.0	
5.	Modern household furniture	1.0	

9. Media ownership

1.	Nil	0	
2.	Newspaper / magazines	1.0	
3.	Radio/transistor	2.0	
4.	Television	3.0	

10. Distinctive features

a. Transport	Nil	0	
	Bullock/Mule/Camel cart	0.5	
	Improvise cart	1.0	
	Bicycle	1.0	
	Scooter / Motor Cycle	2.0	
	Tractor trolley / four wheeler		
b. Electricity	At home	1.0	
	On farm	1.0	
c. Household items	Smokeless chullah / Kerosene stove	0.5	
	Gas stove	2.0	
	Pressure cooker	1.5	
	Improved kitchen tools (peeler, grater etc.)	1.0	
	Electrical kitchen equipment		
	1. Small equipment (fan, iron, mixer etc.)	1.5	
	2. Large equipment (cooler, washing machine, churner etc.)	2.0	
	Refrigerator	2.5	
	Sewing Machine	1.0	

11. Source of information:

S. No.	Source of information	Frequency		
		Regularly	Occasionally	Never
1.	Training programme			
2.	Field day			
3.	Field visit			
4.	Demonstration			
5.	Exhibition			
6.	Krishimela			
7.	KVK/SAUs/SHGs			
8.	Any other (specify)			

SECTION – II

Livelihood pattern among tribal women of southern Rajasthan

1. What is your livelihood option?

Crop	Horticulture	Animal Husbandry	Wage	Forest	Poultry	Business	Any other

2. Purpose of activity?

Subsistence agriculture ☐ Commercial agriculture ☐ Both ☐

3. Which of the following agriculture products do you produce?

Agriculture Products	Quantity	Selling Price(Rs)	Annual Income (Rs)	Expenditure (Rs)
1. Food grains ➤ Wheat ➤ Maize ➤ Jowar ➤ Bajra (millets) ➤ Any other				
2. Pulses ➤ Black bean ➤ Mung bean ➤ Lobia/ Chanwla ➤ Masoor ➤ Uradmogar dal ➤ Chana dal ➤ Any other				
3. Spices ➤ Garlic ➤ Turmeric ➤ Ginger				

➤ Coriander				
➤ Any other				
4. Oilseeds				
➤ Safflower seeds				
➤ Castor oil seeds				
➤ Lentil				
➤ Fennel				
➤ Groundnut				
➤ Any other				
5. Other (specify)				

- Do you sale your agricultural products? Yes/No
- 4. If sale, where do you sale?
Local market ☐ City market ☐
- 5. Which season do you grow crop products.
Rabi ☐ Kharif ☐ Zaid ☐
- 6. How much time you devote to crop product activity.
 - Less than 2 hrs
 - 2-4 hrs
 - 4-6 hrs
 - More than 8 hrs
- 7. How many days you work in a month?
- 8. Every day
- 9. 1-10 Days
- 10. 10-20 Days.
- 11. 20-30 Days.
- 12. Methods for marketing the produce.
 - Wholesale trader
 - Retail trader
 - Any Other
- 13. Where do you store your produce?
 - Household
 - Warehouses
 - Any Other

HORTICULTURE

12. What is the type of horticulture that you are practice?
Subsistence horticulture ☐ Commercial horticulture ☐ Both ☐
- What type of product you produce?

Horticulture Products	Quantity (Rs)	Selling Rate (Rs)	Annual Income (Rs)
1. Fruit			
➤ Banana			
➤ Mango			
➤ Guavas			
➤ Ber			
➤ Sugarcane			
➤ Amla			

➤ Any Other			
2. Vegetables ➤ Cauliflower ➤ Pumpkin ➤ Potato ➤ Gourd ➤ Tomato ➤ Cabbage ➤ Onion ➤ Limes ➤ Brinjal ➤ Lemon ➤ Any other			
3. Other (specify)			

13. Do you sale your products? Yes/No.

14. If sale, where do you sale?

Local market ☐

City market ☐

15. Which season do you grow crop products.

Rabi ☐

Kharif ☐

Zaid ☐

16. How much time you devote to horticulture activity.

- Less than 2 hrs
- 2-4 hrs
- 4-6 hrs
- More than 8 hrs

17. How many days you work in a month?

- Every day
- 1-10 Days
- 10-20 Days.
- 20-30 Days.

