

## **CHAPTER II**

### **REVIEW OF LITERATURE**

An inclusive review of literature is of vital importance to any research endeavor, as it not only gives an idea of the work done in the earlier period and assist in the description of the problem area but also provides the basis for interpretation and discussion of findings. It acts as a torchbearer for the researcher to get an insight into methods and procedures. Review of literature helps to identify the research gaps in research and to document the events related to particular aspects of the investigation. An acquaintance with earlier relevant studies has been felt necessary to develop a good understanding of the study. The thesis work is concerned with “EXTENT OF FARMERS’ SATISFACTION FROM SERICULTURAL EXTENSION SERVICES: A COMPARATIVE STUDY AMONG THE SILKWORM REARERS OF ASSAM AND KARNATAKA”. Hence, the efforts were made to review the related literature, which was found to be meaningful and having a direct and indirect bearing on the study and furnished under the following heads.

2.1 Profile characteristics of the farmers

2.2 Level of satisfaction of farmers from extension services

2.3 Problems and difficulties faced by the silkworm rearers

#### **2.1 Profile characteristics of the respondents**

##### **2.1.1 Age**

Uddin *et al.* (2008) study revealed that majority (48.35 %) of the respondents belonged to the category of old aged (29-35 years) followed by (27.47 %) middle aged (23-30 years) category and rest (24.17 %) of the respondents belonged to the young aged (15-22 years) category.

Altarawneh *et al.* (2012) study results showed that the majority of the respondents were in the age group of 40-60 years which was 58.00 per cent, followed by 17.00 per cent who were in the age group of fewer than 40 years and 25.00 per cent were in the group of more than 60 years age group.

Arcas-Lario *et al.* (2014) study observed that most of the respondents were in the age of 60 years and an average of 18 years as cooperative members.

Ommani and Noorivandi (2014) study revealed that the majority of the farmers were 40-50 years old (30.32 %).

Ganpat *et al.* (2014) study results found that over half of the respondents (54.00 %) were older than 50 years; 39.00 per cent were 31-50 years old and a small percentage (7.00 %) was 18-30 years old.

Nishi and Kumar (2016) study findings showed that the average age of the members was about 40 years and the majority of them *i.e.*, 70.00 per cent belonged to middle age group having age of between 31 to 50 years. A small number of respondents (18.75 %) were young below 31 years of age, followed by 9.00 per cent of respondents in the old age (>50 years) group.

Rathod *et al.* (2016) study reports showed that about 71.00 per cent belonged to middle age group, followed by 16.00 per cent from the young age group and 13.00 per cent were from the old age group.

Luo and Timothy (2017) study results showed that the majority of the respondent's age group was 31-50 years (44.65 %), 51-65 years (44.2 %) and the 16-30 years old age groups were only 11.2 per cent.

Ganpat *et al.* (2017) study findings showed that 50.00 per cent of the farmers belonged to the age group of below 50 years followed by 50.00 per cent of the farmers were belonged to the age group of more than 50 years.

Ranjan *et al.* (2018) study revealed that the majority (68.33 %) of the farmers in the working area J K trust were from the middle age category followed by old age (13.33 %), and rest (3.33 %) of the respondents were from young age group whereas in the working area of BAIF, the majority (60.00 %) of the dairy farmers were from old age group followed by middle age (36.6 %) group and the rest (3.33 %) of the farmers were from young age group.

Aydogdu *et al.* (2018) study found that majority of the respondents age group were between 41-55 years followed by 31.5 per cent of the respondents age group between 30-40 years, 15.6 per cent of the respondents were above 56 years and rest (8.6 %) of the respondents were below 29 years.

Sugiarto *et al.* (2019) study report showed that most of the farmers (90%) were of a productive range of age between 20-59 years old and rest (10.00 %) of the farmers were more than 60 years old.

Prasertsang *et al.* (2020) study results revealed that majority (34.5 %) of the respondents were 31-40 years group followed by 25.2 per cent of the respondents who belonged to each 41-50 years group and less than 30 years group, and rest (15.2 %) of the respondents were above 50 years.

Yarazari (2020) study results showed that majority (74.00 %) of the respondents belonged to the middle aged category (36-56 years) followed by young (up to 35 years) age group (20.67 %) and rest (5.33 %) of the respondents belonged to the category of above 56 years age group.

### **2.1.2 Educational level**

Uddin *et al.* (2008) study revealed that majority (53.84 %) of the respondents had secondary education followed by primary school (24.17 %), higher secondary and above (10.98 %) and remaining (5.45 %) of the respondents was semi-literate and illiterate.

