Discussion
The research study on information source consultancy knowledge and adoption of new sericulture technologies and training needs of sericulturists in Mysore and Chamarajanagar district was planned. The data were collected and analyzed keeping in view the objectives of the study. The results obtained are discussed in different heads as follows:

5.1 Profile of the sericulturists in the study area.
5.2 Cropping pattern and cropping intensity followed by the respondents in the area.
5.3 Source consultancy pattern of the sericulturists/ sources of information utilized by the sericulturists
5.4 Credibility of different information sources & its measurement
5.5 Association of socio-economic characteristics of the sericulturists and their information source consultancy pattern.
5.6 Technical Source of information consulted by the sericulturists for their urgent need
5.7 Knowledge and adoption level of sericulturists on the recommended practice of sericulture.
5.8 Association of socio-economic characteristics of sericulturists with their knowledge and adoption index in the study area.
5.9 Constraints for partial/ non-adoption of the recommended sericulture technologies.
5.10 Knowledge level of extension officials on sericulture technologies in the study area
5.11 Training needs of the farmers relating to sericulture practices in the study area.
5.1 Profile of the sericulturists in the study area

The relevant independent variables were included in the study to know the socio economic condition and to ascertain their relationship with the dependent variables. The variables included were age, education, extension participation, social participation, mass media utilization, cosmopolitaness, scientific orientation and extension contact.

The respondents belonged to all categories like young, middle and aged groups. Majority of the farmers (71.96%) in Mysore district belonged to middle age, i.e. in the age group of 30-50 and equal number of farmers belonged to young (13.08%) and old age (14.95%) groups. In Chamarajanagar district also the same trend was observed. Here majority of the farmers (52.00%) belonged to middle age group. The average age of the respondents was 45 years in Mysore district and 42 years in Chamarajanagar district.

The percentage of farmers with college education was more in Mysore district as compared to Chamarajanagar district. This may be due to the availability of more number of educational institutes in Mysore as compared to Chamarajanagar. Further it was observed that majority of the farmers had school education which may be due to the support extended by the Government for promoting literacy through various schemes and programmes.

The per capita land holding was found to be higher in case of Mysore district (8.83 acres) as compared to Chamarajanagar district (8.5 acres). The same was true with respect to area under mulberry, with an average area of 2.46 and 2.8 acres respectively in Mysore and Chamarajanagar district. This clearly indicates that most of the farmers in the study area were practicing sericulture as a major bread earning enterprise. The average land holding per head was slightly more in case of Mysore district compared to
Chamarajanagar. It was observed that most of the irrigated land available was utilized for sericulture enterprise.

The average size of the family was 6 (persons) in Mysore district and 5 in Chamarajanagar district. Nearly, 66.67 % of the family members were involved in doing sericulture in Mysore district and 80 % in Chamarajanagar district. This may be because Chamarajanagar district being a traditional area since several decades, each and every member of the family knows the art of sericulture and they themselves involved in sericulture activities. In case of Mysore district, the percent of involvement of family members was 13.33 % less compared to Chamarajanagar district. This may due to the increase percentage of education and family members might have opted for searching jobs.

In Mysore district, the average cocoon yield of cross breed was 56.4kg/100 dfis (district average was 35.33 kg/100 dfis) and bivoltine hybrids was 65.2 kg/100 dfis (district average was 53.20 kg/100 dfis). The average cocoon yield of cross breed in Chamarajanagar district was 56.1 kg/100dfis (district average was 31.80 kg/100 dfis) and the bivoltine hybrids was 62.3 kg/100 dfis (district average was 53.57 kg/100 dfis) which was higher than the district average cocoon yield.

This clearly indicates that most of the farmers were practicing latest sericulture technologies in their field which is because of the existence of strong extension support in both the districts. In addition, the study area to a limited extent receives extension support directly by the Scientists of Central Silk Board, in the study area.

Majority of the sericulturists exhibited moderate level of cosmopolitaness i.e. frequency of visits to outside the village community in connection with the sericulture in both the districts which may be due to the availability of new technology information at grass roots with the help of improved mass media. As the study area is traditional in culture, most of the
farmers were found to be shy natured in contacting extension staff for technical information.

Due to this the extent of participation in extension programmes was low to medium in both the districts. Another reason was the non-awareness of the time of conducting different extension programmes in their area. Also, as opined by farmers, they were not finding time to attend these programmes as they were busy with their field/ personal works.

The participation of farmers in the mass media programme was less, television and radio could not be used properly due to frequent failures of electricity. The utilization of print media by the sericulturists was low and the reason for low utilization was due to low level of education among the farmers.

The percent of social participation was low to medium in both the districts. Low level of education clubbed with no permission to attend the meetings of different grass root level organizations because of non-membership was the reasons for low participation.

From the above findings it can be concluded that the majority of the respondents belonged to middle age group having formal school education. The percapita land holding was around 8.5 acres and the mulberry acreage was around 2.6 acres in the study area with sericulture as the major bread earning enterprise. The average family size was 5 to 6 with 66.67 % of the family members were involved in sericulture. The average cocoon yield of cross breeds was 56.1 kg and bivoltine hybrids was 63.8 kg. The sericulturists exhibited medium level of participation in extension related characteristics.

5.2. Cropping pattern and cropping intensity followed by the respondents in the study area.

The farmers in both the districts accepted sericulture as one of the important commercial enterprises as it can be taken up in all the seasons with
almost 5-6 crops in a year under irrigated condition and 2-3 crops in a year under rainfed condition.