18. Methods for marketing the produce.

- Wholesale trader
- Retail trader
- Any Other

19. Where do you store your produce?

- Household
- Warehouses
- Any Other

ANIMAL HUSBANDRY

20. Are you connected with animal husbandry? Yes/No

21. If yes, what type of livestock that you are practice?

Subsistence ☐

Commercial ☐

Both ☐

22. Give details about your livestock. (Table 1)

S.no.	Livestock	Number owned	Breed
1.	Cow		
2.	Buffalo		
3.	Goat		

4.	Sheep		
5.	Piggery		
6.	Rabbit		
7.	Any Other		

Livestock	Quantity Produce	Quantity Sold	Selling Price (Rs.)	Annual Income(Rs.)	Expenditure(Rs.)
1. Cow <ul style="list-style-type: none"> • Milk • Ghee • Curd • Butter • Paneer • Cow dung • Calf (bael) 					
2. Buffalo <ul style="list-style-type: none"> • Milk • Ghee • Curd • Butter • Paneer • Meat • Buffalo dung 					
3. Goat <ul style="list-style-type: none"> • Milk • Meat • Goat dung • Goat hair 					
4. Sheep <ul style="list-style-type: none"> • Milk • Meat • Sheep dung 					
5. Piggery <ul style="list-style-type: none"> • Meat • Sow milk • Pig manure 					
6. Rabbit <ul style="list-style-type: none"> • Meat • Rabbit manure 					
7. Other (specify)					

23. How much time you devote to animal husbandry activities?

- Less than 2 hrs
- 2-4 hrs
- 4-6 hrs
- More than 8 hrs

24. Do you sale your products? Yes/No.

25. Where do you sale?

Local market ☐

City market ☐

WAGE BASED

Are you engaged in wage based activities? Yes/No

26. Type of labour practices, season

S. No	Items	Yes	No
I	Type of wage labour		
a.	Farm labour		
b.	Non farm labour		
c.	Both		
II	Season		
a.	Rabi		
b.	Kharif		
c.	Zaid		

27. How much time you devote to livestock practices?

- Less than 2 hrs
- 2-4 hrs
- 4-6 hrs
- More than 8 hrs

28. How many days you work in a month?

- Every day
- 1-10 Days
- 10-20 Days.
- 20-30 Days.

FOREST BASED

29. Are you engage in collection of forest produce? Yes/No

30. Which type of food brought from forest?

S. No.	Forest Products	Quantity	Selling Price (Rs)	Annual Income (Rs)	Expenditure (Rs)
1.	Grain				
2.	Tubers				
3.	Wood				
4.	Flowers (medicinal)				
5.	Tree fruit <ul style="list-style-type: none"> • Durian • Tamarind • Grass • Mahua • Jhadu • Jatropha 				

	<ul style="list-style-type: none"> • Alovera • Timru • Desi khajur 				
6.	Wild animals <ul style="list-style-type: none"> • Silk • Honey • Wax • Gum 				
7.	Other (specify)				

31. Do you sale forest produce? Yes/No

32. Where do you sale?

Local market ☐

City market ☐

33. Which season do you work in forest produce?

Rabi ☐

Kharif ☐

Zaid ☐

34. How much time you devote to forest based activity?

- Less than 2 hrs
- 2-4 hrs
- 4-6 hrs
- More than 8 hrs

35. How many days you work in a month?

- Every day
- 1-10 Days
- 10-20 Days.
- 20-30 Days.