Altarawneh *et al.* (2012) study results showed that the majority of the respondents were college graduates (37 percent) followed by 28 percent who had primary education, 18.00 per cent were illiterates and 17.00 per cent of the respondents had secondary education.

Ganpat *et al.* (2014) study reported that most of the farmers (58%) attained primary level education followed by 27 percent had completed secondary education, 10 percent possessed tertiary education, and rest (5 percent) of the farmers attained certificate level education.

Arcas-Lario *et al.* (2014) study observed that most of the respondents' level of education was low, 42.00 per cent of members completed their studies with primary education and 40.00 per cent did not even complete that level of studies. About 15.00 per cent of members completed secondary education, 9.00 per cent in general education, and 6.00 per cent in vocational education. Only 2.00 per cent of the cooperative members had a university degree.

Ommani and Noorivandi (2014) study revealed that the majority of the farmers had high school degree status.

Debnath *et al.* (2016) study indicated that majority (46.67 %) of the respondents possessed medium education followed by low (43.33 %) and remaining (10.00 %) respondents possessed higher educational qualification.

Nishi and Kumar (2016) study findings showed that the highest percentage (42.50 %) of educational qualification of the respondents were having formal education up to matriculation, followed by 25.00, 12.50, 10.00, 6.25, and 3.75 per cent having middle, primary, no formal schooling, graduate or above the intermediate level of education, respectively.

Rathod *et al.* (2016) study results showed that about 37.33 per cent of the respondents possessed higher schooling followed by 29.33 per cent in the college level category and 20.67 per cent were illiterate.

Ganpat *et al.* (2017) study finding showed that most farmers (54 %) had primary/low education or no formal education followed by 33.00 per cent of the farmers had the secondary educational qualification and very few farmers (13.00 %) had higher secondary education.

Luo and Timothy (2017) study findings revealed that 54.4 per cent of the rural residents had a secondary education, 34.7 per cent had achieved less than primary education to the respondents, and rest 10.9 per cent of the respondents had obtained degree or higher-level education.

Ranjan *et al.* (2018) study revealed that the majority of the farmers in the working area J K trust were educated up to middle school, whereas in the working area of BAIF, the majority of the dairy farmers can read and write.

Aydogdu *et al.* (2018) study found that farmers education was as follows, 11.9 per cent were literate without being graduated from any schools, 48.2 per cent graduated from primary school, 16.4% secondary school, 16.2 per cent high school, and 7.3 per cent university graduates.

Sugiarto *et al.* (2019) study revealed that most of the farmers were having high school education (58 %) followed by secondary school (18.00 %), primary school (16.00 %) and rest of the respondents had higher education (8.00 %).

Prasertsang *et al.* (2020) study revealed that the majority of the respondents had received the either secondary (39.00 %) or primary (31.7 %) education, while 22.00 per cent of the respondents were illiterates. Only a few numbers of respondents 7.2 per cent had an education higher than the secondary level.

Yarazari (2020) study revealed that majority (46.66 %) of the farmers had their education up to primary level followed by 42.00 per cent of the farmers had

completed secondary education, 6.67 per cent of the farmers were illiterate and rest (4.67 %) of the farmers had completed their graduation.

### **2.1.3 Farming experience**

Balakrishnappa and Rajan (2010) study results showed that large farmers had more farming experience (13.41 years) than the medium (12.57 years) farmers and small (11 years) farmers.

Goswami *et al.* (2015) study revealed that majority (41.01 %) of the respondents had 10-15 years farming experience in muga culture followed by 29.09 per cent of the respondents had more than 15 years farming experience, 20.91 per cent of the respondents had 5-10 years farming experience and rest 8.18 per cent of the respondents had 0-5 years farming experience in muga culture.

Debnath *et al.* (2016) study result showed that majority of the clientele had medium (36.67 %) and low (36.67 %) farming experience and 26.67 per cent of the clientele had higher farming experience.

Ranjan *et al.* (2018) this study revealed that the majority of the farmers in the working area of BAIF were having more than 10 years of farming experience.

Aydogdu *et al.* (2018) study results showed that majority (38.00 %) of the farmers had (11-20 years) in farming experience followed by 24.00 per cent of the farmers had (21-30 years) farming experience, 21.4 per cent of the farmers had less than 10 years farming experience and the rest (16.5 %) of the farmers had more than 31 years farming experience.

