CHAPTER VII

SUMMARY OF FINDINGS, SUGGESTIONS AND CONCLUSION

7.1 INTRODUCTION

Cultivation of fruits, it’s per capital consumption and production is an index of the standard of living of the people in a country and fruits are a source of vitamins and minerals, so essential for healthy living of the people. Mango, the choicest fruit of Hindustan and one of the most delicious fruits of the world is not only the King of all fruits but also a poor man’s fruit due to the hardy nature of the tree, low cost maintenance and high yield and well kept mango orchards are a source of pleasure and profit. As named botanically, ‘Mangifera Indica L.’ is said to have originated in the Indo-Burma region dating back to 110.B.C. has references on ancient literatures. Mango lends itself to variety of uses and every part of this valuable tree is used by mankind in one form or other which prompts the agriculturalists to cultivate mangoes on an extensive scale.
7.2 SUMMARY OF FINDINGS

Mango occupies third place after Banana and Orange in global production and India stands first among the mango producing countries of the world. Of the major mango producing states, Tamil Nadu covers an area of 44,748 hectares during 2011-12. For the purpose of our study, Shenkottai taluk in Thirunelveli district and Tenkasi taluk in Thirunelveli district were chosen as these two taluks have shown higher percentage of area under mango in respective districts. Only two varieties viz., Kajalattu (Neelum or Kasa) and Kallamai (Killmukku or Bangalora) are commercially important. In spite of the fact that mango is cultivated on an extensive scale in Shenkottai and Tenkasi taluks there exist with certain differences in the cultivation practices and net income derived between these two taluks based on certain facts and a comparative study is attempted at.

For the purpose of analysis, revenue villages in Shenkottai and Tenkasi taluks were arranged in a descending order of area under mango and the first five villages which account for more than 75 per cent of total area under mango were selected from these two taluks, proportionate probability random sampling technique is used to select 150 orchards in each taluk from the selected villages.
A random sample of 30 market intermediaries concerned in this field comprising of commission agents cum wholesaler and retailers was selected for primary data collection regarding marketing costs, profits, etc.

Important objectives of the study are to analyse and compare the cost and return structures in Shenkottai and Tenkasi taluks, to study the relationship between various input factors and gross income received from mango, to examine the resource-use efficiency of various input factors, to analyse the cost-benefit of investment on tree crop mango, to analyse the marketing channel and the share of producer and market intermediaries in prices, price spread in Shenkottai and Tenkasi area, to assess the efficiency of marketing and to study the effects of variations consumer’s price on the shares of producer-seller and the retailer.

The field investigation work was carried out in the months of April, May and June 2012 which is the harvest season for mango. Primary data pertains to the agricultural year 2011-12.

Of the various techniques adopted to study the relationship between various input factors and gross income derived from mango, a multiple linear regression model is fitted and the fitted model is also used to test the resource-
use efficiency of various input factors. To measure the capital productivity of
investment made four methods namely, (i) present value of a flow of future
returns, (ii) benefit-cost ratio, (iii) internal rate of return and (iv) pay-back
period are used in the present study. In order to measure marketing efficiency,
Shepherd’s formula is used. Effects of variation in consumer’s price on the
shares of producer-seller and retailer, two separate functions for each of the
taluks were fitted.

Characteristic features of mango orchards were studied in respect of size
of the family of orchardists, their educational status, farm size, net area
cropped, area under mango, age of the orchards, and size-wise classification
and tenurial system of mango orchards. It was observed that family size was
found to be higher in Tenkasi than Shenkottai and the literacy rate was low in
Tenkasi compared to Shenkottai. Average size of mango orchards in Shenkottai
was 17.21 acres and in Tenkasi 2.77 acres. Shenkottai taluk has a higher
percentage of area irrigated compared to Tenkasi and cropping intensity also
was found to be higher in Shenkottai. Mango cultivation was undertaken in
nearly two-thirds of net area sown in both taluks. The age-wise distribution of
mango orchards shoe a higher percentage of orchards in the age group 20-30
were found in Shenkottai whereas in Tenkasi the number of mango orchards
was the highest in the age group of 10 to 20 years. Proportions of mango orchards in Shenkottai were high in large farms whereas in Tenkasi the farms in the size below 5 acres accounted for the largest percentage of total number of holdings having mango orchards. Regarding tenural system of mango orchards, owner type of tenural system was pronounced in both taluks.

In the study of cost of production of mango orchards, cost of production of mango was classified into direct and indirect cost. Direct cost included the operation and maintenance cost and indirect cost included the annual share of establishment cost, interest on fixed capital, interest on working capital and depreciation.