36. Methods for marketing the produce.

- Wholesale trader
- Retail trader
- Any Other

37. Where do you store your produce?

- Household
- Warehouses
- Any Other

POULTRY BASED

38. Are you engaged in poultry production? Yes/No

39. Which season do you work in poultry farm?

Rabi

Kharif

Zaid

40. Purpose of poultry and produce of poultry production

S. No	Items	Yes	No
I	Purpose of poultry production		
a.	Subsistence		
b.	Commercial		
c.	Both		
II	Poultry produce		
a.	Egg		
b.	Meat		
c.	Chicken manure		

41. Place of sale, storage and marketing by the respondents in poultry based livelihood

S. No	Items	Yes	No
I	Place of sale		
a.	Local market		
b.	City market		
II	Place of storage		
a.	Household		
b.	warehouses		
III	Methods for marketing		
a.	Wholesale		
b.	Retail		

42. How much time you devote to your work.

- Less than 2 hrs
- 2-4 hrs
- 4-6 hrs
- More than 8 hrs

43. How many days you work in a month?

- Every day
- 1-10 Days
- 10-20 Days.
- 20-30 Days.

BUSINESS BASED

44. Are you engaged in Business? Yes/No

45. Type of business & items, place of storage and marketing

S. No	Items	Yes	No
I	Type of business		
a.	Individual		
b.	Partnership business		
II	Type of business items		
a.	Decorative items		
b.	Wooden items		
c.	Fruits and vegetables shops		
d.	Cloth and grocery		
III	Place of storage		
	Household		
IV	Methods for marketing		
	Wholesale		
	Retail		

46. How much time you devote to your work.

- Less than 2 hrs
- 2-4 hrs
- 4-6 hrs
- More than 8 hrs

47. How many days you work in a month?

- Every day
- 1-10 Days
- 10-20 Days.
- 20-30 Days.

SECTION – III

Role of tribal women in crop based livelihood activity

S. No	Activity	Role		
		Independent (2)	Joint with other family members (1)	Nil (0)
1.	Land preparation			
2.	Seed/variety selection			
3.	Seed treatment			
4.	Transplantation			
5.	Engagement of labor			
6.	Management of labor			
7.	Insect and pest control through			
	a. Indigenous method			
	b. Chemical application			
8.	Irrigation/water management			
9.	Weeding			
10.	Application of manure and fertilizers			
11.	Harvesting			
12.	Post-harvest management			
i.	Threshing			
ii.	Winnowing			
iii.	Cleaning			
iv.	Drying			
v.	Post-harvesting processing of produce			
	a. Household level			
	b. Commercial level			
vi.	Retention for			
	a. Consumption			
	b. Seed			
	c. Sale			
13.	Storage			
14.	Marketing of produce			
15.	Credit/loan			
16.	Management of cash earned from sale of produce			

Role of tribal women in horticulture based livelihood activity

S. No	Activity	Role		
		Independent (2)	Joint with other family members (1)	Nil (0)
1.	Selection of land			
2.	Land preparation			
3.	Nursery bed preparation			
4.	Seed sowing			
5.	Cutting/budding/grafting			
6.	Engagement of labor			
7.	Soil treatment			
8.	Maintenance of seedling			
9.	Transplanting of seedling			
10.	Irrigation			
11.	Application of manure & fertilizers			
12.	Plant protection			
13.	Harvesting			
14.	Post-harvest management			
i.	Grading			
ii.	Retention for			
	a. Consumption			
	b. Commercial purpose			
iii.	Processing of produce			
iv.	Packaging			
15.	Storage			
16.	Marketing of produce			
17.	Credit/loan			
18.	Management of cash earned from sale of produce			

Role of tribal women in animal husbandry based livelihood activity

S. No	Activity	Role		
		Independent (2)	Joint with other family members (1)	Nil (0)
1.	Fodder management			
	a. Raising fodder			
	b. Procuring fodder			
	c. Fodder storage			
	d. Feed of animal			
2.	Care of livestock			
3.	Cattle shed management			

4.	Management of labor			
5.	Care of sick animal			
6.	Breeding of animal			
7.	Excreta management			
8.	Milking of the animals			
9.	Marketing of produce			
10.	Credit/loan			
11.	Management of cash earned			