Sugiarto *et al.* (2019) study revealed that half (50.00 %) of the respondents had farming experience of (0-5 years) followed by 36.00 per cent of the respondents had more than 10 years farming experience and rest (14.00 per cent) of the respondents had (6-10 years) farming experience.

Yarazari (2020) study revealed that majority (52.00 %) of the respondents had more than 10 years farming experience followed by 30.00 per cent of the respondents had 0-5 years farming experience and the rest (17.33 %) of the respondents had 5-10 years farming experience in muga silkworm rearing.

#### **2.1.4 Family size**

Uddin *et al.* (2008) study revealed that majority (58.24 %) of the farmers had medium size of family having 5-8 members followed by small size (24.17 %) and rest (17.58 %) of the farmers had large family size (9-12 members).

Mech and Ahmed (2012) study reported that under the family most of the women belonged to the nuclear family comprised of five to eight members.

Sudha and Gandhimathi (2015) reported that the marginal, small, and medium farmers had a large family size that constituted six members in the family.

Sonowal *et al.* (2016) study reported that the majority (57.50 %) of the eri farmers belonged to medium size of a family in the Jorhat district of Assam.

Sadangi (2016) study results showed that only 88 families (38.66 %) of the total sample were found living jointly and the majorities (63.66 %) were in nuclear family. The family size of 5-6 members was found to an extent of 39.58 per cent.

Luo and Timothy (2017) study findings showed that 11.7 per cent of the respondents were having more than seven members in the family.

Pegu (2018) conducted a study in the Lakhimpur district of Assam and results revealed that the majority (52.50 %) of the farmers belonged to the medium-sized families followed by small-sized families (27.50 %), and large-sized families (20 %).

Prasertsang *et al.* (2020) study results revealed that the household size is varied between two to twelve persons in a house and the average numbers of members in a household was five persons.

Yarazari (2020) study results shows that majority (80.67 %) of the farmers had medium size (4-5 members) of family followed by small size (up to 3 members) family and rest (8.00 %) of the farmers had big size (above 5 members) family.

#### **2.1.5 Labour availability within the household**

Pandey *et al.* (2010) conducted a study that Muga rearing requires high family labour to complete different works at different stages. The Muga rearers were having a relatively large family size and were having more male members which made it possible to support the labour intensive Muga culture more efficiently.

Wakhet (2013) conducted a study in the Tinsukia district of Assam, result showed that 53.33 per cent of the respondents had 1-3 family members engaged as labour

in paddy cultivation followed by 43.33 per cent of the respondents had 4-6 family members engaged as labour, rest (3.34 %) of the farmers had 7-9 family members engaged as labour.

Dewangan (2016) conducted a study in Tamnar block, the numbers of working members in 62 families were two members, 31 families' three members, in 3 families' four members and in 4 families five members were working. It was evident through the analysis that three members were involved in the occupation from the average families.

Yarazari (2020) results revealed that the Muga silkworm is reared in outdoor condition and the farmers need to have a lot of skills to conduct Muga silkworm rearing effectively. Male persons were highly skilled and well experienced in Muga culture hence, their involvement was also high.

#### **2.1.6 Annual family income**

Manju (1997) conducted a study in the Belagavi district of Karnataka; the results revealed that the majority 73.33 per cent of sericulturists belonged to the medium-income category followed by high 14.16 per cent of income category.

Suneeldutt and Chole (2002) study revealed that 66.25 per cent of sericulturists fall under the category of high-income group followed by medium (30.00 %) and low (3.75 %) income group.

Shashidham (2003) study results showed that 42.44 per cent of respondents belonged to a medium level of income and in the low category, 30.00 per cent of respondents were noticed, whereas 27.70 per cent of the farmers belonged to high-income group.

Suresh (2004) study revealed that most of the respondents were in the medium-income category with 80.33 per cent followed by the high and low-income group viz., 15.00 per cent and 4.17 per cent, respectively.

Uddin *et al.* (2008) study found that majority (51.64 %) of the respondents had medium family annual income followed by low (36.26 %) and high (15.38 %) family income.

Rathod *et al.* (2016) study findings revealed that 69.34 per cent of the respondents were under the medium income category followed by low (20.33 %) income and higher (10.33 %) level income category.

Debnath *et al.* (2016) study result showed that majority (56.67 %) of the clientele had low annual income followed by medium (41.67 %) and rest (1.67 %) of the farmers had high annual income.

Luo and Timothy (2017) study results showed that the income from agriculture was measured, 65.00 per cent of the respondents earn less than 5000 yuan from farming, 21.7 per cent earn between 5000-10,000 yuan, and only 13.3 per cent of the respondents earned more than 10,000 yuan.