5.3. Source consultancy pattern of the sericulturists

The use of institutional sources was more compared to informal or mass media sources. It was interesting to note that among the institutional source, Sericulture Demonstrator/ Field Assistants were the most consulted source of information followed by cocoon market officials. This trend could be explained by the fact that Sericulture Demonstrator/ Field Assistants were the only formal change agents at local level, who were readily available and can provide constant technical guidance. The faith they had developed on this source might be the reason for this tendency. Another possible reason could be the very nature of the job requirement of these officials was to make regular visits to the villages and constantly guide the farmers. Also being an institutional source, farmers considered this source as dependable, practicable and more economical when compared to other sources. The above observation also gets due support from the findings of Dubey (1955), who concluded in his study that the main source of information for the improved practices were village level worker, agricultural extension workers, neighbours and relatives. Similar findings were reported by Sharma and Sharma (1994), Rogers (1993). Even though, the research institute is a better information source, utilization of this source was only by few farmers (12.25%) as they visited for specific works. These findings are in line with those of Bhople et al., (1998) who reported that university scientists and participation in field days were the least consulted source by progressive orange growers of Maharashtra state.

Among the informal sources, the most consulted source was neighbours and friends followed by relatives and progressive farmer in the study area. This might be due to the fact that they are easily and readily accessible to the sericulturists. The above findings are in conformity with the findings of Rattaiah (1979).
Among the mass media sources consulted, television was the most consulted source followed by radio and sericulture magazine. The reason may be that television has been perceived as the most effective mass media as it provides opportunity to see and listen. Therefore, acquisition of knowledge from television is more compared to other mass media. The visual impact of television helps in better understanding of the message and retention of the same for long period. The other reason is that, in recent years the capacity of the farmers to purchase radio and television sets was increased. Sericulture magazines have been ranked as the least preferred mass media. This may be due to the lack of knowledge about the availability of sericulture magazine and low or no education level of the farmers in the study area. The other reason may be inability to understand the print media easily. These findings are in agreement with results reported by Kumar (1992).

From the above it can be concluded that farmers consulted more of institutional sources compared to informal or mass media sources. Sericulture Demonstrator/ Field Assistant was the most consulted source of information followed by neighbours and friends and cocoon market officials. Farmers might have considered these source as dependable, practicable and more economical when compared to other sources The least consulted source was sericulture magazine and this may be due to the lack of knowledge about the availability and low or no education level of the farmers in the study area.

5.4 Credibility of different information sources and its measurement

Source credibility is the degree to which a source is perceived as trustworthy and competent by the receivers. The credibility of any source depends on the trustworthiness and confidence attached to it by the farmers. This plays an important role in effective communication. The other dimensions of credibility such as newness, authenticity and availability also play an important role. The source credibility has been measured by two methods, viz., ranking method and paired comparison method.
Sericulturists in the study area rated Sericulture Demonstrator/ Field Assistants as the most credible source followed by neighbours and friends and the research institute in the order and ranked them first, second and third respectively in both the districts based on their credibility level. As the demonstrator was the only technical staff most accessible to the sericulturists due to his regular contact, farmers might have developed faith and trust in him and rated as the most credible source.

The studies conducted on credibility of information source related to sericulture are very limited. However, the findings of present study are in more or less in agreement with the findings of the studies conducted on other areas like agriculture. The above observation also gets due supports from the findings of Taufiq Rusdi (1995) and Waghdhare et.al (1998) who reported in their study that extension workers were the top most credible source of information. Singh and Sahay (1970) in their study on high yield variety programme reported that the most credible source was village level workers. Singh and Prasad (1974) in their study on source credibility perception reported that village level worker was the most credible source of information in the progressive village. Similar findings were reported by Joon (1970) and Deshponde and Trifle (1984).

In this study Sericulture Demonstrator/ Field Assistants happened to be the most credible source, because of their technical competency, availability and accessibility to the sericulturists. Sericulture Demonstrator/ Field Assistants are gross root level workers working at village level and they maintain constant contact with the respondents. The concepts of accuracy, relevancy, accountability of information provided might have influenced the sericulturists to assign first rank to this source.

The second credible source was recognized as an informal source namely, neighbours and friends. The simple reason is they belonged to farmers community and exchange of information between them was made easy. Further, continuous and constant interaction and mutual obligations
between them also added to their credentials to these sources. Even though research institute is a formal source, farmers gave third rank in the credibility scale in both the districts, as the research institute was not situated in the vicinity and all farmers could not take the advantage of using it. Also there was little opportunity to meet and obtain all that they need from this source. Cocoon market officials were placed next place in the credibility scale. This is because that farmers are visiting cocoon market only during marketing of their cocoons.

The radio and sericulture magazine received the least rating on the credibility scale. However, the Spearman’s rank correlation co-efficient ($r_s = 0.965$) confirmed that there was no significant difference in the ranking system arrived at by both the methods. This indicated the consistency of source credibility positions obtained by the two methods. This is in agreement with the findings of Reddy and Kivlin (1968) where he reported that radio broadcasts were found to be the least credible source. Similar findings were reported by Singh and Shankaraiah (1968) also.

The low or no literacy level of the farmers, lack of reading habits among the respondents and the ability of the farmers to comprehend information which is of technical nature has made sericulture magazine to occupy the ninth and last rank in the credibility scale.


In the light of the above discussion it can be concluded that sericulturists in the study area rated Sericulture Demonstrator/ Field Assistant as the most credible source followed by neighbours and friends, research institute, cocoon market officials, television, relatives, progressive farmer, radio, sericulture magazine and others. However, there was no significant difference between the ranking given by both the methods.
5.5 Association of socio-economic characteristics of sericulturists and their information source consultancy pattern

In Mysore district, the coefficients of variables like age, education and cosmopoliteness were found to have significant but negative relationship indicating that as the age, education and visits to nearby town, increases of an individual, their consultancy level for technical information decrease. It was also observed that scientific orientation, extension contact, extension participation, social participation, mass media contact and knowledge even though found positive were found to be non-significant with source consultancy pattern.

In Chamarajanagar district, experience, knowledge and adoption index of the farmers depicted significant relationship with the information source consultancy pattern indicating that the farmers were consulting all the information sources irrespective of their experience, knowledge and adoption level [Mande et.al., (1993) and Raghavendra (1997)].

