Chapter 5

MAJOR FINDINGS AND RECOMMENDATIONS

This chapter presents the major findings of the study based on the following objectives and subsequent recommendations drawn from the findings as well as from field level observation and suggestions of experienced dairy farmers. The General Objective of the study was to understand the present scenario of the village milk co-operatives in Kerala with special reference to the Anand Pattern Co-operative Societies (APCOS). The Specific Objectives of the study were: 1. To inquire and describe the socio-economic profile of the dairy farmers who are supplying milk to the village milk co-operatives 2. To examine the various aspects of dairy farming and the major problems encountered by the farmers in dairying 3. To analyze the knowledge/awareness of dairy farmers regarding the policies and programmes in the dairy sector 4. To understand the perception of members of the village milk co-operatives about the concept of co-operation-co-operative identity, values, principles and their commitment to the village milk co-operatives 5. To examine the extent of participation of the dairy farmers in the activities of the village milk co-operatives as well as the development activities of the village. 6. To assess the effectiveness of leadership exercised by the presidents on the functioning of the village milk co-operatives 7. To find out the extent of utilization of existing support services and linkages of the dairy sector by the dairy farmers 8. To assess the various community assets-resources and facilities generated/created by the village milk co-operatives 9. To recommend appropriate measures/action programmes for the effective functioning of the village milk co-operatives.

The design of the study was mainly descriptive in nature with correlation components built into it. The study is intended to describe the various aspects of Anand Pattern Co-operative Society (APCOS) to get a comprehensive understanding about village milk co-operatives in Kerala. There are two categories of population in this Study 1. Village Milk Co-operative in
The dairy farmers who are pouring milk in Village Milk Co-operatives. As per the statistics of GOK, in the year 2009-10, there are 2678 Village Milk Co-operatives (commonly known as APCOS) and 8.40 lakhs dairy farmers who are pouring milk in Village Milk Co-operatives in the State.

Multi stage random sampling was used in the selection of APCOS and purposive sampling was used in the selection of dairy farmers. The Kerala Milk Marketing Federation (KCMMF) comprises of Three Regional Milk Producers Unions, viz., Trivandrum Regional Co-operative Milk Producers Union (TRCMPU), Ernakulam Regional Co-operative Milk Producers Union (ERCMPU) and Malabar Regional Co-operative Milk Producers Union (MRCMPU). The village milk co-operatives(APCOS) of the southern districts(Trivandrum, Kollam, Pathanamthitta, Alleppey) of the State are affiliated to TRCMPU and of the central region(Ernakulam, Trichur, Idukki and Kottayam Districts )to ERCMPU and of the northern districts (Palakkad, Malapuram, Kozhikode,Wayanad, Kannur and Kasaragode)to MRCMPU. From each region, one district each was selected and from each of the selected districts, four Dairy Development Blocks were selected and from each of the selected Blocks, three APCOS were selected, one each from A, B, C categories according to the audit classification of APCOS. Altogether 36 APCOS were selected for the study with 12 each from A, B, and C categories. Hence the sample size for the population of village level Anand Pattern Co-operative societies (APCOS) in Kerala was 36. The Secretary/President of the APCOS was the respondent who has provided the data about APCOS. Ten dairy farmers each were selected from each of the identified APCOS, constituting a sample size of 360, who are supplying milk to APCOS.

Pre tested interview schedules and standardized as well as adopted scales from the related studies were used for collecting data from the respondents. The data were then processed and analyzed by using Statistical Package for Social Sciences (SPSS).
5.1 Major Findings

The major findings of the study are scripted under the following headings. 1. Socio-Economic profile of the Dairy Farmers, 2. Dairy Farming and Allied Aspects and constraints experienced by farmers in Dairying, 3. Awareness of Dairy Farmers about the policies and programmes in Dairy Sector, 4. Perception of Dairy Farmers about Co-operation and their Commitment to dairy co-operative society 5. Participation of dairy farmers in the activities of APCOS and in the development activities of the village, 6. The effectiveness of leadership of the presidents of APCOS, 7.Support services and linkages of dairy sector, 8.Community assets of APCOS.

5.1.1. Socio-Economic Profile of the Dairy Farmers

- Majority of the dairy farmers (71.1%) are in the middle age group of 36-60 years and the percentage of young dairy farmers(20-35years) in the sample are very low (5.8 %) which indicates that younger generation is not taking up dairy farming as a preferred occupation.

- Most of the dairy farmers (70.28%) are males. The female dairy farmers constitute only 29.72% of the sample. The women membership in the dairy co-operatives in the sample is lower than the expected goal of NDDB of having 50% women membership in dairy co-operatives

- Caste-wise distribution of the sample shows that majority of the dairy farmers belong to backward communities with a distribution of OBC (54.7%), OEC’s (2.2%) and SC&ST (8.1%) and 35 % belong to the forward communities.

- A good number (78%) of the dairy farmers has education up to high school and 3.61% are illiterate indicating the lower level of education of the dairy farmers.
- 23.1% have membership in political parties pointing the political influences in dairy co-operatives in Kerala.

- Majority of the Dairy Farmers (92.77%) are illiterate as far as computer and internet are concerned. This indicates that the programmes of ICT for people are not reaching the grass root as expected.

- 11.67% have land line and 46.11% have mobile phone, implying that the mobile technology has really penetrated in the rural areas of Kerala.

- The co-operative movement demands that the members should have continuous education on co-operative values and principles to safeguard the goal of co-operation but majority (80.28%) of the dairy farmers have no training in co-operation.

- Even though most (78.06%) of the dairy farmers have bank accounts, 21.94% did not have Bank Account which reveals the fact that 100% bank linkages have not reached to the rural areas.

- The dairy farmers have got an average 12.60 years of association with APCOS, depicts that they have sufficient years of experience in dairy sector.

- Regarding training in dairying, 68.6% of the respondents have training in dairy farming by way of attending seminars and training classes organized by the Dairy Development, Animal Husbandry Departments of Gov. of Kerala and APCOS and other agencies in the sector. But 31.4% of the respondents did not have any formal training in dairy farming and they undertake the dairying activity based on the traditional and local experience which they have acquired over the time.

5.1.1.1 The Family Profile

- The family Profile of the respondents follows a more or less similar population characteristic of the State of Kerala. The average family size is 4.3 which depict the typical small family norm of the State.
- 60.55% of the members in the households depend on the Head of the family for their survival.

- Regarding the occupation pattern of the family members, out of the total 1531 people, 352 (22.99%) are having agriculture and dairy farming as major occupation. 315 (20.57%) people (all women) are engaged in household work supporting the major occupation of the family and 107 (6.77%) people, are daily wage earners.

- Majority of the households have access to the basic necessities of life. 98.89% of the families live in their owned houses, 100% have access to drinking water, 97.5% are having electricity and toilets etc., indicate that the dairy farmers possess basic amenities of life.

- 15-24% of the households have own vehicles, majority are having television (92.5%), mobile phone (72%) and bank accounts (78.1%) which are good indicators of social and economic development of the families of dairy farmers.

- Most (68%) of the dairy farmers are marginal farmers with land less than one hectare, only 13.9% have land above one hectare and about 18.1% of have no agriculture land. The average agriculture land of the sample is 129.18 cents

- Monthly income of the family from all sources is estimated as Rs.10778.91 and yearly per capita income is Rs. 32016.52 which is lower than the national per capita income at current price which is Rs.46492/.

- Majority of the dairy farmers (76.9%) belong to the APL section and only 23.1% are from the BPL section as per the Government’s certification.