Role of tribal women in wage based livelihood activity

S. No	Activity	Role		
		Independent (2)	Joint with other family members (1)	Nil (0)
1.	Work selection			
2.	Distribution of responsibilities			
3.	Selection of working months			
4.	Selection of working hours			
5.	Selection of working place			
6.	Working as labour			
7.	Management of cash earned			

Role of tribal women in forest based livelihood activity

S. No	Activity	Role		
		Independent (2)	Joint with other family members (1)	Nil (0)
1.	Assessment of forest resources			
2.	Distribution of responsibilities			
3.	Season of collection			
4.	Method of collection			
5.	Time of collection			
6.	Items and amount of collection			
7.	Use of forest produce for consumption			
8.	Place of sale			
9.	Sale rate of products			
10.	Processing of produce			
11.	Value addition			
12.	Packaging			
13.	Storage			
14.	Marketing			
15.	Credit/loan			
16.	Management of cash earned			

Role of tribal women in poultry based livelihood activity

S. No	Activity	Role		
		Independent (2)	Joint with other family members (1)	Nil (0)
1.	Selection of site			
2.	Feed of chicks			
3.	Poultry shed management			
4.	Management of labor			
5.	Care of sick chicks			
6.	Manure management			
7.	Cleaning of shed			
8.	Purchasing of raw material			
9.	Marketing			
10.	Credit/loan			
11.	Management of cash earned			

Role of tribal women in business based livelihood activity

S. No	Activity	Role		
		Independent (2)	Joint with other family members (1)	Nil (0)
1.	Selection of business activity			
2.	Establishment of business			
3.	Material planning			
4.	Source of finance			
5.	Arrangement of fund			
6.	Involvement in trade work			
7.	Distribution of responsibilities			
8.	Marketing			
9.	Type of material to be sold out			
10.	Sale rate of products			
11.	Purchasing rate of products			
12.	Saving and asset creation			
13.	Credit/loan			
14.	Management of cash earned			

SECTION – IV

Factors affecting livelihood security of the family

CROP BASED LIVELIHOOD

S. No	Factors	Complete (2)		Partial (1)		Not at all (0)	
		f	%	f	%	f	%
A	Access to resources						
1.	Ownership of land						
2.	Irrigation water						
3.	Capital						
	a. Loan						
	b. Saving						
4.	Farm assets						
	a. Tractor						
	b. Tools and implements						
5.	Input						
	a. Planting material						
	b. Improved seed/ varieties						
	c. Fertilizers						
	d. Machinery						
6.	Pest management						
	a. Chemical application						
	b. Indigenous method						
7.	Labour						
	a. Family labourer						
	b. Hired labourer						
8.	Cash earned from sale of produce						
9.	Storage facility						
10.	Transportation facility						
B							
		Regular		Occasional		Never	
I.	Scientific farming methods						
II.	Extension contact						

	a. State department of agriculture						
	b. KVK personnel						
	c. NGOs personnel						
III.	Mass media exposure						
	Print media						
	a. Newspaper						
	b. Magazine						
IV.	Electronic media						
	a. Television						
	b. Radio						
	c. Telephone						
C	Access to market	Always		Sometimes		Never	
	a. Constant demand						
	b. Stable price						
D	Access to regular income						
E							
	a. Production risk						
	b. Marketing risk						
	c. Financial risk						
F							
	a. Use improve methods and practices						
	b. Take loan for livelihood activities						
	c. Produce new products						
G							
	a. Selection of products						
	b. Purchas of raw material						
	c. Marketing of the produce						

HORTICULTURE BASED LIVELIHOOD

S. No	Factors	Complete (2)		Partial (1)		Not at all (0)	
		f	%	f	%	f	%
A	Access to resources						
1.	Ownership of land						
2.	Irrigation water						
3.	Capital						
	a. Loan						
	b. Saving						
4.	Farm assets						
	a. Tractor						
	b. Tools and implements						
5.	Input						
	a. Planting material						
	b. Improved seed/ varieties						
	c. Fertilizers						
	d. Machinery						
6.	Insecticides / pesticides						
	a. Chemical application						
	b. Indigenous method						
7.	Labour						
	a. Family labourer						
	b. Hired labourer						
8.	Cash earned from sale of produce						
9.	Storage facility						
10.	Transportation facility						
B							
		Regular		Occasional		Never	
I.	Scientific farming methods						
II.	Extension contact						
	a. State department of agriculture						
	b. KVK personnel						
	c. NGOs personnel						

