SUMMARY OF FINDINGS, SUGGESTIONS AND CONCLUSION
CHAPTER VI

SUMMARY OF FINDINGS, SUGGESTIONS
AND CONCLUSION

Agriculture has continuously been playing a predominant role in the economic development of all developed and developing countries. Ever since India's independence, agriculture in India has taken major strides owing to the varietals and agronomic interventions of agricultural research and the resourcefulness of the farming community. Coconut is a multi-product crop and small and marginal farmers, involved in coconut growing, depend solely on this palm for their domestic requirements such as food, fuel and shelter.

Richly endowed with a favorable climate and soil condition, conducive to coconut cultivation, Kanyakumari district offers scope for increasing production and productivity of coconut palm. But the farmers are attracted raising rubber crop and the consequent conversion of coconut palm-groves into rubber plantation has given a stunning blow to coconut production. In spite of this, coconut continues to occupy the second place in importance with regard to area, production and productivity.

The researcher has undertaken this study, with the specific objective of analyzing the cost and returns of coconut production, the resource use efficiency and returns to scale and evaluating the marketing cost, marketable margin, price spread and marketing efficiency of different channels of distribution in the domestic markets. Besides studying the temporal variations in the price of coconut and assessing its total performance, the researcher has attempted to analyze the problem encountered in the cultivation and marketing of coconut by the growers. Appropriate suggestions on the basis of the findings have also been included.

In order to analyse and interpret both primary and secondary data, appropriate statistical tools such as Cobb-Douglas type of production function, simple regression equation, exponential function, co-efficient of variation,
Garrett’s ranking technique, Capital budgeting techniques, Time Series analysis using multiplicative mode and percentage analysis have been used.

5.1 Summary of Findings

5.1.1 Profile of the Study Area

Kanyakumari district was inaugurated on 1st November, 1959, with Nagercoil as its headquarters. The total area of the district is 1672 square miles and its population is 16, 69,733. It is blessed with a favorable agro-climatic condition for the growth of different varieties of crop. In the plains, semi-arid tropical monsoon type of climate prevails. The monsoon rains and the winter and summer rains account for the average annual rainfall of 1352.5 mm. The annual average number of rainy days is normally 85.9. The major source of rain fall is the North-East monsoon. Besides the favorable climatic conditions of this district, the soil conditions constitute the physical basis for agriculture. Hence varieties of crops like food crops, plantain crops, cash crops, fiber crops and rubber crops are raised in the district.

5.1.2 Reviews of Earlier Studies

Reviews of earlier studies are made on the following aspects: the importance of coconut cultivation, medicinal importance of coconut, types of coconut cultivars, employment potential of coconut cultivation, costs and cost of production, components of cost of production, marketing conditions of coconuts, agricultural marketing, problems of coconut cultivation and role of government in coconut development and research.

5.1.3 Socio Economic conditions of Sample Respondents

It is observed that among the total sample respondents selected for the study, there are 121 marginal farmers, 33 small farmers, 22 medium farmers and 24 large farmers. Of the respondents, a majority of the marginal and large farmers are in the age group of above 36 years. It is apparent from the study, that majority of the marginal, small, medium and larger farmers have 11-20 years experience in coconut cultivation and that the percentage of farmers with college
level education is higher in all the four categories of farmers. It is also found that agriculture is the occupation of majority of the sample respondents selected for the present study. Majority of 32.23 per cent of marginal, 45.45 per cent of small, 45.45 per cent of medium and 54.17 per cent of large farmers have only five members in their families. It is understood that majority of the sample respondents have utilized one or two member in coconut cultivation.

5.1.4 Production of Coconut in Kanyakumari District

It is found that in Kanyakumari district, the area under coconut cultivation which stood at 17492 hectares in 1988-89 has increased to 24,935 in 2008-2009. It is found that the trend value for area under coconut cultivation in Kanyakumari district has show an increase from 17,562 hectares in 1988-89 to 24,661 hectares in 2008-2009.

It is observed that production of coconut in Kanyakumari district had fluctuated from 1988-89 to 2008-09. Analysis of production revealed that the trend value had marked increase from 1652 lakh nuts in 1988-89 to 2594 lakh nuts in 2008-2009.

It is also observed that productivity of coconut in Kanyakumari district had been fluctuating during the period under review, with a gradual increase from 1652 nuts per hectare in 1988-89 to 1824 nuts per hectare in 1989-90. The trend value of production also decreased from 12215 in 1988-89 to 12056 in 2008-2009.

Regarding the area of production of coconut in the different taluks of Kanyakumari district, Kalkulam taluk has been ranked first with an average area of 9578 hectares out of the total area, contributing 38.78 per cent to the total area of coconut cultivation. The trend in area of coconut cultivation in Kalkulam taluk has increased remarkably from 6008 hectares in 1988-1989 to 9794 hectares in 2008-2009. Agsteeswaram taluk has been ranked second, with an average area of 8333 hectares out of total average area, contributing 32.70 per cents total area of coconut cultivation. The trend in area of coconut cultivation in the taluk, has
shown an increasing trend from 5569 hectares in 1988-1989 to 8261 in 2008-2009.