- As per the scale used to measure the socio-economic status of the families of the respondents it is found that 1.4% are poor and 56.9% are from lower middle class, 39.4% are from upper middle class and 2.2% are from higher class.
5.1.2 Dairy Farming and Allied Aspects

5.1.2.1. Cattles owned by Dairy Farmers

- On an average 2-3 (mean=2.3) milch cows are kept by dairy farmers and Jersey and Holstein Friesians (HF) are the commonly found cross breed animals with the dairy farmers in Kerala. Majority of the dairy farmers are small and marginal farmers with a small numbers of cattle asset. Farmers who have one or two cows in milk comprise 77.22% of the sample. Only 2.5% of the sample is medium type dairy farmers with 11-50 cows in milk.

- The average milk production per cow for the commonly reared crossbreed variety, Jersey and HF are found to be 9.04 and 9.84 liters/day respectively.

- A few dairy farmers are still maintaining good quality local breeds for domestic purposes and the average yield per local breed cow is found to be 6.35 liters per day. Low maintenance cost of local cows, better level of disease resistance, recent findings regarding the superior quality of milk of local breeds, etc., are some of the reasons for renewed interest in protection of local breeds.

- Based on the farmers’ experience in rearing the different types of cows over the years, majority (66.4%) have preferred to rear the jersey cows. The characteristics like increased fat content in the milk, easy adaptability to the climatic changes, disease resistance capacity, lower intake of feed compared to other crossbreed cows and quiet nature so that even women could manage them are found to be the merits of jersey cows by the farmers. Farmers had the opinion that the government should promote more of jersey variety among the small and marginal farmers.

5.1.2.2. Economics of Dairy Farming

- The mean value of the asset of dairy units is Rs 91, 261/- (S.D= 1.71 lacs) and a good number (35%) are having dairy unit worth Rs.25, 000/- to Rs.50, 000/-.
The average milk production in households per day in lean and flush seasons are 20.79 liters and 22.35 liters respectively and significant difference is observed in the production of milk between lean and flush seasons.

Significant difference is also found in the production of milk per cow between lean and flush seasons with average production of milk per cow in lean and flush seasons are 8.70 and 9.48 liters respectively.

The average household consumption per day in lean and flush seasons is 1.39 liters and 1.43 liters respectively. It is observed that the average family size of the sample is 4.3. Hence, the average per capita consumption of milk/milk products in the households of dairy farmers is estimated as 0.325 liters (334 gm/day) which is much above the state per capita consumption of 232 gms of milk per day and the Indian Council for Medical Research (ICMR)’s recommendation of per capita 280 grams of milk per day for a healthy diet. The data indicated that the dairy farming has got positive impact on health promotion in the villages.

Significant difference is found between the actual milk production and expected milk production by the cows owned by the dairy farmers. The average actual milk production per day is 8.88 liters and the average expected milk production is 12.16 liters. Dairy farmers have raised the apprehension that the milk production of the crossbreed cows is getting diminished over the productive years due to prevailing illness and changing climatic conditions which is substantiated with the above results. Even in the second or third lactation where normally an increase in yield is expected, the farmers’ experience show that the actual yield is less than the expected yield. This critical issue is to be scientifically investigated by experts in the dairy and veterinary sector.
There is significant difference in the average price of milk given by APCOS and price of milk in local sale in both lean and flush season. In both seasons there is a difference of Rs 4 -5/- in the local sale and sale to APCOS. The farmers who find local market for their produce are able to gain additional income through local sale. But farmers can not solely depend on local market because the demand in the local market is stable and limited. APCOS is the reliable option for farmers to sell their milk which is a guaranteed market

- Majority of the dairy farmers (91.4%) use cow dung for agriculture purposes, whereas 53.3% sell a portion of the cow dung and earn additional income from dairy farming and only 13.3% use cow dung for green fodder cultivation.

- Only 11.4% of the dairy farmers have biogas plant attached to their dairy unit. Even though the Agriculture department and various NGOs are promoting the use of biogas as a renewable energy, it was not effectively implemented among the dairy farmers.

- Most of the farmers (74.2%) do not know the unit cost of production indicating the lack of awareness among the dairy farmers regarding the basic financial skills required for successful dairy management.

- Analysis of Variance (ANOVA) has shown that there is no significant difference in milk production, sale to APCOS, local sale and household consumption of milk among the Three Regions of KCMMF.

**5.1.2.3 The Supportive factors of Dairy Farming**

- Most (79.16%) of the farmers are doing all the work of their dairy unit by themselves and 18.06% have employed only one part-time worker that too only for milking the cows daily in the morning and in the evening. About 10 farmers (2.78%) who are having mini dairy units have employed 2-5 workers to assist in the dairy related work.
• Of the 75 farmers who have availed paid labour for dairy related work, 52(66.33%) are paying only Rs 8-50 per day mainly for milking the cows

• Only a few farmers (2.2%) have the proper practice of keeping the records and accounts of dairy unit. Regarding the knowledge about cost of milk production only 25.8% have the awareness regarding the unit production cost. Any field level estimate of cost of production in dairy farming is rather a rough estimate since very few farmers keep the actual records and make objective calculation about the cost involved in dairy activity.

• Regarding participation of male members, in 80.8% households have one male-member involved in dairy related work and in 4.2% households two male members are involved in the same.

• About female participation, 78.6% of the households have one female member involved in dairy related work and 11.1% of households’ two women are involved in dairy work.

• Majority (66.7%) of the households have two persons involved in dairy farm activities, mostly husband and wife and in 18.9% households only one person is engaged in dairy farming related work.

• On an average, one male member and one female member from the households are engaged in dairy farming and the average number of persons per household got involved in dairy farming activities are two(mean =2.2). Regarding time spent, on an average 7.17 hrs /day are spent for dairy related work by the family members. The average time spent by male member and female member is 3.88 hrs& 3.46 hrs respectively.

• Decision making in dairy related work are mostly made by men who are the heads of the households (HOH).But in 30.8% of the families the decisions are made jointly by
husband and wife indicating the female participation in decisions making in dairy farming. In general, the male dominance in decision making about dairy farming is found in the households of dairy farmers under study.

- A good number (78.1%) of the farmers are having bank accounts. But about 21.9% are not having bank account which means that farmers are not fully linked with the banks. At present, the farmers are given cash payment for the sale of milk to APCOS on a weekly basis and 99.2% of the respondents prefer the present mode of weekly cash payment. Though modern banking facilities are available even in rural areas, the coverage and usage is very minimal among dairy farmers and APCOS is not taking initiatives to link their financial operations through banks.

5.1.2.4. Comparative Analysis between Main and Subsidiary Dairy farmers

- Binomial Test of proportion to test the Equality of Proportion of Main and Subsidiary Farmers has shown that the proportion of main farmers is significantly higher than that of subsidiary farmers in southern region (the proportion is 0.61: 0.39). But there is no significant difference in proportions of main and subsidiary farmers in other regions.

- Significant association is found between the receipts of grant, loan availed and priority of dairy farming with higher proportion of main farmers received grant and availed loan for dairy farming.

- Independent sample t-test result has shown that there is significant difference in the average milk production between the cows owned by the main and subsidiary farmers with the average milk production per cow of main farmers is 9.42 liters and of subsidiary farmers is 8.37 liters implying that main farmers are having efficient dairy management practices.
5.1.2.5 Strategies adopted by the dairy farmers for profitable dairy farming

- 30.6% of the dairy farmers are found to be successful in dairy farming based on the assessment made using the scale to measure the level of success in household dairy farming.