III.	Mass media exposure							
	Print media							
	a. Newspaper							
	b. Magazine							
IV.	Electronic media							
	a. Television							
	b. Radio							
	c. Telephone							
C	Access to market	Always	Sometimes	Never				
	a. Constant demand							
	b. Stable price							
D	Access to regular income							
C	Risk factors							
	a. Production risk							
	b. Marketing risk							
	c. Financial risk							
F	Risk taking ability							
	a. Use improve methods and practices							
	b. Take loan for livelihood activities							
	c. Produce new products							
G	Decision making ability							
	a. Selection of products							
	b. Purchase of raw material							
	c. Marketing of the produce							

ANIMAL HUSBANDARY BASED LIVELIHOOD

S. No	Factors	Complete (2)		Partial (1)		Not at all (0)	
		f	%	f	%	f	%
A	Access to resources						
1.	Sale and purchase of livestock						
	a. No. of animals be purchased / sold						
	b. Selection of animal breed						
2.	Fodder management						
	a. Procuring fodder						
	b. Raising fodder						
	c. Storage of fodder						
	d. Feed of animal						
	e. Purchase of cattle feed						
3.	Capital						
	a. Loan						
	b. Saving						
4.	Input						
	a. Cattle shed						
	b. Machinery						
	c. Milking utensil						
	d. Cleaning equipment						
	e. Drying shed						
5.	Excreta management						
	a. Fresh excreta						
	b. Processed excreta						
6.	Labour						
	a. Family labourer						
	b. Hired labourer						
7.	Storage facility						
8.	Transportation facility						
9.	Cash earned from sale of produce						

B							
I.	Scientific livestock methods	Regular		Occasional		Never	
	a. Fodder preservation methods						
	b. Improved breed						
	c. Advance milking methods						
	d. Cattle immunization and vaccination						
II.	Extension contact						
	a. State department of agriculture						
	b. KVK personnel						
	c. NGOs personnel						
III.	Mass media exposure						
	Print media						
	a. Newspaper						
	b. Magazine						
IV.	Electronic media						
	a. Television						
	b. Radio						
	c. Telephone						

WAGE BASED LIVELIHOOD

S. No	Factors	Complete (2)		Partial (1)		Not at all (0)	
		f	%	f	%	f	%
A	Access to resources						
1.	Capital						
	a. Loan						
	b. Saving						
2.	Transportation facility						
3.	Utilization of income						
B							
I.	Extension contact	Regular		Occasional		Never	
	a. State department of agriculture						
	a. KVK personnel						
	b. NGOs personnel						
II.	Mass media exposure						
	Print media						
	a. Newspaper						
	b. Magazine						
III.	Electronic media						
	a. Television						
	b. Radio						
	c. Telephone						
C	Access to market	Always		Sometimes		Never	
	a. Constant demand						
	a. Stable wages						
D	Access to regular income						
E	Risk factors						
	a. Occupational health hazards						
	b. Financial risk						
F	Risk taking ability						
	a. Take loan for livelihood activities						
G	Decision making ability						
	a. Selection of working place						
	b. Selection of working months						
	c. Selection of working hours						