In the cost of establishment of mango orchard per acre for five years, all initial cost such as seed material, planting, gap drilling, fencing, fertiliser, cost of labour both human and animal, watch and ward cost, interest on land value and land tax, repairing cost were included. Average initial establishment cost was found to be Rs.1792 in Tenkasi taluk and Rs.1928 in Shenkottai taluk. Seed material and planting cost was Rs.1200 in Shenkottai and Rs.960 in Tenkasi taluk. Fencing and gap filling cost amounted to Rs.728 in Shenkottai and Rs.832 in Tenkasi. Cost of fertilisers and manures was Rs.600 in Shenkottai and
Rs.400 in Tenkasi. Land values during the period under study were Rs.22,952 and Rs.24,858 per acre in Shenkottai and Tenkasi taluk respectively. Cost of human labour per acre was Rs.3,400 in Shenkottai and Rs.1140 in Tenkasi taluks. Cost of bullock labour in the total establishment cost was 13.44 per cent in Shenkottai and 9.22 per cent in Tenkasi. Watch and ward cost and repair and upkeep of farm implements were found to be Rs.1000 and Rs.250 respectively in Shenkottai and Tenkasi taluks. The average total establishment cost per acre of mango orchard amounted to Rs.22,328 in Shenkottai and Rs.19,532 in Tenkasi. Net establishment cost for establishing one acre in Shenkottai mango orchard was Rs.20,778 and in Tenkasi it amounted to Rs.18,082. The annual share of establishment cost was worked out based on the assessment that life time of mango is 50 years.

The operation and maintenance cost which include labour cost both human and bullock, cost on plant protection, watch and ward cost plus land tax, repair and upkeep of implements, transport cost with unloading and commission etc., amounted to Rs.7,350 in Shenkottai taluk and Rs.5,540 in Tenkasi. Operation cost alone formed 57.14 per cent and 50.36 per cent of the total cost on operation and maintenance on Shenkottai and Tenkasi taluks respectively. Plant protection cost was 25.85 per cent in Shenkottai and 26.72 per cent in
Tenkasi. Cost of human and bullock labour formed 9.25 per cent and 8.16 per cent in Shenkottai, 5.95 per cent and 6.50 per cent in Tenkasi. Cost of maintenance alone like repair and upkeep of implements, transport and commission charges formed 42.86 per cent of the total cost on operation and maintenance in Shenkottai taluk and 49.64 per cent in Tenkasi. Commission charges accounts for 27.21 per cent and 36.10 per cent in Shenkottai and Tenkasi respectively. Transport and unloading cost was 14.29 percent in Shenkottai and 11.73 per cent in Tenkasi. Repair and upkeep of implements was less than 2 per cent in both the taluks.

Cost of production of mangoes included direct costs and indirect cost. The direct cost included annual operation and maintenance and the indirect cost included the annual share of establishment cost up to bearing, interest on fixed and working capital and depreciation of fixed assets.

The cost of production of mango per acre was Rs.10,677.56 in Shenkottai and in Tenkasi it was Rs.8,384.00. Of this direct cost amounted to Rs.7,350 in Shenkottai representing 68.84 per cent of the total cost of production. In Tenkasi, the direct cost amounted to Rs.5,540.00 which is 66.06 per cent of the
total cost. The indirect cost was Rs.3,327.56 (31.16 per cent) in Shenkottai and Rs.2,844.00 (33.94 per cent) in Tenkasi.

Returns showing the variety-wise estimates of yield per tree in kilogram were found to be 179 kg per tree for ‘Bangalora’ in Shenkottai and 164.50 kg per tree in Tenkasi for the variety. The yield of ‘Neelum’ variety was found to be 136.50 kg/tree in Shenkottai and 116 kg per tree in Tenkasi. The yields in physical terms were 6,270 metric tonnes and 2,050 metric tonnes of Bangalora and Neelum respectively in Shenkottai and 4.94 metric tonnes of Bangalora and 1.16 metric tonnes of Neelum in Tenkasi taluk. Yield in monetary terms was Rs.15,862.45 in Shenkottai and Rs.19,924.9 in Tenkasi. Net return figures are Rs.21,047.34 in Shenkottai and Rs.11,462.56 in Tenkasi.

Mango being perennial crop, cost of production could be estimated only if the cost and yield figures during the entire life span is taken into account. The age-wise analysis of mango orchard shows that cost of production decreases during the second and third stages with the age of orchard increases. It could be observed that cost of production per kilogram of mango up to 20 years was Rs.1.18 in Shenkottai and rs.1.02 in Tenkasi. As the average yield after 20th year increased from 9640.80 kg to 21,960.74 kg in Shenkottai and from
8740.24 kg to 16,300.70 kg in Tenkasi, the cost of production between 21-35 years was Rs.0.49 and Rs.0.50 in Shenkottai and Tenkasi respectively. In the peak bearing stage, cost of production of mango per kilogram is almost the same in both taluks. In the declining stage cost per kilogram was higher and yield was declining in both taluks.