- Testing of Hypothesis 1

Independent sample t-test shows that there is significant difference between farmers who have received training in dairy farming and farmers who have not received training in dairy farming, in their level of success in dairying (p-value<0.01, at 1% level of significance). The farmers with training (mean= 101.49) had scored more on success factors than other farmers without training (mean=96.85). Hence the proposed hypothesis - There is significant difference between farmers with and without training in dairy farming in their mean scores of success factors adopted in dairy farming – is accepted.

- The analysis of variance shows that there is significant difference between Central and other two Regions regarding mean score of success factors in dairy farming. The farmers in the Central Region are found to be adopting the strategies in dairy management more in comparison to the farmers of Northern and Southern Regions.

5.1.2.6 Constraints/Problems experienced by Farmers in Dairying

- Even though farmers have to face many constraints in dairy farming, majority (64.2%) of the farmers like to continue in the same mode but 16.7% are planning to limit the dairy farming to household requirements and about 12.8% are about to quit the activity and only 6.4% wanted to expand the dairy farming.

- Significant association is found between the opinion about the experience in dairy farming and priority of dairy farming. The proportion of the main farmers who like to continue in the present mode is more than the subsidiary farmers and the proportion of
the subsidiary farmers who plan to limit the activity to household uses is more than the main farmers.

- The problems of dairy sector which are ranked as very crucial by the farmers are increase in the cost of cattle feed, non-competitive price for the milk supplied, and lack of government support for the farmers. Majority of the farmers have the opinion that the two major issues affecting the sector are the increasing cost of cattle feed (81.7%) and the low procurement price of milk (71.1%).

5.1.2.7 Dairy Farmers’ suggestions to resolve the problems in Dairy Sector

- The remedial measures suggested by most of the farmers (83.9%) are 50% subsidy for cattle feed and 31.4% of farmers demand immediate increase in the price of milk. About 12.2% of the farmers wanted the effective implementation of the schemes and projects of dairy sector and about 11.9% wanted free veterinary services for dairy farmers.

- The other suggestions of farmers are: Proper integration of existing depts. of government in dairy sector, Health insurance schemes for farmers, Training programmes and Local production of cattle feed and linking the dairy farming as a productive work under the Mahatma Gandhi National Rural Employment Guarantee Scheme (MNREGS).

**Suggestions regarding farmer level initiatives to address the problems**

- 11.1% of the farmers suggested that use of maximum green fodder and locally produced cattle feed could reduce the cost of animal feed.

- About 8.3% of the farmers opinioned that dairy unit with 10-12 cows is more profitable than a dairy unit with 2-3 cows because the cost of production will be less for medium size dairy unit but the farmer has to take it up as a full time occupation.
• Local sale of milk and acquiring training in dairy farming and first aid treatment to animals etc were the other suggestions which farmers could do to face the problems of dairy sector.

**Suggestions regarding APCOS level initiatives to address the problems**

• 13- 15 % of the farmers have suggested that APCOSs have to provide production incentives/enhanced bonus and subsidy for cattle feed.

• Local production of cattle feed, loan for dairy farmers, local sale of milk by APCOS, training and orientations classes and providing veterinary services through APCOS/MILMA

**Suggestions regarding Unions/Federation (MILMA) level initiatives**

• 33.1% have opined that the MILMA who is producing and distributing cattle feed should provide subsidy for farmers

• 8- 10% of the farmers wanted the MILMA to take up the leadership roles in negotiating with government to enhance the price of milk as well as to demand for subsidies for dairy farmers. Veterinary services, subsidy for veterinary medicines, promotion of green fodder cultivation and supply of quality breed cows are the other support the MILMA could provide to reduce the burden of dairy farmers

**5.1.3 Knowledge/Awareness of Dairy Farmers about the Policies and Programmes in Dairy Sector**

• The knowledge/awareness regarding the policies of dairy sector is found to be very low among the dairy farmers including the governing body members of APCOS. Only a small percentage (3- 6%) of the farmers are aware about the same.

• Majority (80-95%) of the farmers have knowledge/awareness regarding the Schemes and Programmes. Farmers are well aware of the projects which are directly beneficial
to them which are implemented through Animal Husbandry and Dairy Development Departments of the Government. 41.67% are having high level of awareness about the programmes of dairy sector.

- **Testing of Hypothesis II**

  Independent sample t-test shows that there is significant difference between Members and Non-Members in their level of knowledge/awareness of programmes of dairy sector (p-value<0.05, at 1% level of significance) with the members having an average level of awareness (mean=100.435) and non-members having only a low level of awareness (mean=94.837) about the programmes of diary sector. Hence, the stated Hypothesis - *There is significant difference between member dairy farmers and non-member dairy farmers in their level of awareness regarding programmes in dairy sector- is accepted.*

  The members have more interaction with APCOS hence they are better informed about the programmes and policies in dairy sector. Active membership often facilitates better awareness about the programmes in the dairy sector.

- Chi-square test for relatedness shows that education and level of awareness are associated. As level of education increases the level of awareness also increased and level of education and priority of dairy farming are also associated i.e. as education increases dairy farming is becoming a subsidiary occupation because education creates other opportunities for employment. Most of the marginal farmers who had chosen dairy farming as their major occupation are having only a low level of education.

- Independent sample t-test results have also shown that there is significant difference in awareness with male farmers are better aware than female farmers, APL Farmers have more awareness than BPL farmers and Farmers with training in dairy farming
have higher level of awareness than farmers without training about programmes in
dairy sector.

- Analysis of Variance (ANOVA) has shown that there is significant difference among
farmers regarding the level of awareness of the programmes in dairy sector across
three regions, caste, education, socio-economic status and membership positions in
APCOS

5.1.4 Perception of Dairy Farmers about Co-operation and their Commitment to
Dairy Co-operative Society

- 35% of the farmers are having low level of perception regarding co-operation, 33.7%
and 31.4% respectively have average and above average level of perception
regarding the co-operation

- 26.5% of the farmers have low level of commitment, 47.0% have average level of
commitment and 26.5% exhibit high level of commitment to their dairy co-operative
society.

- Testing of Hypothesis III

A positive correlation (r=0.347, sig = 0.000, at 1% level of significance) is found
between the perception of farmers about co-operation and their commitment to their
organization. Hence, the proposed hypothesis- There is a positive correlation between
the perception on co-operation and commitment to the organization among the
members of dairy co-operative society- is accepted.

APCOS being a member controlled, democratic organization, the members’
commitment is very crucial for its success. A right perception regarding the values
and principles and internalization of these values and principles would results in
enhanced commitment and consequently the success of the organization. It is
observed that only 31.4% and 26.5% of the farmers are having above average
perception regarding co-operation and commitment to the dairy society respectively. The farmers’ perception regarding the foundations of their organization needs to be strengthened to enhance their commitment to achieve the socio-economic objectives of the organization.

- Independent sample t-test result has shown that there is significant difference between farmers who have received training and other farmers who have no formal training regarding their perception about co-operation. The farmers who had attended the training programmes in dairy farming have higher level of perception on co-operation than the others who have no formal training in dairy farming.

- The farmers of Southern Region are having lesser level of perception on co-operation than the other two Regions but there is no significant difference among the farmers of the three Regions on commitment to the dairy co-operative society and they have demonstrated an average level of commitment.

- There is significant difference among farmers of different educational background on their perception about co-operation and on commitment towards the dairy co-operative society. The farmers with higher level of education are having a better perception on co-operation and they have shown more commitment because educational advantages have offered more opportunities for them to get involved in the activities of APCOS.

- The Presidents of APCOS are having high level of perception on co-operation and commitment towards the organization. Being the leaders of the co-operative organizations, presidents are well aware of the co-operative dimensions of the APCOS and they have shown greater interest in the affairs of the society.