Highly significant relationship between the age, education, experience, cosmopoliteness and knowledge index of the farmers with their information source consultancy were observed in the study area. The learned farmers had an opportunity to get exposed to print media on the subject and were receptive to new ideas and trained their mental fitness to remember better. Further, they had frequent contacts with the extension agency, there by acquiring more information. Similar findings were reported by Hegde (1986), Sreenivasa (1993), Javale and Nachane (1994), Kumar (1997), Jyothi (2000) and Raghuraja (2001).

Significant relationship between experience of the farmers and their source consultancy pattern was observed. Farmers experience in sericulture made them possible to judge which source is good and they used to consult more sources to confirm credibility of information perceived earlier from other sources. A significant relationship was noticed by social participation and cosmopoliteness. Cosmopolite individual will have greater contacts with
outside world which will broaden the mental horizon of farmers and provides opportunity to acquire knowledge. Mande et al., (1993), Shankar Rao and Sudharshanan Reddy (1999) also reported similar findings.

Higher education level of the sericulturists enabled them to consult different sources of information to increase their knowledge level which has shown a significant relationship with source consultancy pattern. The above observation also gets due support from findings of Jaale and Nachane (1994) who reported that education was found to have positive relationship with source consultancy pattern. Yogananda (1992), Ravishankar (1995), Kumar (1998) and Jyothi (2000) reported similar findings.

In the light of the above discussion, it can be concluded that in Mysore district, the variables like age, education and cosmopolitanism were found to have significant but negative relationship and in Chamarajanagar district, experience, knowledge and adoption index of the farmers depicted significant relationship with the information source consultancy pattern indicating that the farmers are consulting all the information sources irrespective of their experience, knowledge and adoption level.

5.6 Technical source of information consulted by the sericulturists for urgent need

The Sericulture Demonstrator/Field Assistant was the only competent person who was readily available at local level and provided constant technical guidance. Hence, he was found to be the best source for urgent need. Hence, the majority of the respondents consulted him. In the absence of Sericulture Demonstrator/Field Assistant, the respondents used to consult neighbours and friends followed by progressive farmers.

5.7 Knowledge and adoption level of sericulturists on the recommended practice of sericulture

Knowledge of the recommended technologies is a pre-requisite for adoption of them. A greater knowledge of technical nature leads to higher
adoption level. Thus knowledge influences the human behaviour producing both favourable and unfavourable responses. Knowledge refers to the fact or condition of knowing the things with a considerable degree of familiarity gained through experience or contact or association with the individual or things known. Knowledge is one of the important components in the human behaviour which plays important role in the covert and overt of an individual. Once knowledge is acquired, it produces changes in one's thinking process which will lead to further changes in the aptitude of the individual. Hence, a complete working knowledge is essential for proper adoption of improved practices and technologies. It is observed that the process of acquisition of knowledge by farmers and practicing different technologies depends on their profile constituted by various personal and socio-economic characters.

Adoption is a process by which an individual comes to a decision either to adopt the technology or practice fully or partially or reject an innovation. In this process, individuals become aware of a new idea or technology, get interested, critically examine, try and then make the adoption (Dwarakinath et al., 1994). The farmers look for a simple, inexpensive, less labour and time saving technologies in order to increase return and efficiency in sericulture. Unless the research findings are converted into simple and more practical, they cannot be adopted. This view is supported by Thiagarajan, 2002.

In the present study an attempt has been made to estimate the knowledge level of the farmers on the mulberry cultivation and silkworm rearing practices.

5.7.1 Knowledge level of sericulturists on the recommended practice of Mulberry cultivation

5.7.1.1. Soil testing and soil reclamation

The farmers had medium knowledge on soil testing and soil reclamation measures. Farmers were not aware of the location of the soil testing laboratory and did not give much importance for the health of the soil.
The poor knowledge level of the extension workers in the study area also influenced for this. Hence, this technology might not have been disseminated effectively among the farmers.

5.7.1.2. Mulberry varieties

More than 85% of the sericulturists had either partial or full knowledge. The spread of knowledge relating to mulberry varieties and its advantages has influenced the knowledge level of farmers. The above finding is in agreement with the findings of Manju (1990), Srinivasa (1989) and Shreedhara (1997).

5.7.1.3. Chawki Garden

More than 90% of the farmers had sufficient knowledge about the maintenance of chawki mulberry garden. This technology had increased the economic level of farmers and hence the farmers acquired more knowledge.

5.7.1.4. Paired row system

Paired row system of plantation is recommended mainly for V1 mulberry under irrigated condition. Majority of the farmers did not have sufficient knowledge about this practice. The reason may be that farmers could not get the information properly with regard to the benefit from this technology (Srinivasa, 1989).

5.7.1.5. Farm yard manure and chemical fertilizer quantity

Few farmers in the study area had correct knowledge and majority of the farmers had partial knowledge about the use of chemical fertilizer. As profitability of sericulture depends largely on production of mulberry leaf and the mulberry leaf production depends very much on manure usage, farmers might have acquired the knowledge from extension workers or fellow farmers. Similar findings were reported by Shivamurthy (1988), Sarkar (1988).

5.7.1.6. Mulberry pest and disease Control

Majority of the farmers had no knowledge about this technology. Lack of knowledge may be due to complexity of practices and fear of toxicity to silkworms and non-availability of pesticides in the villages. The above finding is in agreement with the findings of Govindaiah et al., (1996), Nikhade (1995), Ganapathy et al., (1999).

5.7.1.7. Pruning and thinning of mulberry plants

Majority of the farmers in Mysore district had either full or partial knowledge about this technology. It indicates that farmers also have taken keen interest to know about this technology as the practice is simple and involves less cost. The reason for low knowledge level among the farmers of Chamarajanagar district might be district being a traditional rainfed belt, most of the farmers were practicing sericulture under rainfed condition. Similar type of results were reported by Sreenivasa (1989).

5.7.1.8. Compost making

Most of the farmers possessed either partial or full knowledge about this practice. Farmers might not have been educated on these aspects or these practices might not have been disseminated effectively among farmers.