The worked out netted benefit cost ratio was 4.04 and 3.29 for orchards in the age group of 21-35 years in Shenkottai and Tenkasi respectively and the ratio is the highest compared to other three stages.

A comparative study of cost in Shenkottai and Tenkasi taluks indicates the highest cost of establishment, a higher cost on operation and maintenance and a higher cost of production in Shenkottai taluk than in Tenkasi taluk. The lower cost of production in Tenkasi is attributed to the high congenity of the soil, lower cost of fertilisers and manures. Lower cost of irrigation and cheaper labour available and the farming practices followed in this taluk.

A higher yield and return was observed in Shenkottai taluk compared to Tenkasi. Higher yield in Shenkottai is due to the long set practice of mango cultivation, the high number of bearing age of the orchards and the larger number of trees planted per acre compared to Tenkasi, and the special care that
cultivators in Shenkottai take with regard to watering, pruning, bunding, etc. Both gross income and net return are higher in Shenkottai compared to Tenkasi due to higher yield, regular care and watering, higher prices due to higher yield, regular care and watering, higher prices due to diversified market. The netted benefit cost ratio is also higher in Shenkottai due to the age of the orchards which are in the peak bearing stage.

The production problems of mango were identified and they were analysed by using Garrett’s ranking technique. It was found from the analysis that the most important factor which severely affected mango was the problem of huge investment need for raising the mango orchard.

Multiple linear regression model of the Cobb-Douglas was fitted, to estimate the relation between gross income from mango and the five explanatory variables. Three variables namely, human labour, plant protection and number of bearing trees influence the gross income of mango orchard in Shenkottai whereas in Tenkasi only two variables i.e., plant protection and number of bearing trees influence the gross income. Numbers of bearing trees show a greater influence on the gross income compared to other factor inputs in both the taluks. The Chow’s test pointed to the structural difference existed at
the slope level and not at the intercept level and at the slope level difference was caused by variable, number of bearing trees.

The marginal value productivities of all factor inputs were found to be positive in both taluks. This shows the scope for improvement in profit with increasing input.

Regarding resource-use efficiency the ratio of marginal value products to their respective cost indicate that human labour and tillage practices are underutilised whereas in the case of plant protection both taluks have shown a greater efficiency and orchardists were found to be rational in its use.

Regarding the farm size and productivity, the statistical test has shown that the existence of direct relation between them in mango cultivation. It means that the productivity of mango increases whenever the size increases on account of enjoying the economics of large scale operations.

The net present value indicated the soundness of investment in mango orchards in both the taluks. Of the two taluks, investment on mango orchard in Shenkottai taluk is economically more feasible than in Tenkasi taluk. Benefit-cost ratios were 2.73 for Shenkottai and 2.52 in Tenkasi and it indicates higher
profitability of mango orchards in Shenkottai than in Tenkasi. The Internal Rate of Return shows a higher rate of return and high pay-off nature of investment of mango orchards in both Shenkottai and Tenkasi taluks. Regarding the pay-back period, the Shenkottai mango orchard will recoup the investment earlier than Tenkasi grove.

Analysis of the marketing of mangoes reveals that cart, Tractor and van were the main modes of transport to nearby places and for a long distance lorry was used. There is no significant variation between the two taluks regarding the loading and unloading charges and commission charges. More than 90 per cent of the produce was marketed through commission agents cum wholesaler. From Shenkottai, mangoes were marketed to Theni, Thirunelveli, Pollachi and Coimbatore within the State and mangoes were sent to other states also namely, Karnataka, Kerala etc. The producer-sellers have to incur a higher cost by way of transport and commission charges over the producer having pre-harvest contracts, but this extra cost gives an incentive of 10 per cent extra profit to producer-sellers.

Final sale price including commission and transit charge was Rs.6,911.50 per metric tonnes in Shenkottai and Rs.2,440.03 in Tenkasi taluk. The
producer’s share in consumer’s price was 59.67 per cent in Shenkottai and 60.14 in Tenkasi. The retailer’s share was the highest among the chain of intermediaries. The price spread i.e., gross marketing margin was 43.55 per cent and 42.85 per cent in the consumer’s rupee in Shenkottai and Tenkasi taluks respectively. A higher price spread was found in Shenkottai compared to Tenkasi.