- On the whole, the dairy farmers have demonstrated an average level of perception regarding co-operation and they have got average level of commitment to their
organization and a positive correlation was found between perception on co-operation and commitment to the organization.

5.1.5 Participation of Dairy Farmers in the activities of APCOS and in the Development Activities of the Village

- Majority (79-84%) of the member farmers have participated in the Annual General Body Meeting, other special meetings organized occasionally to discuss the critical issues affecting farmers and farmers are very much concerned about the low income from dairy farming due the unsolved issues of the sector.
- A small percentage (3-10%) of dairy farmers are found to be getting involved in the common micro level organizations, welfare programs in the village and taking leadership roles in community activities.
- About 56% of the members have participated in the gramasabha and about 41% are able to raise the problems of dairy farmers in the gramasabha discussions.
- Members participating in APCOS' own programmes are also found to be very low (17-25%) which implies that the co-operative ideal of concern for community through welfare activities in the village is not taking place effectively through APCOS in the village.
- Only 22.3% of the dairy farmers have shown higher level of participation both issues related to community’s concerns and in the activities of APCOS.
- Dairy farmers have recorded an average level of participation in the activities of APCOS and in the programmes of the local community.
- The members with training have got higher level of participation and the training programmes are found to be effective in enhancing participation of members in the activities of APCOS and of the community because the training results in better
awareness creation and better participation in the programmes of APCOS and local community.

- **Testing of Hypothesis IV**

The one way ANOVA indicates that there is significant difference in the level of participation in dairy society as well as the local community activities among the dairy farmers belonging to different membership positions in APCOS (p-value <0.05 at 5% level of significance). The Presidents are having higher level of participation (mean=113.27) followed by Governing Board members (mean=104.15) and the ordinary members (mean=96.94) have only lower level of participation in the activities of APCOS and the local community. Hence, the stated hypothesis - *There is significant relationship between membership positions in dairy co-operative society and level of participation of members in programmes of dairy co-operative and local community – is accepted.*

Leadership positions in grass root organizations are avenues for members to get involved in the local issues and concerns of the people. Women and BPL members and members with low level of education are to be encouraged to take up leadership roles in APCOS after equipping them by way of training and capacity building programmes. The leadership positions are opportunities for them to get involved in community development activities of the village.

### 5.1.6 The Effectiveness of Leadership of the Presidents of APCOS

- 100% of the Presidents of APCOS are males and belonging to APL and majority (77.8 %) of them are in the age group of 36-60 years and there is almost equal representation from forward (47.2%) and backward classes (52.8%) with a slight majority for backward class. But no representation is found from SC/ST communities.
Regarding the priority of dairy farming only 8.3% have dairy farming as major occupation and vast majority (91.7%) are having dairying as only a subsidiary occupation.

As far as the association and experience with APCOS, it is found that most of them have(63.9%) come to the sector during the Operation Flood Period(1980-1996) in Kerala and about 27.8% have joined the sector in the post Operation Flood period(1997-2010) who are the new generation dairy farmers who have entered the sector and reached to the leadership of APCOS.

About 50% of the Presidents have continued in the position for less than 10 years but about 41.7% have occupied the post of president for the last 10-20 years and 8.3% of them have held it for more than 20 years continuously. 50% of the presidents are having more than 10 years of tenure as leaders of APCOS.

91.7% and 47.2% of the presidents have training in dairy farming and training in co-operation respectively.

Majority of the presidents are having a high level of perception regarding co-operation (69.4%), commitment to the organization (61.1%), awareness on programmes in dairy sector (75%), participation in programmes of APCOS and the local community (77.8%). The presidents being the leaders of the co-operative society are getting involved in the manifold activities of APCOS.

Only 38.9% of the Presidents are highly effective in their leadership roles. 30.6% of the Presidents are found to be average and another 30.6% are found to be below average in their leadership roles. The leadership effectiveness scores of the Presidents in all regions are average (mean score in between 95-105). The members of APCOS have perceived that the effectiveness the leadership of the APCOS Presidents’ is average.
• **Testing of Hypothesis - V**

There are no significant positive correlations, found between the perception of co-operation, commitment, awareness of programmes of dairy sector, participation in APCOS / local community and the leadership effectiveness of Presidents. Hence, the stated hypothesis - *There are significant correlations between the perception of co-operation, commitment, awareness, participation and leadership effectiveness of the Presidents of dairy co-operatives* - is rejected.

The mean scores of Presidents on various aspects of co-operation are above average. In spite of above average knowledge in co-operation, commitment, awareness of policies and programmes in dairy sector, and participation in local community as well as in APCOS the Presidents are not able to become effective in leading their organizations to its socio-economic objectives.

5.1.7 Support Services and Linkages of Dairy Sector

- Majority (80.28%) of the dairy farmers have no training in co-operation even though they are members of the dairy co-operative societies.

- A good number of farmers (68.61%) have attended training in dairy farming with an average of one training programme. Training in dairy farming and allied sectors are generally appreciated by farmers as they are useful and related to their livelihood.

- Most (96.7%) of the farmers are having continuous contact with doctors of the veterinary hospitals under the Animal Husbandry Department. Of these 49% consider that the contact is of having high value. Veterinary service is a key factor for successful dairy farming and dairy farmers are well aware of the importance of veterinary services in dairy farming.
Only 32.5% of the farmers have contact with the extn. staff of dairy development department even though the Dairy Development Department of GOK is entrusted with responsibility of the promotion of dairy farming in the State including the formation as well as administrative control of APCOSs in the State. The department is having its office in each development block and dairy extension staffs are working in each block and they are expected to interact with dairy farmers. Similarly only 26.4% have contact with field staff of MILMA union.

A good number (71.4%) of the farmers are maintaining contact with LSG and 48.6% are having linkages with local banks.

Only very few dairy farmers (less than 2%) have contact with educational institutions (university/colleges) of the locality and farmers’ contact with local NGOs are also very minimal (4.4%).

*Kissan toll free number*(1800 180 1551) from where farmers can access reliable information regarding farming is very minimally (1.9%) utilized by the dairy farmers.

Microcredit programmes are operational among the farmers but the usages of such financial services are also very low among the dairy farmers (16.1%).

**The training need’s assessment of dairy farmers**

- Majority(84.2%) of the dairy farmers have reported that they require training regarding diseases affecting the animals which is a major problem of dairy farming and 35% of them have given top priority to this topic.

- A major constraint in dairy farming is the escalating cost of cattle feed and non-availability of green fodder. Farmers are interested to learn techniques for local production of cattle feed. 67.8% of the farmers want to learn the local production of cattle feed and 29% of them considered that the training requirement is very high.37.8% demand training in fodder cultivation and preservation.
Most (76-79%) of the farmers have considered half day seminar and one day seminars are moderately useful and about 16-18% have rated them as highly useful.

A few farmers have the view that Short-term training programmes, Radio and Television programmes, Newspaper and Magazines and exhibitions are also effective in information dissemination among dairy farmers.

**Dairy farmers’ preference regarding the mode of training in the future**

- Half day /one day seminars are the preferred option for majority of the farmers. 55-56% has expressed moderate interest in half/one day seminars and 21.7% expressed their high level of interest in half day training. Most of the dairy farmers are marginal farmers who are engaged in dairy related work all through the day and they could spare only a few hours in a day for any kind of programmes so half day training is the most suitable option to ensure participation of dairy farmers.

- Radio and Television Programmes are moderately preferred (53.1% &74.4% respectively) by the dairy farmers as channels of information dissemination.

- Exhibition and *Kissan melas* are happening every year under the leadership of the government agencies but majority (59.2%) have the opinion that they were not interested but a sizable percentage (33.1%) have shown their interest in exhibition and *kissan melas* as a preferred source for information access.