5.7.1.9. Irrigation schedule

Majority of the sericulturists had sufficient knowledge about this technology. This is a common practice and the spread of knowledge is easy in this aspect. Irrigation is an essential practice to harvest good quality mulberry leaf. Hence farmers practiced irrigation schedules. This finding is in
conformity with findings of Manju (1997), Sreenivasa (1989) and Shreedhara (1997).

5.7.1.10. Mechanization in mulberry garden

It is interesting to observe from the results that many of the farmers had no knowledge about mechanization. The possible reason might be high cost of the technology clubbed with low education and low social participation levels.

In the light of the above discussion it can be concluded that the majority of the sericulturists in the study area had adequate knowledge on mulberry cultivation technologies like new mulberry varieties, chawki garden, quantity of farm yard manure and fertilizer, compost making and irrigation schedule. The knowledge level was poor on technologies like paired row system of plantation, pruning and thinning of mulberry plants, mulberry pest and disease control and mechanization. This implies that there is a need to educate the sericulturists through extension staff, arranging training programmes and involving farmers in extension activities like group discussion, demonstrations, field days, educational films, enlightenment programmes etc.

5.7.2. Knowledge level of sericulturists on the recommended practice on silkworm rearing technologies

5.7.2.1. Disinfection

Disinfection of rearing house and equipments is crucial for the successful cocoon crop and plays a vital role in the economy of farmers. This has necessitated the farmers to acquire more knowledge regarding this practice. Majority of the sericulturists possessed either partial or full knowledge about this technology. It is said that medium to high level of knowledge regarding this technology is essential to rear the silkworms.
successfully. Importance of this practice might be the reason for having better knowledge in this technology. [Shreedhara (1997) and Srinivasa (1989)].

5.7.2.2. Hygiene

Majority of the sericulturists possessed partial knowledge on the maintenance of hygiene condition during rearing. Lack of information and poor economic condition might have been attributed as the reasons for partial knowledge level of farmers. This could also be attributed to poor extension work in the study area and also under traditional sericultural belt, it might be difficult for extension workers to convince the sericulturists. These results are in line with the findings of Aswathanarayana (1989) and Thiagarajan (2002).

5.7.2.3. Incubation

It is observed that majority of the farmers in Chamarajanagar district were having partial knowledge about this technology. The reason may be that farmers knows that the incubation of eggs directly influences the hatching of silkworm eggs which in turn influences the cocoon yield. In Mysore district as some of the farmers are receiving chawki reared worms from the chawki rearing centres the knowledge level of farmers is less compared to Chamarajanagar district with reference to incubation.

5.7.2.4. Loose egg brushing

Bivoltine hybrid silkworm eggs are being supplied in loose form on weight basis. Usually, bivoltine hybrids are reared by the sericulturists having irrigation facility and better rearing facilities. It is observed that knowledge level of the farmers on this technology is very poor. The possible reason might be due to the fact that most of the farmers were rearing cross breed which was supplied in sheet form or as some farmers were receiving chawki worms from the chawki rearing centres. Hence, they do not have sufficient knowledge about this technology.
5.7.2.5. Chawki rearing

Knowledge level of majority of farmers on chawki rearing was either partial or full. The reason for the high knowledge may be, that farmers understand that good chawki rearing brings good yield. The findings are in conformity with that of Shreedhara (1997) and Srinivasa (1989).

5.7.2.6. Bed disinfectant

Considerable percentage of farmers had full knowledge about this practice but remaining farmers had partial knowledge. This may be attributed to the fact that bed disinfectants played vital role in the crop success. The disease control measures in silkworm rearing mainly depends on the use of bed disinfectant. This might have necessitated the farmers to acquire more knowledge regarding this practice. Similar findings were reported by Shreenivasa (1989), Shreedhara (1997), Aswathanarayana (1989), Narayanaswamy et al., (2001) and Krishnamurthy et al., (1999).

5.7.2.7. Shoot rearing

It is interesting to observe from the findings that majority of the farmers had possessed complete knowledge about this technology. The possible reason might be that shoot rearing practice was a major factor to save the labour and hence reduced expenditure with increase of profitability in sericulture. Farmers took much interest to know the technology with a view to reduce the labour. [Manju (1997) and Narayanaswamy et al., (1999)].

5.7.2.8. Integrated pest management for uzifly

Almost all the farmers possessed partial knowledge about this practice. Most of the farmers were aware of only nylon net enclosure during rearing to control the uzifly attack which is a mechanical control for uzifly. Around 27 % of the farmers knew about chemical or biological control methods to control the uzifly. Moderate level of social participation and scientific orientation may
be attributed to this situation. Similar findings were reported by Thiagarajan (2002) and Manju (1997).

5.7.2.9. Rotary mountage

The rotary mountages are used to harvest the uniform size, shape and quality cocoons. This technology was being popularized in II and III phase of JICA project. Majority of the farmers in Chamarajanagar had no knowledge about this technology. The possible reason for this might be availability and cost of the rotary mountage and the other possible reason might be the lack of awareness about the handling of rotary mountages.

5.7.2.10. Separate Rearing House

Majority of the farmers had knowledge that separate rearing house is very much required for silkworm rearing. Schemes available for assistance of rearing house construction helped the farmers to know about this. These results are in conformity with the findings of Shreedhara (1997), Manju (1997), Aswathanarayana (1989) and Srinivasa (1989).

From the above discussion, it is clear that sericulturists in the study area had sufficient knowledge on technologies like separate rearing house, disinfection and hygiene, incubation, chawki rearing, use of bed disinfectants and integrated pest management to control uzifly which directly helped in improving the cocoon yield and quality. The poor knowledge level was observed on technologies like loose egg brushing and use of rotary mountages.