FOREST BASED LIVELIHOOD

S. No	Factors	Complete		Partial		Not at all	
		f	%	f	%	f	%
A	Access to resources						
1.	Forest area						
2.	Forest produce						
3.	Input						
a.	Collecting equipment						
b.	Machinery						
4.	Labour						
a.	Family labourer						
b.	Hired labourer						
5.	Credit and loan						
6.	Storage facility						
8.	Transportation facility						
9.	Cash earned from sale of produce						
B							
I.	Extension contact	Regular		Occasional		Never	
a.	State department of agriculture						
b.	KVK personnel						
c.	NGOs personnel						
II.							
a.	Newspaper						
b.	Magazine						
III.							
a.	Television						

b.	Radio						
c.	Telephone						
C	Access to market	Always		Sometimes		Never	
a.	Constant demand						
b.	Stable price						
D	Access to regular income						
E	Risk factors						
a.	Marketing risk						
b.	Finance risk						
F	Risk taking ability						
a.	Take loan for livelihood activities						
G	Decision making ability						
	a. Selection of products						
	b. Selection of working hours						
	c. Marketing of the products						

POULTRY BASED LIVELIHOOD

S. No	Factors	Complete (2)		Partial (1)		Not at all (0)	
		f	%	f	%	f	%
A	Access to resources						
1.	Ownership of land						
2.	Capital						
	Loan						
	Saving						
3.	Input						
	a. Improved poultry breeds						
	b. Poultry feed						
	c. Tool and machinery						
4.	Labour						
	a. Family labourer						
	b. Hired labourer						
5.	Storage facility						
6.	Transportation facility						
7.	Cash earned from sale of products						
B							
I.	Scientific poultry methods	Regular		Occasional		Never	
	a. Breeding						
	b. Feeding						
	c. Health management						
II.	Extension contact						
	a. State department of agriculture						
	b. KVK personnel						
	c. NGOs personnel						
III.	Mass media exposure						
	Print media						
	a. Newspaper						

	b. Magazine						
IV.	Electronic media						
	a. Television						
	b. Radio						
	c. Telephone						
C	Access to market	Always		Sometimes		Never	
	a. Constant demand						
	b. Stable price						
D	Access to regular income						
E	Risk factors						
	a. Production risk						
	b. Marketing risk						
	c. Finance risk						
F	Risk taking ability						
	a. Use improve methods and practices						
	b. Take loan for livelihood activities						
	c. Produce new products						
G	Decision making ability						
	a. Selection of products						
	b. Purchasing of raw material						
	c. Marketing of the produce						

BUSINESS BASED LIVELIHOOD

S. No	Factors	Complete (2)		Partial (1)		Not at all (0)	
		f	%	f	%	f	%
A	Access to resources						
1.	Ownership of shop/ land						
2.	Capital						
	a. Loan						
	b. Saving						
3.	Input						
	a. Infrastructure						
	b. Equipment						
	c. Machinery						
4.	Labour						
	a. Family labourer						
	b. Hired labourer						
5.	Storage facility						
6.	Transportation facility						
7.	Cash earned from sale of products						
B							
		Regular		Occasional		Never	
I.	Mass media exposure Print media						
	a. Newspaper						
	b. Magazine						
II.	Electronic media						
	a. Television						
	b. Radio						
	c. Telephone						

C	Access to market	Always		Sometimes		Never	
	a. Constant demand						
	b. Remunerative price						
D	Access to regular income						
E	Risk factors						
	a. Marketing risk						
	b. Finance risk						
F	Risk taking ability						
	a. Use improve methods and practices						
	b. Take loan for livelihood activities						
	c. Produce new products						
G	Decision making ability						
	a. Selection of products						
	b. Purchasing of raw material						
	c. Marketing of the produce						