- Majority (78%) of farmers are interested in on farm training. This is an indication that the extension departments and field staff of the agencies of dairy sector have to be with farmers to train them and solve their problems which they encounter in dairy farming. APCOS could better facilitate on farm training in an effective manner by utilizing its networks and resources.
Effectiveness of Linkages in Dairy Sector

- Most of the dairy farmers (76-98%) have considered the linkage with MILMA /Animal Husbandry/Dairy Development Dept/Krishibhavan/LSG are required and desirable because all these agencies are directly related to dairy farming.

- 85.5% affirm that they have no linkage with Agriculture University and its programmes but about 52% of the dairy farmers have the view that linkage with Agriculture University is desirable for dairy farmers and APCOS.

- Majority (84.7%) are not linked to the community based credit systems but 49.2% have the opinion that linkages with microfinance institutions are required.

- Most (99-100%) of the Dairy farmers have perceived that they or their organization (APCOS) have no linkage with nearby educational institutions/local NGOs/Social Work Institutes/National or International agencies promoting livelihood programmes. A small group (12-18%) has the opinion that such linkages are useful for APCOS and dairy farmers.

5.1.8 Community Assets of APCOS

The various community assets- resources and facilities created by APCOS’ in the villages for a successful operation of dairy related activities are summarized in this section. The village milk societies have organized the marginal farmers and created the necessary infrastructural and marketing networks so that anybody in the village can start a dairy unit and take membership in the dairy society and sell the milk to the dairy society as well as utilize various benefits from the programmes of dairy sector for enhancing ones income.

- Majority of milk societies (69.5%) are formed and commenced their activities under Operation Flood programme of phases II&III. The new milk societies (11.1%) are
also formed even after Operation flood programme. 19.4\% were established before the OF Period in Kerala

- Average no. of members in a milk society is found to be 395 (Min=16 Max=835) with 77.64\% male and 22.36\% female membership. “Perspective2010” was a strategic plan of NDDB to meet the challenges of dairy industry and one of the targets was increasing women membership in dairy co-operatives to 50\% and improving women participation in the governance of dairy co-operatives at all level. Women membership is only around 25\% in Kerala far below the expectation of NDDB.

**Average No. of farmers pouring milk in the Milk Society**

- Only 25.85\% of the members are active farmers who are supplying milk to the society. The rest 74.15\% members are there on the membership roll but not supplying milk to the society. This dormant membership indicates that farmers have withdrawn from the dairy farming activity due to various reasons and among the milk pouring members 25.45\% are women and among pouring non members 35.63\% are women.

- The Friedman test of equality of mean for related samples is used to compare the number of milk pouring members from 2005-06 to 2009-10. Since the p-values are greater than 0.05, at 5\% level of significance, there is no significant variation is observed in the number of members supplying milk over the years. There is no significant variation in the population of active dairy farmers for the last five years as per the sample survey. On the whole, there are reports that dairy farmers are withdrawing from dairy farming due to adverse situations of the sector but on the other hand government had implemented many projects and services for the sector and consequently there is an increase in production and per capita availability of milk in Kerala from 2006 onwards (Economic review2009, GOK). Since there is no
significant variation in the number of farmers who are pouring milk to the society the following could be inferred

1. Dairy Farmers are not withdrawing from the sector as reported in the media
2. Even if some farmers have withdrawn, new farmers have entered the sector under government support schemes and projects

Local consumers

- The Friedman test of equality of mean for related samples shows that there is significant variation in number of consumers (p-value. <0.01 at 1% level of significance) There is an increase in the mean number of local consumers of the milk societies. The people depending on the local dairy society to purchase milk has increased over the years from 2005-06 to 2009-10. The average no. of consumers for the period 2009-10 was 89(S.D =70 Min= 22 & Max = 295). The local sale is an opportunity for Village Milk Societies to enhance their income.

Assets of APCOS

- Majority(63.9%) of the APCOS have owned land varying from 5 to 10 cents and 16.7% of APCOS have more than 10 cents of land and 19.4 % of APCOS have not possessed any land.
- The average size of land owned by APCOS during the period (2005-2010) is 8.10 cent to 8.23 cents. The mean value of land during the same period (2005-2010) has increased from Rs.2.54 lacs in 2005-06 to Rs.6.24 lacs in 2009-10 with an increase of 145% approximately.
Most (77.8%) of the APCOS are having their own building for milk collection and for the functioning of the office. Only eight APCOS (22.2%) are functioning in the rented building.

Friedman test of equality of mean for related sample has shown that there is significant variation in the value of building owned by the APCOS over the period (2005-10). There is an increase in the value of building with an increase in the built up area of the buildings over the period i.e., Asset in the form of buildings have been added to APCOS during the period 2005-2010. There is also an increase in value of other assets owned of the APCOS during the period.

**Total Asset of APCOS**

Friedman test of equality of mean for related sample is used to compare the total asset owned by APCOS for the period 2005-06 to 2009-10. Test shows that there is significant variation in the total asset of APCOS for the stated period (p-value < 0.01, at 1% level of significance). There is an increase in the total asset of APCOS over the period. For the year 2009-10 the mean assets value is Rs. 23.81 lacs (S.D = Rs 28.43 lacs, Min = Rs 10269 & Max = Rs 114 lacs). The facilities created by APCOS are beneficial for the whole community and this is a group asset which is having clear community linkages. **Total no of APCOS now functioning as on 31.3.2010(Annual Report 2009-10, Milma)** are about 2678. The average asset of an APCOS of the sample in 2009-10 is Rs 23.81 lacs. As far as all the existing APCOS in Kerala are concerned they have together created total assets of Rs 637.73 cores approximately. This large network of facilities spread across the rural villages of Kerala is the result of the hard work of small and marginal dairy farmers for last thirty years.

But in all the years, the ANOVA shows that there is no significant difference in total assets owned by the APCOS in the three regions under MILMA. The assets formed in
the dairy co-operative net work in Kerala are spread all over the state and no major variation is noticed among the three Regions. The APCOS’ have been established in almost all villages in Kerala where there are opportunities for dairy farming.

**Liability of APCOS**

- Regarding the debt status of APCOS, over the period 2005-2010, majority of the societies (above 86%) have no debt and in the year 2010 only four APCOS (11.2%) have debts up to three lacs i.e., the APCOS are not creating any major liability to the shareholding dairy farmers over the period and considering the asset they have formed over the period, the liability is very negligible, showing a healthy financial situation of APCOS in general.

**Grant Received by APCOS**

- In all years, the ANOVA shows that there is no significant difference in total financial assistance received among different regions and the mean value of grant received in the year 2009-10 was Rs.83352.

**Milk Collection and Sales by APCOS**

The major activity of APCOS is the daily milk collection from the farmers and handing over the same to the unions. The quantity of milk collected in an indicator of the performance of APCOS in terms of its business operation. Majority of APCOS (55.5%) handle 50000-2 lacs liters of milk per year and 30.6% of APCOS handle more than two lacs milk per year.

- Friedman test of equality of mean for related sample has shown that there is significant variation in the collection of milk by APCOS over the period 2005-06 to 2009-10. Various Support programmes introduced by the government has helped to increase the milk production marginally in the year 2008-09 but it has again decreased in the year 2009-10
The average quantity of milk collection per day by APCOS depicts that in the year 2009-10, fourteen (39.9%) APCOS have collected less than 250 liters of milk collection per day, 10(27.8%) APCOS have collected 250-500 and 8(22.2%) have collected 500-1000 liters of milk per day. On the other hand, about 4(11.1%)) are very large societies which have handled more than 1000 liters of milk per day.