5.7.3. Adoption level of sericulturists on the recommended practice of mulberry cultivation.

5.7.3.1. Soil testing and soil reclamation measures

The results with respect to soil testing showed that majority of the farmers were not adopting this technology in the study area. This situation
could be attributed to the location of soil testing laboratories away from the farmer's garden, lack of sufficient technical knowledge, ignorance about the importance of the recommended practice or due to economic constraints. The reason may be that as mulberry is grown in a wide range of soils, farmers might not have taken any interest to do soil testing or reclamation of problematic soils. Similar findings were reported by Sreenivasa (1989).

5.7.3.2. Mulberry varieties

Majority of the farmers adopted the plantation of recommended mulberry varieties. This may be attributed to the adequate knowledge level of farmers about the importance of new mulberry varieties. Similar findings were reported by Ismath Afsan et al. (1999). The reason for non adoption might be some farmers are hesitant to take risk in planting new varieties which may affect their income due to long waiting period to commence their silkworm rearing. This view is supported by Gopala and Krishna (1993), Ganapathy et al., (1999) and Datta (2001). Srinivasa (1989) and Manju (1997) pointed out the problem of adoption of new mulberry varieties due to the perennial nature of the crop. The other possible reasons are lack of irrigation and weak financial status of farmers. Mallikarjuna (2001) reported that non-availability of credit to sericulture enterprise is one of the factor for non-adoption of technologies to the full scale.

5.7.3.3. Chawki garden

Maintenance of the separate chawki garden technology was not practiced by majority of the sericulturists in the study area. Chawki garden requires frequent irrigation and proper fertilizer doses. Hence, farmers are not able to adopt this technology. The other reason for non-adoption of this practice was that most of the farmers in the study area were receiving chawki worms from the chawki rearing centers. Hence, maintenance of separate chawki garden was not required. The other reason might be that too small land holdings did not allow them to have separate mulberry garden.
chawki. The findings are in conformity with that of Manju, S, (1997) and Narayanaswamy et al., (1999).

5.7.3.4. Paired row system

Majority of the sericulturists did not adopt this practice in both the districts. The reason is due to lack of complete knowledge and realization of the importance of the practice. This view is supported by Chikkanna et al., (1995). The adoption percentage was much lesser in Chamarajanagar district compared to Mysore district. Chamarajanagar being a traditional belt, it might have been difficult for the extension workers to convince the farmers and most of them followed 3' x 3' system of plantation.

5.7.3.5. Farmyard manure and chemical fertilizer quantity

Application of farmyard manure and chemical fertilizers by sericulturists was adopted partially by majority of the farmers in the study area. The partial adoption may be attributed to the high cost of fertilizers, weak financial status of farmers and non-availability of farmyard manure and chemical fertilizer in time. The findings are in conformity with Thiagarajan (2002), Siddaramaiah and Prakash Kumar (1994), Dolli et al. (1993), Singhvi et al., (1993), Venkatesh Kumar et al., 1999, Raghu et al., (1999), Shivalingaiah et al., (1999) and Shreedhara (1997). Shivamurthy (1998), who studied the adoption of sericulture technologies found that partial/ non-adoption of the recommended sericulture practices were due to lack of complete knowledge, scarcity of irrigation, non-availability of fertilizers in time and lack of finance.

5.7.3.6. Mulberry pest and disease control

More than 60% of the sericulturists in the study area did not adopt this practice. The possible reason for non-adoption may be as informed by Srinivasa (1989) lack of complete knowledge, high cost of pesticides, complexity of the technology, lack of technical guidance and non-availability of sprayers. As reported by Ganapathy et al., (1999) lack of awareness was the
reason for the low adoption. As reported by Govindaiah et al., (1996), farmers did not adopt plant protection measures due to fear of chemical toxicity to silkworms by spraying of chemicals on the mulberry plants.

5.7.3.7. Pruning and thinning of mulberry plants

Only 50% of the farmers adopted this practice either partially or fully. Due to lack of sufficient technical knowledge about the practice and ignorance about the importance of the recommended practice, the farmers might not have adopted the technology as recommended by research institute. Farmers also felt that leaf yield may be reduced by removing the weak branches.

5.7.3.8. Compost making

With regard to compost making, majority of the farmers adopted this practice partially in the study area. The possible reason for partial adoption may be lack of complete knowledge about the technology, technical guidance by the extension staff and ignorance about the importance of the recommended practice. The findings were similar to that of Srinivasa (1989).

5.7.3.9. Irrigation schedule

Even though majority of the farmers had knowledge about this practice, 25% of the farmers did not practice this technology. The major constraint for non-adoption might be low water source in their bore well during summer seasons and frequent power failure in the study area. Srinivasa (1989) in his study reported that majority of the sericulturists in central zone possessed correct knowledge about irrigation and Khan (1985) reported that farmers expressed the problem of shortage of irrigation water.

5.7.3.10. Mechanization in mulberry garden

It is interesting to know that cent percent of farmers under the study area did not adopt this technology. The non-adoption of technology may be
due to the lack of knowledge, high cost of the technology, traditional way of practicing sericulture, the complexity of the technology and realization of the importance of technology.

It can be concluded that the farmers were adopting the recommended mulberry cultivation technologies either partially or fully. However, sizable proportion of technologies namely soil testing, reclamation, mulberry pest and disease control and mechanization belonged to low adoption category. The possible reason could be lack of awareness, no guidance from extension staff, high cost of the technology, traditional way of practicing sericulture, complexity of the technology and ignorance about the realization of the importance of technology.