Ranjan *et al.* (2018) study revealed that the majority of the farmers in the working area J K trust were having a monthly annual income of Rs. 1000-5000, whereas in the working area of BAIF, the majority of the dairy farmers were having a monthly income of Rs. 5001-10,000.

Yarazari (2020) study revealed that majority (49.33 %) of the farmers had low family income (Rs. 30,000-40,000) followed by 26.67 per cent medium (Rs. 40,000-60,000) and 24.00 per cent high income (Rs. more than 60,000) from muga culture.

#### **2.1.7 Size of operational landholding**

Uddin *et al.* (2008) study revealed that majority (43.95 %) of the respondents had small size of operational land holding followed by medium (37.36 %), large (12.08 %) and rest (6.59 %) of the respondents had marginal size of operational land holdings.

Ganpat *et al.* (2014) reported that a significant portion of the respondents (68.00 %) owned 1-5 acres of land, 15.00 per cent possessed less than 1 acres of land, 12.00 per cent owned between 6-10 acres of land, and 5.00 per cent owned more than 10 acres of the land.

Debnath *et al.* (2016) study results showed that majority (41.67 %) of the respondents had small land holdings followed 30.00 per cent of the respondents had semi-medium landholding, 25.00 per cent of the respondents had marginal landholdings, 3.33 per cent of the respondents had medium landholding and none of the respondents had large landholdings.

Rathod *et al.* (2016) study revealed that 76.67 per cent of the farmers were medium landholding farmers followed by 12.67 per cent small landholdings and larger landholding farmers were 10.66 per cent.



Ganpat *et al.* (2017) study reports showed that most (68.00 %) of the farmers were having a small size of operational landholding *i.e.*, 1-5 acres followed by 19.00 per cent of the farmers who had large size of operational landholding *i.e.*, more than 5 acres and very few farmers had marginal landholding *i.e.*, less than one acres of operational landholding (13.00 %).

Ranjan *et al.* (2018) study revealed that the majority of the farmers in the working area of both NGO's had marginal landholding up to 2.5 acres.

Aydogdu *et al.* (2018) study results revealed that majority (34.4 %) of the farmers had landholding between 10.1-30 hectares followed by 33.3 per cent of the farmers had landholdings between 5.1-10 hectares, 25.9 per cent of the farmers had less than 5 hectares and rest (6.4 %) of the farmers had more than 30.1 hectares of landholdings.

Yarazari (2020) study revealed that majority (52.00 %) of the respondents had less than 1 acres land area under muga food plants followed by 31.33 per cent of the respondents had 1 acres of land area and 16.67 per cent of the respondents had more than 1 acres of land area under muga food plants.

### **2.1.8 Farm equipment availability**

Archana (2012) study revealed that majority of the respondents had low farm implements and machinery status (39.17 %), followed by medium (36.67 %) and high (24.16 %) farm implements and machinery status.

Sampath Kumar (2014) Majority of the large farmers had high knowledge (57.5%) regarding agriculture implements and machinery followed by medium and small farmers (45%) had low and medium knowledge Majority of the large farmers (62.5%) and medium farmers (50%) had medium extent of use of agriculture implements and machinery and small farmers (40%) had low extent of use.

Harilal and Eshwaran (2015) found that only 50 per cent of all farmers surveyed used machines for harvesting, and a slightly higher proportion used machines for intercultural operations. Mechanisation in transplanting was very limited and machines were rarely used on garden land.

Mishra (2018) Reported that about 66.66 % respondents made profit to the tune of 10% by adopting mechanization in silkworm rearing, further 34.16% of respondents could able to reduce the cost of cultivation to the extent of 40-50%.

### **2.1.9 Extension contact**

Kumar (1996) study results revealed that 51.67 per cent of farmers never contacted AAO's whereas 42.50 per cent had contacted village administration and the remaining 5.83 per cent of the respondents contacted AO's occasionally.

Manju (1997) conducted a study in Belagavi district of Karnataka and reported that 43.33 per cent of the respondents had contacted with sericulture demonstrator and 13.33 percent had contacted sericultural extension officer.

Suneeldutt and Chole (2002) study revealed that 46.25 per cent of farmers had medium contact with extension agencies followed by low (31.25 %) and high (22.50 %) level of extension contact with the farmers.

Uddin *et al.* (2008) study revealed that majority (53.84 %) of the farmers had medium extension contact followed by low (23.07 %) and high (23.07 %) level of extension contact.