SECTION – V

Constraints faced by the tribal women in livelihood security of the family

S.N.		Degree of severity		
I	CROP PRODUCTION BASED			
A	Personal constraints	To a great extent (2)	To some extent (1)	Not at all (0)
1.	Lack of education			
2.	Lack of motivation			
3.	Lack of scientific orientation			
4.	No risk bearing capacity			
5.	Non-cooperation of family members			
6.	Excess of social responsibilities			
7.	Health problems			
8.	Lack of decision making capabilities			
9.	Heavy workload			
10.	Lack of enthusiasm to adopt new technology related to crop production			
B	Technical constraints			
11.	Lack of technical guidance			
12.	Lack of knowledge regarding latest technology			
13.	Lack of timely technical inputs			
14.	Unavailability of improved varieties			
15.	Lack of proper training about tools and implements			
C	Operational constraints			
16.	Lack of transportation facilities			
17.	Long distance of the market			
18.	Inefficient arrangement for marketing & sale			
19.	High fluctuation in demands of produce			
20.	Unavailability of tools			
21.	Long unproductive period			
D	Economic constraints			
22.	High rates of interest on loans			
23.	Low credibility of source of purchasing			
24.	Lack of loan facilities			
25.	Poor production			
26.	More price of tools after subsidized rates			
27.	Lack of market information			
	HORTICULTURE BASED			
A	Personal constraints			
1.	Non-cooperation of family members			
2.	Health problem			

3.	No risk bearing capacity			
4.	Lack of experience			
5.	Excess of social responsibilities			
6.	Heavy workload			
7.	Lack of education			
8.	Lack of decision making capabilities			
9.	Lack of motivation			
10.	Lack of enthusiasm to adopt new technology related to horticulture production			
11.	Lack of scientific orientation			
B	Technical constraints			
12.	Lack of technical guidance			
13.	Lack of timely technical inputs			
14.	Lack of proper training about tools and implements			
15.	Lack of knowledge regarding latest technology			
16.	Unavailability of improved varieties			
C	Economic constraints			
17.	High rates of interest on loans			
18.	Lack of market information			
19.	Low-credibility of source of purchasing			
20.	More price of tools after subsidized rates			
21.	Poor production			
22.	Lack of loan facilities			
D	Operational constraints			
23.	Long unproductive period			
24.	Unavailability of tools			
25.	Long distance of the market			
26.	Inefficient arrangement for marketing & sale			
27.	Lack of transportation facilities			
28.	High fluctuation in demands of produce			
	ANIMAL HUSBANDRY BASED			
A	Personal constraints			
29.	No risk bearing capacity			
30.	Lack of decision making capabilities			
31.	Excess of social responsibilities			
32.	Lack of scientific orientation			
33.	Lack of enthusiasm to adopt new technology related to horticulture production			
34.	Lack of motivation			
35.	Heavy workload			
36.	Health problem			
37.	Non-cooperation of family members			
38.	Lack of education			
39.	Lack of experience			
B	Technical constraints			

40.	Lack of information about government programmes and facilities provided for cattle keepers			
41.	Insufficient knowledge of the important management practices like deworming, castration			
42.	Lack of knowledge about scientific method of milking			
43.	Lack of knowledge about cattle diseases and their control			
44.	Inadequate knowledge of breeding practices			
45.	Lack of knowledge regarding dairy innovations			
C	Operational constraints			
46.	Non availability of improved fodder seed			
47.	Lack of retail fodder shop			
48.	Non availability of improved fodder seed			
49.	Unavailability of land for green fodder production			
50.	Long distance of the market			
51.	Lack of transportation facilities			
52.	Distance and location of veterinary centres			
53.	Lack of educational programme on cattle rearing			
54.	Lack of veterinary hospital and health centres			
55.	Inefficient arrangement for marketing & sale			
D	Economic constraints			
56.	Lack of credit facilities for purchase of cattle feed and mineral mixture			
57.	High cost of concentration			
58.	High cost of veterinary medicines			
59.	High fluctuation in demands of produce			
60.	High cost of cross bred cattle			
61.	Unavailability of bank facilities for loan			
	WAGE BASED			
A	Personal constraints			
62.	Lack of experience			
63.	Lack of decision making capabilities			
64.	Excess of social responsibilities			
65.	Lack of motivation			
66.	Health problem			
67.	Non-cooperation of family members			
68.	Lack of education			
69.	Lack of scientific orientation			
70.	Heavy workload			
71.	No risk bearing capacity			
B	Technical constraints			