5.7.4. Adoption level of farmers in the study area on silkworm rearing technologies

5.7.4.1. Disinfection

In the study area, majority of the farmers adopted the practice partially. The supply of disinfectants to the farmers was done free of cost by the department of Sericulture. Whenever supply of disinfectants was stopped by the Department, the farmers did not bother to purchase the disinfectants from the market. Most of the farmers did not know about the actual concentration and quantity of the disinfectant and preparation of solution in correct manner. These were the reasons for partial adoption of the technology. The above findings were supported by the observations of Ganapathy et al. (1999) and Gopala and Krishna (1993) who recorded that lack of proper knowledge about disinfection measures was the reason for partial adoption of the practice. The other possible reason for partial adoption might be the poor economic condition of farmers to purchase the required disinfectants. About 18% of the farmers adopted the technology completely. This might be attributed to the possession of separate rearing house by them in which conducting the disinfection was easy.
5.7.4.2. Hygiene

The hygiene was partially adopted by majority of the farmers in the study area. Washing of hands before entering the rearing house and dusting of 10% bleaching powder along with lime around the rearing house is essential to prevent diseases of silkworm. Lack of complete knowledge about this technology may be the reason for low/partial adoption of this technology. This finding is supported by the observations of Lakshmanan et al., (1997) and Ganapathy et al., (1999). The other possible reason might be cost involved and also neglecting attitude.

5.7.4.3. Incubation of layings

Regarding incubation of silkworm eggs, majority of the farmers in the study area adopted the said technology partially and around 41.5% of farmers did not adopt the technology. The reason for non-adoption may be due to the factor that most of the farmers received chawki reared worms from the chawki rearing centres. Hence, the incubation of silkworm eggs was not essential. The other possible reason might be the ignorance about the importance of the technology and lack of facilities for doing the incubation scientifically.

5.7.4.4. Loose egg brushing

Majority of the farmers in the study area did not adopt this technology. The possible reason for non adoption is that most of the farmers reared cross breed (multivoltine x bivoltine hybrids). Cross breed eggs are available in sheet form. Hence, there was no necessity to adopt loose egg brushing technology. The other reason for non adoption was that most of the farmers in the study area were utilizing the services of chawki rearing centres to overcome the risk and uncertainties in the silkworm rearing.

5.7.4.5. Chawki rearing

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Chawki rearing centres rear silkworms up to second moult by trained personnel and second moult worms are supplied to the farmers. From the table, it is understood that majority of the farmers adopted chawki rearing technologies like maintenance of temperature, humidity, spacing and feeding of quality leaf partially. The possible reason for partial adoption may be lack of infrastructural facilities, poor economic condition, partial knowledge and the farmers might not have realized the importance of chawki rearing. The other reason for non-adoption might be the existence of chawki rearing centres in the area from where farmers received chawki worms. Hence, the question of adoption of technology did not arise.

5.7.4.6. Bed disinfectant

It could be observed that majority of the farmers partially adopted and 30% of farmers completely adopted the use of bed disinfectants. The results are in conformity with the findings of Rajashekaraiah (1979), Srinivasa (1989) and Lakshmanan et al. (1998). The possible reason for partial adoption might be, bed disinfectants were supplied free of cost to the farmers by the Department of Sericulture, but not in sufficient quantity. The other reasons were farmers poor economic condition to purchase the disinfectants, lack of awareness and non-availability of the disinfectants in their places.

5.7.4.7. Shoot rearing

Majority of the farmers in the study area practiced this technology. As this technology saves more than 50% labour force farmers were adopting this technology. As 50% of the farmers were having separate rearing house, it was easy for them to adopt shoot rearing technology. Other 50% of the farmers in the study area did not have separate rearing house. As shoot rearing technology requires more space compared to stand /tray rearing, farmers were not in a position to practice this technology. All farmers could not construct separate rearing houses due to financial constraint and hence could not adopt this technology cent per cent.
5.7.4.8. Integrated pest management for uzifly

Control of uzifly in the rearing house is possible by adopting the integrated management, i.e. mechanical, chemical and biological. Majority of the farmers in the study area adopted the technology partially. Most of the farmers used only nylon net enclosures, and wire mesh to windows, thereby adopting only mechanical control. The possible reason for using the mechanical control i.e. nylon net enclosure was easy and also department supplied nets freely or on subsidized cost. and only few farmers used the uzi trap. The reason for partial adoption of chemical control i.e. uzi tablet by only by few farmers was due to the non availability of uzi tablet and uzicide in all the places and complexity of the chemical control method. Biological control of uzifly was not adopted by most of the farmers. The reason was non availability of the biological control agents. Further, as the effect of these agents are slow, farmers were not ready to use biological control methods. The other possible reason for non-adoption was the complexity of the technology and partial knowledge level of farmers. Findings of Nikhade et.al.,(1995) and Chapke Rajendra (2000) indicates that lack of knowledge about the control of pests and diseases was the reason for non adoption of the technology.

5.7.4.9. Rotary mountages

Majority of the farmers in both the districts were not using rotary mountages for mounting the spinning worms. Nearly 97 % of the farmers were not adopting this technology. The reason for non-adoption was attributed to high cost of the mountages, non-availability of rotary mountages, complexity of the technology and need of separate mounting hall for using the rotary mountages. Farmers also felt that this technology requires more labour. Majority of the farmers were in the habit of hiring mountages, but the rotary mountages were not available for hiring. In addition to this, lack of knowledge about the relative advantage of the practice were the reasons for non-adoption of the technology.
5.7.4.10. Separate rearing house

It is observed from the results that 50% of the farmers had no separate rearing house. Most of them utilized portion of the dwelling house to rear silkworms. Due to poor economic condition, farmers were finding it difficult to invest the money on the construction of rearing house. The above finding are in conformity with the findings of and Srinivasa (1989).

Some of the respondents have realized the importance of possessing separate rearing house for taking up disinfection, maintaining temperature during rearing, etc., which are the key factors for the success of silkworm crop. From the result it was clear that 50% of the farmers have constructed separate rearing house for silkworm rearing. The possible reason for this was that farmers who were getting good returns from the cocoon crop invested a portion of their returns for the construction of rearing house and the department of sericulture is giving to subsidy for the construction of rearing house to the farmers, few farmers have constructed the separate rearing house. But this facility is not given to all the farmers.