Ganpat *et al.* (2014) study reported that concerning extension visits, 25.00 per cent of the respondents reported that extension officers never visited, 35.00 per cent reported monthly visits by the extension officers, 26.00 per cent reported annual visits, 8 percent of the farmers were visited on fortnightly basis and rest (6.00 %) was weekly visited by the extension officers.

Ganpat *et al.* (2017) study result showed that most farmers (36.00 %) reported annual extension visited followed by monthly extension visits of 31.00 per cent and fortnightly or weekly extension visits to the farmers' field was 15.00 per cent.

Ranjan *et al.* (2017) study revealed that the majority of the farmers in the working area of both NGO's, fall under the medium category of extension agency contact.

### **2.1.10 membership in the farming organization**

Ganpat *et al.* (2014) study reported that most of the farmers (77.00 %) indicated they were not member of any farmers' group and the rest of the 23.00 per cent of the respondents indicated member of farming group.

Pandey *et al.* (2015) study results revealed that majority (46.7 %) of the respondents did not participated in the farming organization followed by very low (40.00 %) participation in the farming organization and low (13.33 %) participation in the farming organization.

Nishi and Kumar (2016) study results showed that the largest percentages of respondents *i.e.*, 46.25 per cent had medium level of organizational participation. However, 31.25 per cent of respondents had low level of organizational participation, while 22.50 per cent of the respondents had high level of organizational participation.

Rathod *et al.* (2016) study findings revealed that majority (68.00 %) of the respondents were member of one organization followed by more than one organization (30.33 %), wide public leader (0.67 %), officer bearer (0 %) and 0.67 per cent did not participate in social activities.

Ganpat *et al.* (2017) study revealed that most (71%) of the respondents did not belonged to the farming groups and only 29.00 per cent of the farmers were a member of the farming group.

#### **2.1.11 Extent of communication channels used for data collection**

Hasan and Sharma (2011) results revealed that all the homemakers owned television and mobile phone followed by print media (90 percent), magazine (60.00 %) and computer was possessed by 50.00 per cent of the respondents.

Kameswari *et al.* (2011) revealed that majority (78.00 %) of Indian Himalayan region farmers possess mobile phones followed by television (68.00 %), radio (38.00 %), newspaper (21.00 %) and internet (1.5 %).

Upadhyay *et al.* (2011) results revealed that majority (87.44 %) of the rural women posses' television followed by radio (60.08 %) and rest (24.66 %) had newspaper as print media.

Ogbonna and Agwu (2013) results found that majority (98.9 %) of the rural farmers had radio followed by mobile phones (96.7 %) and television (95.5 %).

Ganpat *et al.* (2014) study revealed that most of the farmers (63.00 %) stated that they had access and use of other sources of information, some (37.00 %) stated that extension service was their the only information sources.

Ranjan *et al.* (2017) study revealed that the majority of the farmers in the working area of both NGOs, majority of the dairy farmers fall under the medium category of mass media exposure.

Rao and Meera (2017) revealed that majority (100.00 %) of the officials had mobile phones followed by personal computers (82.22 %), computers with internet (68.33 %), smart phone with internet (46.67 %) and rest (45.56 %) possessed smart phones.

Avilesh *et al.* (2017) study revealed that majority (26.8 %) of the farmers possessed cellular phones followed by computers (23.7 %), telephones (21.9 %), smart phones (19.6 %) and tablets (8.00 %).

Awatade *et al.* (2018) findings of the study clearly depict that among the mass media sources used for collecting the information regarding the farming were viz., T.V. 100.00 per cent, mobile 94.17 per cent and newspaper 90.83 per cent were the most used sources by the respondents.

### **2.1.12 Training exposure**

Sarada and Prabhakar (2009) study results revealed that majorities (64.17 %) of the contact farmers were untrained and remaining (35.83 %) farmers were trained.

Chauhan (2010) study results showed that majority (70.00 %) of progressive farmers had their training through government agency, followed by 13.00 per cent had their training by Agricultural University, 11.00 per cent farmers by Gram Panchayat, only 4.00 and 2.00 per cent of them had such training by co-operative society and NGO's respectively.

Ramalakshmi (2012) study results showed that majority (50.00 %) of the farmers had medium training exposure followed by low (30.83 %) and high (19.17 %) level of training exposure.

Chetia (2013) study reported that the majority of the respondents responded that farmers were lacking proper training by which they can improve their rearing and reeling skills.

Kabir (2015) reported that 88.9 percent of the respondents had participated in Training programme on ICTs.