The average volume of milk collected per day by APCOS over the period 2005 to 2010 is between 605.72literes to 520.37liters. The Northern Region is above other two Regions in the quantity of milk collection per day but in all years, the ANOVA shows there is no significant difference in average Milk collection per day by APCOS over the period among different regions.

The Major quantity of milk collected by APCOS are directly sold to the Regional Unions who will market the processed milk and other milk products in various forms in the Market, adding value to the collected raw milk which in turn bring in additional income to APCOS and dairy farmers respectively. In the year 2009-10 about 50% of APCOS have sold less than 50,000 liters of milk to the union annually.

Majority of the APCOS (61-64%) have yearly local sale of milk up to 50000 liters. Two APCOS (5.6%) have local sale of milk of more than two lacs and around 30% of APCOS have a local sale of milk in the range of 50000-2 lacs of liters annually.

The percentage of local sale of milk by APCOS to the total sale varies from 25.5% to 35.6% during the period 2005-2010. As per Rules, the APCOS are permitted to sell only 20% of the collected milk through its outlets and the rest should be supplied to the union. The percentage of local sale in the sample is above the stipulated norm by the union. Local sale is an avenue for APCOS to fetch better income than the sale to the union. The increase in demand for milk in the local area forces APCOS to sell milk locally. Though local sale brings in better margin for APCOS but not an assured
market because the local demand is limited and the surplus quantity of milk could only be managed through the regular sale to the union which is the advantage of APCOS.

**Administrative Expenditure of APCOS**

- The Presidents of APCOS are given a nominal honorarium as per the existing rules of APCOS. A few societies give a token honorarium (mean Rs 2965) for the presidents.
- No of employees of APCOS are proportional to the work volume and average no of employees of APCOS are three with secretary and two other staff who are trained in the technical aspects of milk collection.
- The secretary is the key staff of society who is responsible for the day to day administration of the society. The mean salary of the secretary for the period 2009-10 was Rs62192/year. There is an increase in the average yearly salary of the secretary over the years.
- The support staff of APCOS is helping the secretary in the day to day running of the dairy society. Their jobs include dairy milk collection at the centre, local sale of milk, proper care of the equipments and other assigned work. The salary and wages of the workers are as per the rules and regulation of the co-operative society act and the mean wages for the year 2009-10 was Rs1.03 lacs/year. There is a gradual increase in the average yearly salary and wages of the workers in APCOS.
- The Average Non Salary yearly administrative expenditure of APCOS is around 1.1 lacs to 1.84 lacs over the period 2005-2010 with varying expenditure in each year.

**Business Turn Over and Profit of APCOS**

- The average turnover of APCOS in the period varies over the years. In the year 2005-06 the mean turnover was RS 67.03 lacs and in the year 2006-07 it was Rs.66.03 lacs
and in the year 2007-08 it was Rs 71.89 lacs and the from the available data of the years 2008-10, it was only Rs.40.55lacs and Rs.42.92 lacs respectively. There is very high variation in the turnover of APCOS basically due to the difference in the volume of milk handled by them. Maximum turnover was noticed in the years 2006-08 with Rs 7.01 cores of business was handled by a few APCOS.

- Majority of the APCOS are making profit and it is shared among the member farmers as per the existing norms of APCOS. The Average Profit generated varies over the period. For the last three years (2007-10) the average profit of APCOS was between Rs 1.6 lacs to Rs 1.8 lacs i.e., the APCOS are generating only very marginal profit. The percentage of profit in the years (2007-10) was 2.5%, 4.31% & 3.73% respectively and the average profit generated in the period (2007-10) was only 3.51%.

**Services of APCOS to the member farmers**

- APCOS are providing the services in relation to procurement of milk from farmers: Weekly payment to farmers, Distribution of cattle feed, and Payment of 65% of APCOS’s profit as bonus based on the quantity of milk supplied by farmers in a financial year.

- From the balance amount in the profit, 10% is set apart for the cattle development fund, 10% for welfare services, 10% as bonus to the staff, 5% for co-operative development fund and for the reserve fund. *(Byelaw of APCOS, p16).* The services mentioned above are often organized from the 35% of the profit of APCOS set apart for those services. Apart from the statutorily mentioned services, a few APCOS organize various services by net working with the Government department projects and programmes of NGOS and other institutions in the locality.
Dairy Farmers’ views about the Merits of APCOS

- The most important merit of APCOS as perceived by the dairy farmers (N=360) was that the APCOS has created *a good infrastructure facilities for milk procurement from dairy farmers in the villages in Kerala*. The other important merits of APCOS perceived by the farmers are: it is a good platform for people to come together and the APCOS could easily organize the farmers in the villages.

Problems encountered by APCOS

- The Major problems encountered by APCOS as per the opinion of the presidents/secretaries are, the increasing cost of milk production, low return for farmers, Lack of coordination of departments in dairy sector, political overtones, lack of modernization of APCOS, ineffective schemes and labour shortage. The government fixing the price of milk in the market without considering the real production cost of milk is adversely affecting the dairy farmers and APCOS.

Suggestions of Presidents/secretaries of APCOS for improving the functioning of Dairy Co-operatives

- The presidents/secretaries have put forward a set of creative suggestions for the better functioning of APCOS in the state. The two important suggestions are regarding the price control of milk in the state and the demand for subsidy for cattle feed. The presidents/secretaries had the strong conviction from their experience that the dairy sector in Kerala could overcome the existing crisis only though the implementation of these two vital demands of dairy farmers. Their other recommendations are regarding policy decision in government for providing more grant/loan for dairy farming and changes in dairy co-operative laws for providing autonomy for co-operative organizations to perform independently.
• Regarding recommendation specifically concerning the role of MILMA/APCOS, the present day leadership of MILMA/APCOS has to initiate steps to organize the dairy farmers for enhancing the dairy farming in the state of Kerala. All these creative recommendations have relevance only in the context of government removing its excessive control in price determination of milk in the State with producers’ and their prouder organization should have the freedom to decide the price of milk.

SWOT Analysis of APCOS by the Presidents/Secretaries of APCOS

The presidents /secretaries of APCOS are asked to identify the strengths, weaknesses, opportunities and threats of the village co-operatives at present.

• The infrastructural asset including land, building, machines and other facilities are counted as the import strength of APCOS in the villages. The increasing demand for milk and milk products is an encouragement and opportunities for APOCS to enlarge the business and acquire profit for its member farmers.

• The inherent weakness of the co-operative organization with over politicization and unnecessary governmental control in price determination of milk with lower support and subsidies from government is badly affecting APCOS. The non- availability of green fodder due to rapid urbanization, increasing cost of cattle feed and higher morbidity of crossbreed animals are the threats of dairy farming and in turn affect the performance of APOCS in the State. APCOS have to compete with private sector dairies and facilitate better grant and loan schemes for its members to keep its membership base intact and services farmer friendly.
5.2. Recommendations

The following recommendations are made, based on the major findings of the study, suggestions put forth by the experienced dairy farmers, staff of APCOS and field level observation of the researcher.