From the above discussion, it can be concluded that farmers adopted some of the improved technologies such as disinfection and hygiene maintenance, chawki rearing techniques, dusting of bed disinfectants, shoot rearing method of rearing, uzi control methods and construction of separate rearing house for silkworm rearing either partially or fully. This can be attributed to the adequate knowledge about importance of the technologies and also due to the assistance provided by the department of sericulture. The department of sericulture was providing disinfectants, subsidy for construction of rearing house and supply of chawki worms through chaki rearing centres. Use of rotary mountages was not adopted by the farmers in the study area. The possible reason may be the high cost of the technology, non availability of the materials and lack of awareness were responsible for non adoption of these technologies.
5.8. Association of socio-economic characteristics of the sericulturists with their knowledge and adoption index

From the results, it was observed that the relationship between age and knowledge/adoption index of farmers in both the districts were non-significant. The possible reason for this might be the average age being 42 years and nearly one third of the farmers average age was more than 50, they had not any interest in learning and adopting improved technologies. Similar findings were reported by Krishnamurthy et al. (1999) and Vijayakumar and Kanvi (2001).

The relationship with the education and knowledge/adoption index in both the districts were found to be non significant. The reason may be one third of them were illiterates and 26% of them had only primary middle school education and only 6% of them had college education. Even though nearly two third of them had formal education, there was no emphasis on agricultural information in formal education system. Thus, the influence of formal education was not significant.

From the table, it was clear that the relationship between experience and knowledge/adoption index of the sericulturists was significant in both the districts. This indicates that experience had influence on knowledge level of sericulturists. Similar reports were reported by Geetha et al.(2001).

The variables like area under mulberry and family size recorded non-significant relationship with knowledge and adoption index of the sericulturists. Srinivasa (1989), in his study on adoption of sericultural production technology by farmers reported that total land (farm size) and family size of farmers had no relationship with knowledge and adoption of sericulture technologies. The process of acquiring knowledge depends upon individual interest and needs. Irrespective of their land holding, some farmers participated in extension activities to seek information on new technologies. Since sericulture is a technical and risk bearing enterprise, irrespective of their land holdings, the sericulturist might have gained the knowledge and adopted
the same to get maximum benefits (Vijayakumar and Kanvi, 2001). Thiagarajan, 2002, has reported that the non-significant relation might be due to the education level of sericulturists.

Scientific orientation and extension participation were found to have non significant relationship with knowledge and adoption index of sericulturists. In the overall study, mass media participation has recorded positive and significant relation with knowledge/ adoption index. Mass media sources like reading of magazines, listening to radio and viewing sericultural programmes in television might have helped them to increase their knowledge level and adoption index. In addition to the participation in extension activities, contact with extension officials provides opportunities in gaining knowledge and adopting the improved practices. During the social participation, farmers might have exchanged their views by sharing their experience, that might have motivated them in understanding the benefit of technology and adopting the improved sericultural practices. Munikrishnappa (2001) in his study reported that extension participation along with the habit of visiting neighbouring places were found to have positive influence on the knowledge and adoption level of sericulture. Govinda Gowda (2002) reported in his study that extension participation and social participation had significant relationship with knowledge level of the farmers.

From the above it can be concluded that experience and social participation had significant relationship with knowledge level and technology adoption indicating that the farmers learnt about technologies before adopting the same. The participation in extension activities, social participation and contact with extension officials provided opportunities in gaining knowledge and adopting the improved practices.

Age, education, land holding, family size and scientific orientation did not show significant relationship with knowledge and adoption of improved technologies. Lack of emphasis on agricultural information in formal education system made the education factor non significant.
5.9. Reasons for partial and non-adoption of recommended sericulture technologies by the farmers in the study area.

It can be observed that majority of the farmers were facing one or the other problem for implementing the new technologies recommended for mulberry cultivation and silkworm rearing.

Nearly 30.92% of sericulturists in the study area expressed that they could not uproot the existing varieties as they have to stop the silkworm rearing nearly for 6 months till the new plantation is established. As most of the farmers were very poor, they were not ready to lose their livelihood by stopping the silkworm rearings. Similar findings were reported by Gopala and Krishna (1993).

In addition to this, nearly 22% of the farmers in the study area expressed that due to lack of sufficient water for irrigation, they were not able to plant new mulberry varieties which required more water.

The major constraints as opined by some farmers in the study area were lack of awareness about the improved technologies and they were not getting the latest information from the extension officials.

Nearly 49% of the sericulturists in the study area were facing problem of non availability of separate rearing house. They were doing rearing in dwelling house itself. Because of this, they were not able to adopt disinfection, maintenance of hygiene and integrated pest management of uzifly completely. Financial status was another major reason for lack of separate rearing houses and having bore wells for irrigation purpose.

Many farmers expressed that technical guidance from the extension staff on improved/recommended technology were not available properly and they had no training opportunities. Hence, they could not adopt the technologies and get the benefits. 70% of the sericulturists opined that because of the high cost involved in some of the technologies, they were
unable to adopt them. Similar findings were reported by Sreenivasa (1989), Aswathanarayana (1989), Thiagarajan, 2002 and Shreedhara (1997).

5.10 Knowledge level of extension officials on sericulture technologies

The transfer of technologies from lab to land is as important as developing a technology itself. Extension education is one of the important method by which the technology can reach the farmers. This is mainly done by the extensional workers. Extension worker should possess complete knowledge and information about the recommended technologies.

The extension officials supervising the sericulturists in the study area had sufficient knowledge on mulberry cultivation technologies like mulberry varieties, compost making, irrigation schedule, quantity of farmyard manure requirement and silkworm rearing technologies like shoot rearing and separate rearing house. The possible reason might be the extension officials might have attended training programmes at sericulture training schools or CSRTI, Mysore and the other reason might be these technologies are simple and easy to understand even by the extension officials.

The knowledge level observed on technologies like soil testing, chawki garden maintenance, quantity of fertilizer, paired row system of plantation, mulberry pest and disease control, pruning & thinning of mulberry plants, incubation and chawki rearing was medium. The poor knowledge level of the extension officials on some of technologies like soil reclamation measures, mechanization in mulberry garden and rotary mountage might be due to either these topics were not covered during their training programme or they had no opportunity to learn latest technologies.