Kafura *et al.* (2016) reported that majority (59.00%) of the farmers were not exposure to training followed by (20.00%) were exposure to low level training, 12.00 per cent of the farmers were exposure to medium level training and rest 9.00 per cent of the farmers were exposure to high level of training.

Pandey *et al.* (2015) study reported that majority (53.3 %) of the respondents had one day training followed by 25.00 per cent had no training and rest 21.7 per cent of the respondents had two days training exposure.

#### **2.1.13 Knowledge level of the farmers**

Uddin *et al.* (2008) study revealed that majority (58.24 %) of the farmers had medium knowledge level followed by high (26.37 %) and low (15.38 %) level of knowledge regarding farming.

Kamble (2008) study revealed that the knowledge level of 42.50 per cent of respondents on integrated technological package was medium while 38.33 per cent and 19.17 per cent of the respondents had low and high level of knowledge, respectively.

Motamed (2010) study revealed that nearly of half of silkworm rearers (48.00 %) had medium level of knowledge about improved silkworm rearing practices followed by one third (31.00 %) of silkworm rearers had low level of knowledge about improved silkworm rearing practices and only 21.00 per cent of the silkworm rearers had high level of knowledge about improved silkworm rearing practices.

Khalache and Gaikwad (2011) study revealed that nearly 55.60 per cent of the sericulturists had a medium level of knowledge regarding selected sericultural management practices.

Ali *et al.* (2013) study revealed that majority (61.13 %) of the farmers possessed a high-level knowledge and 31.33 per cent had medium and the remaining 7.34 per cent of the farmers had a low level of knowledge about recommended practices related to sericulture.

Susikaran and Sridhar (2013) study results revealed that knowledge and adoption level of technologies were analyzed using knowledge and adoption index for both zones. Knowledge of sericulture technologies in northeastern and western zones were 77.02 per cent and 91.04 per cent, respectively.

Rathod *et al.* (2016) study reports showed that the majority (80.00 %) of the farmers possessed a medium level of knowledge followed by the high (16.00 %) and low (4.00 %) knowledge level category.

Mech *et al.* (2016) study results showed that the majority (40.00 %) of the Muga farmers had high level of knowledge followed by 32.5 per cent and 27.5 per cent as medium and low level, respectively.

Sudhakara (2017) study results showed that more than half (55.00 %) of the respondents had medium level of knowledge followed by low (22.00 %) knowledge and high knowledge (23.00 %) level was noticed among the farmers about improved sericulture production technologies.

Yarazari (2020) conducted a study and results showed that the majority (77.34 %) of the farmers had high level of knowledge followed by the medium (22.67 %) level of knowledge.

## **2.2. Level of satisfaction of farmers from extension services**

Adesiji *et al.* (2010) study conducted in Ogun State of Nigeria and revealed that majority (49.92 %) of the farmers had expressed effectiveness of extension services rendered to be high, while 50.8 per cent do not.

Agholor *et al.* (2013) study revealed that overall satisfaction with quality of extension services (timeliness of delivery, accuracy of service, relevance to farmers' needs/situation and ease of understanding) were; females (65.33 %) are 'very satisfied' than male (60.00 %) followed by 'satisfied' (male: 13.33 % and female: 10.67 %) and the rest were 'neither satisfied nor dissatisfied' (26.67 % and female: 24 %) with quality of extension services.

Ganpat *et al.* (2014) conducted a study in Organization of Eastern Caribbean States, results showed that majority (57.00 %) of the respondents had medium level of satisfaction from extension services followed by low (22.00 %) level of satisfaction from extension services and rest (21.00 %) of the respondents belonged to high level of satisfaction from extension services.

Chand *et al.* (2014) study revealed that majority of the respondents expressed their satisfaction level regarding veterinary services, 38.67 per cent of the farmers were found to be medium category of satisfaction followed by low category (36.67 %) and remaining (24.67 %) of the farmers had high satisfaction with veterinary services.

Elias *et al.* (2016) conducted a study in North West Ethiopia, results revealed that majority (38.67 %) of the respondents were dissatisfied with agricultural extension services followed by 28.00 per cent were moderately satisfied, 23.33 per cent were satisfied, 6.00 per cent were strongly dissatisfied, and remaining (4.00 %) respondents were strongly satisfied with agricultural extension services.

Debnath *et al.* (2016) conducted a study in Tripura state of North-Eastern India, findings revealed that a majority (38.33 %) of the farmers had expressed their high level of clientele satisfaction with public agricultural extension services followed by medium (36.67 %) level of clientele satisfaction with public agricultural extension services and remaining (25.00 %) farmers expressed their low level of satisfaction with public agricultural extension services.