72.	Lack of information about government programmes and facilities			
73.	Lack of knowledge about wages			
74.	Lack of knowledge about labour schemes and rights			
75.	Inadequate knowledge of working place			
76.	Lack of knowledge regarding health insurance schemes			
C	Operational constraints			
77.	Lack of transportation facilities			
78.	Long distance of work place			
79.	Discrimination at workplace			
80.	Lack of maternity leaves			
81.	Lack of hospital and health centres around the working place			
82.	Job insecurity			
83.	Lack of child care facility at work place			
D	Economic constraints			
84.	Lack of credit facilities			
85.	Fluctuation in salary and daily wages			
86.	High cost of medical treatments			
	FOREST BASED			
A	Personal constraints			
87.	Lack of experience			
88.	Lack of scientific orientation			
89.	Excess of social responsibilities			
90.	Non-cooperation of family members			
91.	Heavy workload			
92.	Lack of education			
93.	Health problem			
94.	Lack of enthusiasm to adopt new technology			
95.	Lack of motivation			
96.	No risk bearing capacity			
97.	Lack of decision making capabilities			
B	Technical constraints			
98.	Lack of knowledge about scientific method of collection			
99.	Lack of knowledge regarding new technology in forest produce collection			
100.	Inadequate knowledge of value addition practices			
C	Operational constraints			
101.	Long distance and location of forest			
102.	Lack of transportation facilities			
103.	Forest animal attack			
104.	Non availability of tool and machinery for			

	collecting forest products			
105.	Lack of market facilities in/around the village			
106.	Non availability of storage facilities			
107.	Non availability of processing unit			
108.	Inefficient arrangement for selling & purchasing			
D	Economic constraints			
109.	High commission of middle men			
110.	High fluctuation in demands of produce			
111.	Lack of credit and loan facilities			
112.	Fluctuation in selling price of products			
113.	Unavailability of bank facilities for loan			
114.	High transportation cost			
	POULTRY BASED			
A	Personal constraints			
115.	Lack of education			
116.	Excess of social responsibilities			
117.	Lack of experience			
118.	Heavy workload			
119.	No risk bearing capacity			
120.	Health problem			
121.	Non-cooperation of family members			
122.	Lack of decision making capabilities			
123.	Lack of enthusiasm to adopt new technology			
124.	Lack of scientific orientation			
125.	Lack of motivation			
B	Technical constraints			
126.	Lack of information about government programmes and facilities provided for poultry production			
127.	Lack of knowledge about identification of improved poultry breeds			
128.	Lack of technical guidance			
129.	Lack of knowledge about poultry production			
C	Operational constraints			
130.	High mortality of chicks			
131.	Difficulty in taking care of poultry unit			
132.	Time consuming activity			
133.	Non availability of market at local level			
134.	Creates bad smell in surrounding area			
135.	Non availability of qualitative poultry feed			
136.	Lack of space			
137.	Breaking of eggs			
138.	Lack of regular transportation facility			
139.	Difficult to protect from diseases in rainy season			

140.	High mortality of chicks			
D	Economic constraints			
141.	Fluctuation in prices of poultry products			
142.	Unavailability of bank facilities for loan			
143.	High cost of transportation			
144.	High cost of electricity			
145.	Costly technology			
	BUSINESS BASED			
A	Personal constraints			
146.	Lack of experience			
147.	Heavy workload			
148.	Health problem			
149.	No risk bearing capacity			
150.	Lack of scientific orientation			
151.	Lack of motivation			
152.	Lack of education			
153.	Excess of social responsibilities			
154.	Lack of decision making capabilities			
155.	Non-cooperation of family members			
B	Technical constraints			
156.	Lack of knowledge about new business license			
157.	Lack of guidance			
C	Operational constraints			
158.	High fluctuation in demands of produce			
159.	Inefficient arrangement for marketing & sale			
160.	Lack of space			
161.	Interruption in power supply			
162.	Long distance of the market			
163.	Lack of transportation facilities			
164.	Lack of organized and regular market			
165.	Shortage of raw materials			
166.	Poor storage facilities			
D	Economic constraints			
167.	Poor returns to investment			
168.	High cost of transportation			
169.	High cost of electricity			
170.	High investment			
171.	Unavailability of bank facilities for loan			