From the above it can be concluded the knowledge level of extension officials was moderate to poor in some of the technologies. As majority of the farmers were consulting extension officials as their credible and main source of technical information, effective training of the extension staff is required to guide and convince the farmers to adopt the improved technologies.
5.11 Concept of training

Need based training programme that imparts practical training for sericulturists in practicing technology skills is very essential Sethu Rao (1975) stated that farmers training is an intensive learning activity, assisted by competent trainers, to understand and practice the skills required in adoption of new technologies at a place where appropriate facility exist and at a time and duration considered suitable by the farmers. Farmers training both institutional and peripatetic has been accepted as one of the very important extension strategies to bring about fast changes among farmers.

5.11.1. Training programmes undergone by the respondents in the study area

In the information collected, it was observed that 37% of the respondents have undergone training for a period of 3 to 9 days at different training centres, viz., Sericulture Training school (STS) Kuderu, K.R.pet, Thandavapura, University of Agricultural Sciences, Bangalore and Central Sericultural Research And Training Institute, Mysore. Around 6% of respondents have attended peripatetic training. This indicates that majority of the farmers (nearly 67%) did not attend any training programme. As stated by Dwarakinath and Padmasini (1977), the training would act as means of transferring new knowledge and skill in scientific agriculture of an external origin to a local farming. Hence, training of farmers is a must. As majority of respondents were not trained, information was collected to know the training needs of the respondents in the study area.

5.11.2. Training needs of the respondents in the study area

An attempt was made to know the training needs of the farmers in the study area. Sericulturists in Mysore district felt that disinfection followed by chawki rearing was very important where training was required. Whereas in Chamarajanagar district, it was vermicompost followed by disinfection and chawki rearing. The farmers were aware of the importance of disinfection
which played a major role in the success of cocoon crop. The next preferred training area was chawki rearing. The possible reason may be rearing of young age silkworms is very important as it will determine success of cocoon crops.

Farmers showed interest for training on vermicompost production technology. The possible reason might be that it is difficult to get sufficient quantity of farmyard manure and hence farmers wanted to generate compost in a systematic manner in their farm, so that it is possible to get quality compost in a short period and it reduces the expenditure. Department of sericulture also helped financially in construction of vermicompost shed, hence farmers showed more interest.

26.09% of the respondents opted for training on mulberry cultivation. They expressed interest in learning about new mulberry varieties and paired row system of plantation which not only helps in partial mechanization in their mulberry garden and helps in reducing the labour. It also yields more quantity of leaf which helps in brushing of more layings and in return more yield and more income from same unit area.

30 % farmers of Chamarajanagar district preferred to undergo training in shoot rearing technology which also helps in reducing labour.

Farmers of study area did not prefer much for nursery raising, soil testing and mulberry pest and disease management. The possible reason for this might be as mulberry is being harvested frequently (once in 45 days) farmers were not taking any interest in managing the pest and diseases of mulberry. In the same manner, farmers were not showing the interest in soil testing training programme, as mulberry grows well in all types of soil.

Dandin (1987) in his report has stated that lack of adequate training and extension net work are the reasons for low yield in sericulture. Similar findings were reported by Sarkar (1988). Hence training of farmers is very much essential to bring awareness about new technologies in farmers.
5.11.3. Type of training

Majority of the farmers wanted informal type of training in Chamarajanagar district. The possible reason might be that in this district the percentage of illiterates was more compared to Mysore district. Farmers were of the opinion that informal training would be useful in knowing the things in a better manner. Whereas in Mysore district farmers preferred formal type of training as the classes will be conducted in a systematic way compared to informal training.

5.11.4. Method of training

The farmers in both the districts preferred practical classes and study tour followed by lecture. The reason might be the silkworm rearing requires lot of skill. As majority of the farmers are illiterates, they preferred practical classes and study tour. Because in practical classes, importance will be given for skill teaching and farmers will be allowed to practice the skill. So, learning the skills would become easy and retention will be more. During the study tour farmers will be exposed to the progressive farmers who are adopting all the improved technologies. As the proverb says seeing is believing, farmers will be more convinced by seeing and interacting with the progressive farmers. As indicated by Coombs and Ahmad (1974), training emphasizes more systematic and deeper learning of specific skills and related knowledge. Similar findings were reported by Sidhu and Patel (1968), Kumar and Snehalatha, Mago (1974), Sharma and Murthy (1971), Jesuraja et al., (1987) and Ansari and Chandargi (2000).

5.11.5 Duration of training:

In both the districts, majority of the respondents preferred training of one week duration. The possible reason may be that farmers are feeling difficult to leave their agricultural/sericultural activities and attend the training programme for longer duration. Hence, farmers were ready to attend the shorter duration training programme. Similar findings were reported by Kumar
and Snehalatha Mago (1974), Singh et al. (1979) and Dayananda Patel (1985).

While interviewing the farmers, the farmers were asked to inform suitable time for their training. Majority of the respondents indicated that April to June is the suitable season for their training. The reason may be, as informed by the farmers that they will be free from the agricultural activities during the above period.

5.11.6. Place of training

Majority of the respondents in both the districts indicated peripatetic training as their first preference followed by Institutional training. The peripatetic type of training was preferred by majority of the respondents in both the districts. This is because that the sericulturists have pre-occupied commitments in their farm and home and do not want to move out of their places. Moreover they might have felt that the training offered in their own situation would be more realistic and applicable to their own background and resource. The above finding is supported by Kumar and Mago (1974), Singh (1976), Murthy (1989), Shreeshailaja (1993) and Sumathi and Alagesan (2001).

Training farmers is essential for at least one week duration, with more of practicals and study tour preferably in the month of April to May. The topics preferred by the sericulturists were vermicompost, disinfection and hygiene maintenance and chawki rearing.