Marketing efficiency was estimated using the Shepherd’s formula and it is found that there is no difference between two taluks as per the ratios so arrived at. From the results estimated regression coefficients share of producer and retailer were significantly affected by variation in consumer’s price. The producer’s share was inversely related to the consumer’s price while retailer’s share was positively related.

The problem pertaining to marketing of mango were identified and ranked by using Garrett’s ranking technique. It was noted from the analysis that the major problem in marketing mango was inadequate credit facilities.

The overall analysis indicates the variability in cost of production of mango found in the selected areas of study (i.e., Tenkasi and Shenkottai taluks) and the variability attributed to the nature of soil, cost of labour, cost of
chemicals and pesticides, the farming practices observed and the age of the orchards on the selected revenue villages. While the cost is dependent on the farm and farm practices, variation in yield was bound to occur with farming practices and age of the orchards. Age wise distribution of orchards shows a higher cost in the initial bearing stage which gradually decreases over the years. The yield is said to increase gradually up to the peak bearing stage i.e., 35 years and comes down beyond this stage.

Of the various input factors, human labour, plant protection and the number of bearing trees influence the gross income even though there is variation between the two taluks regarding the influence off human labour on gross income. The number of bearing trees extent greater influence than other variables. Resource utilisation with regard to plant protection was effective in both the taluks where in there is scope for efficient utilisation of human labour and tillage practices.

The positive marginal value productivity figures indicate scope for improvements in profit with increasing input. The net present value, benefit cost ratio and internal rate of return show mango production to be economically feasible, highly profitable in both the taluks even though it is slightly higher in
Shenkottai taluk compared to Tenkasi. Transporting is mainly done using carts, tractors and cans and for long distances lorry is used. Marketing is done by the commission agents cum wholesalers. There is no variation in respect of loading and unloading charges in Shenkottai and Tenkasi. Producers share in price was around 55 per cent. A higher price spread was found in Shenkottai compared to Tenkasi. Consumer’s prices have a bearing on the share of producer’s and retailers. The producer’s share was inversely related to consumer’s price while retailer’s share was positively related.

6.3 CONCLUSION

Thus, it may be concluded from the analysis of the findings of the present study that the establishing of mango orchards in both Thirunelveli district, particularly Shenkottai and Tenkasi taluk of respective districts are technically feasible and economically viable. Comparing these two taluks, Shenkottai stood better in all respects such as intensive care of orchards, yield, price, recoup the investment earlier, marketing, etc. Further, statistical test namely Chow’s test showed that there is a structural difference in the production relation between the two taluks. It was also observed that the difference existed only at the slope level due to the variable, number of bearing trees. The human labour and tillage
practices are under utilization in the study regions whereas the uses of plant protections are found to be rational.

Marketing margin was found higher in Shenkottai compared to Tenkasi. It could be concluded that there is no difference regarding the marketing efficiency between two taluks based on the results of the Shepherd’s formula.

6.4 SUGGESTIONS

The study clearly; brings out the fact that cultivation of mango in the study region is economically viable. However, the removal of certain constraints faced by the orchardists both at the stages of production and marketing can also help to increase the yield and get a better price for their produce.

The most important factor in the production of any crops is the availability of the capital and more so in case of the fruits like mango as these crops are highly capital intensive. It could be observed from the study that the institutional agencies, commercial banks and co-operative banks almost do not advance credit to meet their cost of cultivation of mango. Hence, most of the orchardists relied upon the local money lenders and contractors so as to fulfil
their financial requirements with exorbitant rate of interest. So steps should be devised to ensure adequate credit for cultivation of mango in the study areas.

The lack of technical knowledge on the part of the orchardists prevented them from realising the maximum yield from mango in the study areas. They do not bother to apply recommended fertilizers or manures and the attitude of the cultivation was casual towards maintaining the orchards. In this context, the tension agency has to play an important role in educating the cultivators regarding proper input requirements and their beneficial effects.

The seasonal nature of the fruits like mango creates wide fluctuation in prices and sometimes the cultivators get so low price that they find it unremunerative even to harvest the fruit. Hence, there is need to devise ways and means to ensure better price and offer cold storage facilities. Establishing fruit processing industries are also advocated in the study area.

Adequate transport facilities at low cost and other infrastructural facilities are indispensable for proper marketing. Lacks of these facilities are resulting in poor returns in the study region. It could also be observed that most of the orchardists sell their produce only through commission agents cum wholesalers who have charged a higher rate of commission. Thus, to improve the marketing
channels and also fix reasonable commission charges. Further, market committee officials can take steps to propagate the marketing of mangoes through the regulated markets in the study areas.