1. The percentage of youth (age group of 20-35) engaged in dairy farming in the sample is found to be very low (5.8%) depicting the general trend of youth opting out from agriculture and allied sectors. *The dairy co-operatives and Depts. of the Government related to dairy development have to plan programmes to attract youth towards dairy farming and dairy based enterprises.*

2. The women membership in the dairy co-operatives in the sample is only 29.72% which is much below the expected of goal of NDDB of having 50% women membership in dairy co-operatives. *The NGOs, LSGs, and other Govt. departments having programmes in women empowerment have to promote dairy farming as a livelihood and business enterprise among rural women and encourage them to become active members in village milk co-operatives because participation in member based organizations are pathways for socio-economic and political empowerment.*

3. The lower levels of education of dairy farmers with majority (92.77%) are computer illiterate brought out the gravity of *digital divide* in the rural areas of Kerala. This has indicated that the governmental project of e-literacy has not reached the grass root as expected. *The infrastructure facilities created by the APCOS could be used as an information/training centre for dairy farmers as well as for the people of the village. The APCOS’s centre can effectively function as a non formal education centre for dairy farmers in educating them on topics of diary as well as other areas of interest like computer, internet and so on.*
4. Even though majority of the dairy farmers have membership in co-operative organizations, most (80.28%) of them have not received any training in fundamentals aspects of co-operative movements. Since the co-operative movement demands that the members should have continuous education on co-operative identity, values and principles of co-operation to safeguard the foundations of the co-operative organizations, APCOS could organize training programmes in co-operation for the member farmers to strengthen its co-operative foundations. During the period 2007-08 to 2009-10 only a small percentage (1.9 %) of farmers have received training in co-operation organized by APCOS/MILMA. Dairy Co-operative organizations are not taking efforts to strengthen their co-operative basis thorough training and awareness programmes. *The MILMA federation has to continuously conscientise their members through various training and awareness generation programmes to strengthen co-operative foundations of dairy organizations.*

5. APCOS can create awareness among members regarding all banking services and establish 100 per cent bank linkages for their members and implement bank linked payment for dairy farmers for pouring milk in APCOS

6. Green fodder cultivation is an the essential component for successful dairy development but shortage of green fodder is reported due to the scarcity of land available for green fodder cultivation and the large majority of dairy farmers in the state comprises of marginal (68%) and landless farmers (18.1%). *Government has to plan projects to increase the availability of green fodder by utilizing common lands for green fodder cultivation using the labour available under MGNREGS. To reduce the fodder Shortage, Self Help Groups, Farmers Clubs and APCOS can organize fodder and feed banks with support of Banks and LSGs.*
7. Since most of the marginal farmers have experienced that features of cross breed jersey cows are more farmer friendly, the government should promote jersey breed cows among small and marginal farmers.

8. A renewed interest is seen among farmers to rear local breed cows on account of its low maintenance costs, disease resistance and quality of milk. The movements like organic farming and preservation of indigenous species have created awareness regarding the protection of local breeds. Hence, the breeding policy of the government has to reconsider the preservation, protection and promotion of local breed cows.

9. It is observed that the daily average milk production of cross bred cows in the sample is 8.88 liters much below the average expected milk production of 12.16 liters by the farmers which confirmed the apprehension of many farmers that the milk production of cross breed cow is getting diminished over the productive years due to the changing climatic conditions and higher morbidity of cross breed cows. This critical issue is to be scientifically investigated.

10. Since farmers are not able to realize even the production cost of milk, under the present system of governmental control of milk price in the market, APCOS and MILMA federation have to fight for their rights for autonomy in dairy sector so that reasonable profit may be guaranteed for small and marginal farmers who venture into dairy farming as their livelihood option.

11. Only 11.4% farmers have biogas plants attached to their dairy units. The use of biogas could reduce their energy expenditure for household purposes. Even though the Agriculture Department, LSGs and NGOs are promoting Biogas as a renewable energy, it was not effectively implemented among dairy farmers in spite of the opportunities among them. Agencies in dairy and allied sectors and NGOs have to
promote the use of biogas among dairy farmers to help them to get additional saving by optimal use of cow dung.

12. The cow dung/biogas slurry could also be used to make vermi compost which could fetch additional income for the farmers but at present only 2.2 per cent of the farmers are utilizing the opportunity. Agencies involved in dairy sector could plan and implement projects for household vermi compost units for dairy farmers and provide training for the same.

13. The credit facility available for dairy farming is not viable with prevailing interest rate of 10-12 per cent but one the other hand the credit facilities are available at 3-5 % of interest for the agriculture farmers. The agencies working for the dairy development in the state have to negotiate with financial institutions as well as liaison with government for policy changes so that dairy farmers should be treated on par with agriculture farmers in all grants and subsidy schemes and credit facilities.

14. As majority (74.2%) of the farmers are not aware about the unit cost of milk production APCOS has to organize frequent training programmes for dairy farmers in financial aspects of dairy management.

15. Since it is observed that only 2.2 per cent of the dairy farmers maintain farm registers, APCOS and other agencies in dairy sector can provide training in “Records maintenance” and incentives for farmers for keeping proper records of dairying activities so that scientific and reliable data regarding animals and real cost of dairying could be generated for dairy development programmes in the State. Besides such practices will enhance the dairy management skills of the farmers.

16. Even though family members are involved in the dairy farming activities, a male dominance is observed in the decisions regarding dairy farming at households. Enhancing the women membership in Dairy Co-operatives in turn may help the
women to get more participation in the decisions making in dairy farming in household as well as in the activities of dairy co-operative society.

17. About 31.4 per cent of the farmers have not received any formal training in dairying but farmers with training (68.6 per cent) are found to be adopting various strategies for making dairying a profitable enterprise. *Since significant difference is also observed in their level of success in dairying, continuous training programmes in various aspects of dairy farming could be planned by APCOS and other agencies in dairy sector for their member farmers.*

18. Member farmers are found to be more aware of the programmes of dairy sector than non member farmers who supply milk to APCOS. Membership is an opportunity for farmers to become active in the village level organization which in turn promote better awareness and subsequent utilization of various government schemes in the sector. *APCOS have to enlarge their membership base so that more people in the villages could be included the diary co-operative network.*

19. Awareness about various programmes and services in the dairy sector are very crucial for making dairy farming a viable livelihood option for farmers. Dairy farming is a major livelihood option for small and marginal farmers whose education level is low consequently they have a low level of awareness regarding programmes and services of the sector which in turn would limit their opportunities in utilizing the programmes and services effectively. Hence, *APCOS has to organize special awareness and training programmes for dairy farmers whose major occupation is dairy farming.* *APCOS could better facilitate as a link agent for channelizing the schemes and services for the farmers.*

20. Dairy Farmers’ perception on co-operation and their commitment to their organization are positively correlated but it is observed that only 31.4 percent and 26.5 per cent of
the farmers are having above average perception regarding co-operation and above average commitment to the dairy society respectively. APCOS being a member controlled, democratic organization, the members’ commitment is very crucial for its success. A right perception regarding the values and principles and internalization of these values and principles would results in enhanced commitment and consequently the success of the organization. The farmers’ perception regarding the foundations of their organization needs to be strengthened to enhance their commitment to achieve the socio-economic objectives of the organization. APCOS have to organize training programmes regarding the co-operative foundations of the dairy co-operatives to their members.

21. Dairy farmers who are holding positions in the decision making bodies (Governing Board) of APCOS have shown better perception on co-operation and commitment to the dairy society. Hence, Women dairy farmers, farmers whose major occupation is dairy and farmers with low level of education, whose level of perception on co-operation is found to be low could be given opportunity to take up leadership positions in Governing Board of Diary Co-operatives to enhance their level of perception of co-operation and commitment to the organization for achieving the overall socio-economic objectives of dairy co-operative societies.

22. Significant relationship is found between membership positions in dairy co-operatives and participation in the programmes of dairy society and local community with Governing Board members demonstrating higher level of participation than ordinary members. Besides the members with training have got higher level of participation since the training programmes are found to be effective in enhancing participation of members in the activities of APCOS and of the local community. The training results in better awareness creation and better participation in the programmes of APCOS.
and local community. Dairy farmers belonging to the sections of women, BPL and low educational background are to be encouraged to take up leadership roles in APCOS after equipping them by way of training and capacity building programmes. The leadership positions are opportunities for them to get involved in community development activities of the village.