Rathod *et al.* (2016) conducted a study in Western Maharashtra region, the study revealed that majority (46.00 per cent) of the farmers were partially satisfied with livestock breeding services followed by 37.34 per cent of the farmers were satisfied with the livestock breeding services, and rest (16.66 percent) of the farmers expressed, they were not satisfied with the livestock breeding services.

Chaturvedani *et al.* (2016) study results revealed that majority (45.56 %) of the farmers had medium level of satisfaction with livestock services followed by low (38.33 %) level of satisfaction with livestock services, and rest (16.11 %) of the farmers had high level of satisfaction with livestock services.

Ranjan *et al.* (2017) research was conducted in Bihar state, and results revealed majority (75.00 %) of the farmers were dissatisfied whereas 25.00 per cent of the farmers were very much dissatisfied with the treatment facilities provided by J. K. Trust, additionally it was observed that an equal number (50.00 %) of farmers were dissatisfied and very much dissatisfied with the treatment facilities provided by BAIF.

Naz (2018) findings of the study revealed that farmers were satisfied with NIA services specifically on the provision of quality technical advisory/support services, and quality construction/rehabilitation of irrigation facilities.

Awatade *et al.* (2019) conducted a study in Maharashtra to assess the farmers satisfaction level with extension services and the results revealed that extension officers hardly consider the farmers perception in decision making and ask their opinion, unable to keep their promises, unable to treat all the farmers equally, officers were difficult to contact the farmers and not available when farmers needed them the most. This leads to moderate level of satisfaction of the farmers with extension services.

Sugiarto *et al.* (2019) study result revealed that majority (76.00 %) of the respondents had medium level of farmers' satisfaction with service quality of contract farming followed by high (22.00 %) satisfaction and rest (2.00 %) of the respondents had low satisfaction.

Imam *et al.* (2019) conducted a study in the Begeng sub-district, the result revealed that community in Bengeng sub-district was satisfied with the agricultural extension services provided by the BP3K of Bengeng subdistrict with a point of 79 (CSI) and grade B for the service quality.

Singh and Karla (2019) study results revealed that overall satisfaction towards ATIC services was, more than half (54.5 %) of the respondents had high level of satisfaction towards ATIC services followed by one third (33.00 %) of the respondents had medium level of satisfaction with ATIC services and rest (12.5 %) of the respondents had low level of satisfaction towards ATIC services.

Ovharhe *et al.* (2020) conducted a study in Delta State of Nigeria, revealed that majority of the respondents had expressed their satisfaction level with agricultural extension services were 'just high' (40.28 %) followed by 'average' (29.86 %), 'low' (17.54 %) and 'very high' (12.32 %).

Kassem *et al.* (2021) results revealed that farmers had participated in the provided extension services was poor. The overall farmers were moderately satisfied with extension services.

### **2.3. Problems and difficulties faced by the silkworm rearers**

Raghurasad (1992) conducted a study in Chitradurga district of Karnataka and revealed that 46.00 per cent of the farmers had conveyed market was far away, non-availability of labour (42.00 %), non-availability of disease-free eggs (36.00 %), non-availability of eggs on time (26.00 %) and 23.33 per cent diseases cannot be controlled were the major problems faced by the sericulture farmers.

Govindaih *et al.* (1996) study revealed that 71.00 per cent of the respondents had expressed, lack of knowledge on the mulberry disease and their control methods, insignificant occurrence of mulberry disease was expressed by 5.00 per cent of the respondents and 48.00 per cent had expressed lack of technical knowledge followed by financial problems of non-adoption of plant protection measures (18.00 %), non-availability of chemicals and sprayers (6.36 %) and 15.00 per cent of respondents did not adopt plant protection measures due to fear of the chemical's toxicity to silkworms.

Chetia (2003) report mentioned that a major problem among the farmers were lack of proper training by which they can improve their rearing and reeling skills.



Dhane and Dhane (2004) reported that farmers expressed constraints in mulberry cultivation such as high labour wages (94.00 %), inadequate irrigation facilities (78.00 %), high cost of manures and fertilizers (73.00 %), lack of guidance, and lack of knowledge about mulberry diseases and pests (67.00 %). Respondents also reported the constraints *viz.*, high cost of rearing room (98.00 %) and equipment (93.00 %), lack of credit facilities for construction of rearing room (93.00 %), unavailability of subsidies for rearing silkworms (93.00 %), grading cocoon (93.00 %), lack of knowledge regarding the physical condition in rearing room (68.00 %), and unremunerative rates of cocoons (73.00 %).

Mallikarjun *et al.* (2006) reported that major problems faced by the respondents in Chamarajanagara district in technology adoption were, belief in traditional practices, lack of awareness of new technologies, high cost and investment in silkworm rearing.

Meenal and Rajan (2006) reported that major constraints for low or non-adoption of the improved technologies by the farmers of Sathyamangalam taluk, Erode district were non-availability of inputs (34.00 %), lack of awareness (26.00 %), lack of proper technical guidance (18.00 %), high cost of inputs (22.00 %) and preferences to traditional practices (38.00 %).

Adekunle *et al.* (2009) study reported that some factors which were reducing rural youth involvement in agricultural production in Nigeria were economic, social, and environmental. Economic factors include inadequate credit facilities, initial capital along with some environmental factors.

Motamed (2010) study reported that non-availability of mulberry leaves (88.00 %) and Problem in bidding (87.00 %) were perceived as important constraints in sericulture production as expressed by the growers. Followed by non-availability of labor (80.00 %), non-involvement of Govt. and society during action (76.00 %), low extension contact (74.00 %), delay in payment of dues (73.00 %), lack of separate rearing house (70.00 %), lack of knowledge about sericulture (68.00 %), inadequate support by bank (45.00 %), high cost of Govt. services (37.00 %), lack of money (33.00 %), adverse climate (15.00 %) as the major constraints in sericulture sector.

Shukla (2011) it was found that among the constraints expressed by the farmers of mulberry sericulture, high input cost ranked first followed by lack of irrigation

facilities whereas the constraint ‘scattered field’ was ranked as last responses obtained from mulberry sericulture farmers.

Todmal *et al.* (2013) reported that constraint faced by the silkworm rearers were shortage of irrigation water, lack of labours, insufficiency of capital high cost of chemical fertilizer, lack of knowledge about of bio-fertilizers, lack of information about application of VAM, lack of information about concentration of the bed disinfectant and rearing house disinfectant.

Neog and Giridhar (2014) reported that success of the sericulture industry depends on proper and highly efficient marketing that assures good prices to the farmers, reelers, weavers, and co-operatives.

Dhakhsana and Rajandran (2017) study revealed that competition and lack of cold storage were the factors that highly affected the farmers in direct marketing and poor credit facilities and farmers were unable to store their perishable items, which reduces their profit.

Sudhakara (2017) reported that major problems faced by the farmers are lack of knowledge regarding control of pests and diseases like uzifly, ants, pebrine, white muscardine and yellow muscardine (100.00 %), lack of marketing facility and fluctuation in price of cocoon (100.00 %), lack of information about crossbred races of silkworm (94.00 %), lack of information about concentration of the disinfectant (87.00 %), lack of knowledge regarding controlling of pest and diseases (84.00 %), lack of supply of disease free laying (DLFs) from govt. sources (84.00 %), high cost of establishment at initial stage (80.00 %), high incidence pest and disease like stem borer (78.00 %), lack of knowledge about training and pruning of mulberry plant (70.00 %) and inadequate training facilities (70.00 %).

Bhagabaty *et al.* (2018) according to the study, data reported that farmers of Muga silkworm had faced many problems *viz.*, fluctuation of weather (56.00 %), lack of manpower (52.00 %), high price of cocoons (91.00 %), unavailability of systematic plantation (75.00 %), remoteness of the area of cultural operation (78.00 %), non-availability of seed cocoons (85.00 %), difficulty in handling large number of moths for examination within a short and limited period (65.00 %), and occurrence of diseases and pest (78.00 and 75.00 %), respectively.

Hadimani *et al.* (2019) findings revealed that, the major problem faced by the farmers were lack of knowledge regarding control of pests and diseases like uzifly,

ants, pebrine, white muscardine and yellow Muscardine (100.00 %), lack of marketing facility and fluctuation in price of cocoon, (100.00 %), lack of information about crossbred races of silkworm (92.00 %), lack of information about concentration of the disinfectant (88.00 %), lack of knowledge regarding controlling of pest and diseases (82.00 %) and inadequate training facilities (62.00 %).

Jakkawad *et al.* (2019) reported that constraints faced by the sericulturists were non availability of marketing facilities (100.00 %), lack of skilled labour (72.50 %), Non availability of Mulberry seedlings (51.25 %), disease free layings (50.00 %), lack of required finance (42.50 %), shortage of trays (40.00 %), and incidence of pest and diseases (37.50 %).