23. The Presidents of APCOS are found to be not very effective in leading their organizations to the socio-economic objectives of the organizations in spite of having above average knowledge in co-operation, commitment, awareness of policies and programmes in dairy sector and participation in local community as well as in the affairs of APCOS. *Since they have good commitment and rather clear perception about co-operative framework of their organizations, their effectiveness could be improved through capacity building through training. They need more scientific training in developing their skills in managing the organization effectively. Training in leadership and allied areas in co-operative dairy farming could help the presidents to enhance their leadership and become effective in their role as presidents of prouder organizations in the rural sector.*

24. Even though the agencies in dairy sector namely MILMA, Dairy Development, Animal Husbandry and KLDB and a few NGOs organize short term training programmes for farmers, the training need assessment have revealed that farmers require more training in multiple aspects of dairy farming. *The agencies have to organize training at village level under the coordination of APCOS so that better farmers’ participation could be facilitated under APCOS*

25. APCOS have not established linkages with nearby educational institutions, local and national level NGOs, Social Work Institutions and National/International agencies promoting livelihood programmes. Most of the farmers are not aware about the
advantages of such linkages. Net working, Partnership and Linkages are the development strategies applied in people based organizations to strengthen their capacities to meet the challenges they face in the realization of the objectives of the organizations. *APCOS being a people based village level producer co-operative organization has to utilize all available networks to strengthen their dairy related business to fetch maximum returns to their members who are small and marginal farmers.* Dairy farmers look forward to APCOS as a source of support for building up a sustainable livelihood through dairy farming. Leadership of APCOS have to reflect over whether they are able to provide the adequate support for its members in finding dairy farming as a sustainable livelihood option. In this regard, the APCOS has to utilize all available and possible networks/linkages and partnerships for the larger interest of its members’ welfare. The linkages and networks with various governmental departments involved in dairy development with APCOS and MILMA are to be properly designed to facilitate the independent functioning of MILMA and APCOS so that the objectives of APCOS are realized without the hurdles from the controlling agencies in the Sector. APCOS should have the freedom to develop all possible partnership and networks for promoting welfare and development of small and marginal dairy farmers

26. The Initiative of the government from the period 2005-06 to 2009-10 has helped to increase the milk production in the state as well as to maintain the number of milk pouring members in APCOS without much variation in spite of the various constraints and problems of the dairy sector in Kerala. *The Budgetary allocation for dairy sector is to be increased to provide necessary support for the small and marginal farmers in the State.*
27. The number of local level consumers of milk has increased during the period 2005-06 to 2009-10, creating increased opportunity for APCOS for local sale of milk with better profit margin. The APCOS should have the necessary autonomy with changes in the co-operative rules so that APCOS could start organized retail sale of fresh milk in the locality which would enhance the income of marginal dairy farmers.

28. Significant increase is observed in the total asset value of APCOS during the period 2005-06 to 2009-10 with progressive increase in the resources of APCOS and the asset formed are spread all over state without any major variations. This large network of village level resources and facilities for dairy enterprises are to be further strengthened with government granting necessary autonomy for dairy co-operative organizations to function effectively for the welfare of small and marginal farmers.

29. Establishing dynamic partnership between the APCOS and Social Work Institutions for strengthening the livelihood opportunities of the small and marginal farmers

   The study has revealed that the dairy farmers have no meaningful contact or access to the higher education institutions. The APCOS are also found to have no network or linkage with neighbouring colleges. Not even a single farmer or APCOS in the study is found to be linked to any of the Social Work Institutions in Kerala. At the same time about 12.8 % of the farmers have perceived that linkages with Social Work Institutes are beneficial for farmers.

   Extension is an essential component of higher education where the institutions reaches out to the local community with their knowledge and other competence to help the people to solve their problems as well as to create new avenues for socio-economic development of the locality. Social work training in community practices demands that the learners establish community relationships and make assessment of the community and organize the people by way of forming and strengthening the people’s organizations for
community development. The capacity building of local producer organization is a proven strategy for the *community economic development* which ultimately results in community development.

The study has also revealed that the training in, co-operative foundations of people’s organizations, multiple aspects of dairy farming, leadership development of presidents and governing board members, enhancing women participation in dairy co-operatives, linking dairying with organic farming, financial inclusion of dairy farmers, ICT training for farmers etc. are areas where farmers can be helped by Social Work Institutes. The field work training of social work students in community setting can be linked with the village dairy co-operatives. The social work learners can collaborate with KCMMF and Government Agencies of Diary Development and Animal Husbandry in linking maximum farmers with the training programmes and other projects in dairy sector. The social workers can create better awareness among farmers about their co-operative advantages, importance of achieving autonomy for co-operatives and organize farmers to face the challenges in the co-operative dairy sector. The social work teaching and research institutions can link livelihood related projects and research studies in development sector with farmers through the APCOS.

### 5.3 Scope for Further Research

This study has analyzed the performance of village milk co-operatives which are Anand Pattern Co-operative Societies (APCOS) affiliated to KCMMF. The further research can be conducted in the following areas

- The performance of Regional Milk Unions and State level Federation in strengthening the village dairy co-operatives in Kerala

• Situational Analysis of the traditional dairy co-operatives (Industrial dairy co-operatives which were registered before the implementation of Operation Flood project and were not re-registered as APCOS and not affiliated to KCMMF) to understand whether they could function as independent village level co-operative proder organizations

• The contribution of dairy co-operatives towards development of social capital in the villages

• The scope of women dairy co-operatives in the villages under the context of women empowerment programmes in the State

• The role of local self government (LSG) in strengthening the village producer organizations for promoting rural livelihood

• The policy studies on the structure and functions of co-operatives in the globalised environment to suggest appropriate policy changes for creating a favourable business environment for the Rural Producer Organizations

5.4 Conclusion

The present study is a situational analysis of the village milk co-operatives in Kerala with reference to the Aanad Pattern Co-operative Societies (APCOS). It has presented an overall situation of dairy farmers and dairy co-operatives. The dairy co-operatives have organized the small and marginal dairy farmers and created the necessary infrastructure facilities and marketing network for successful dairy farming. The demand for milk and milk products are increasing even in rural areas with significant increase in the number of local consumers of milk from the village dairy co-operatives. The dairy farmers have
very consistent perception about the strengths of the APCOS in organizing farmers and creating the ‘common assets’ for dairy based livelihood in villages and consider that APCOS have the capacity to overcome the challenges in dairy farming by reorganizing its strengths.

The study has revealed that dairy farming activity is profitable if farmers adopt scientific as well as cost effective strategies in dairy farming. The farmers who have obtained the required training in dairy farming were found to be earning reasonable return and the dairy farming practices are becoming supportive for reducing the input cost of agriculture and household expenditure. Training in multiple aspects of dairy management can be better facilitated by utilizing the existing support services and linkages in diary sector in the State where the APCOS can facilitate such programmes for the maximum benefit of its member farmers.

Since United Nations Organization is celebrating 2012 as International year of Co-operatives to acknowledge the contribution of co-operatives towards social development, the APCOS, the village level producer organizations can do introspective analysis about their strengths, weakness, opportunities and threats to reaffirm the importance of co-operative organizations in socio-economic development of the small and marginal dairy farmers of Kerala. The challenges in achieving the autonomy for co-operatives which alone can promote growth and empowerment of the members must be brought in for further discussions and debate so that goal could achieved at the earliest.

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