It is observed that Villavancode taluk is ranked third, contributing 22.34 per of the total area of coconut cultivation. The trend in area of coconut cultivation in the taluk has increased from 4397 hectares in 1988-1989 to 4924 hectares in 2008-2009 with some increase and decrease here and there. Thovalai taluk has been ranked the last, contributing 6.18 per cent of total area of coconut cultivation. The trend in area of coconut cultivation in the taluk, has increased continuously from 985 hectares in 1998-99 to 1687 hectares in 2008-2009.

Among the various taluks, Kalkulam taluk has been ranked first, with an annual average production of 1001.76 lakh nut out of the overall average of 21037 lakh nuts constituting 39.00 per cent of the total production of coconut. The trend in production of coconut in the taluk, has increased from 831 lakh nuts in 1988-1989 to 1028 lakh nuts in 1999-2000 and has increased to 1174 nuts in 2008-2009.

Agasteeswaram taluk has been ranked second with an annual average production of 838.90 lakhs nuts out of the overall annual average coconut production of 17617 lakh nuts, constituting 32.64 per cent of the overall average production of coconut. The trend in production of coconut in the taluk, has shown an increasing trend from 703 lakh nuts in 1988-1989 to 973 lakh nuts in 2008-2009.

It is found that Vilavancode has been ranked third, with an average production of 566.95lakh coconuts out of the overall average production of 11906 lakh nuts constituting 22.34 per cent of the overall average production of coconut. The trend in production of coconut in the taluk has increased from 541 lakh nuts to 595 lakh nuts during the study period, with some gradual increase and decrease now and then. Thovalai taluk has been ranked the last with an annual average production of 160.33 lakh nuts out of the annual average production of 3367 lakh nuts, constituting 6.03 per cent of the overall average.
production of coconut. The trend in production of coconut in the taluk has increased with a little fluctuation from 125 lakh nuts in 1988-1989 to 194 lakh nuts in 2008-2009.

The productivity of coconut is found to vary in the different taluks of Kanyakumari district. Among the various taluks, Kalkulam taluk is ranked first with an average productivity of 12041.50 nuts per hectare, out of the overall average productivity of 252872 nuts per hectare, constituting 25.20 per cent of the overall average productivity of coconut. The trend in productivity of coconut in the taluk has decreased remarkably from 12266 nuts per hectare in 1988-1989 to 12118 nuts per hectare in 1999-2000 and then with a gradual decrease from 12091 to 12011 nuts per hectare in 2000-2001 to 2008-2009. Villavancode taluk ranked second with an average productivity of 12009.86 nuts per hectare out of the overall average coconut productivity of 252207 nuts per hectare, constituting 25.14 per cent of the overall average productivity of coconut. The trend in productivity of coconut in the taluk has shown in a decreasing trend, from 12225 nuts per hectare in 1988-1989 to 11697 nuts per hectare in 2008-2009.

Analysis reveals that Agasteeswaram taluk is ranked third, with an average productivity of 11982.71 nuts per hectare out of the overall average productivity of 251637 nuts per hectare, constituting 25.10 per cent of the overall average productivity of coconut. The trend in productivity of coconut in the taluk, has decreased from 12324 nuts per hectare in 1988-1989 to 11840 nuts per hectare in 2008-2009. Thovalai taluk has been ranked the last, with an average productivity of 11745.28 nuts per hectare out of the total productivity of 246651 nuts per hectare constituting 24.57 per cent of productivity of coconut. The trend in productivity of coconut in the taluk has decreased with some fluctuations from 12309 nuts per hectare in 1988-1989 to 11367 nuts per hectare in 2008-2009.

The analysis on growth rate has revealed that the area under coconut cultivation, production and productivity in Agasteeswarm taluk increased at the rate of 4.5 per cent per annum 8.07 per cent per annum and 3.2 per cent per annum respectively. It is inferred that the increase in the area of cultivation and
application of latest technologies were the main factors, which contributed to the increase in growth rate of production. Further, the analysis of co-efficient of variation revealed, that the taluk recorded 11.80 per cent variation in the area of coconut cultivation. For the same period, the rate of variation was 26.42 per cent in production and 21.43 per cent in productivity.

The analysis on growth rate revealed that area under coconut cultivation, production and productivity in Kalkulam taluk increased at the rate of 5.15 per cent per annum, 8.92 per cent per annum and 3.59 per cent per annum respectively. Further, the analysis of co-efficient of variation revealed, that the taluk recorded 12.93 per cent variation in the area of coconut cultivation. For the same period, the rate of variation was 27.70 per cent in production and 20.89 per cent in productivity.

The analysis on growth rate revealed that area under coconut cultivation, production and productivity in Vilavancode taluk increased at the rate of 1.37 per cent per annum, 5.07 per cent per annum and 3.55 per cent per annum respectively. Further, the analysis of co-efficient of variation revealed, that the taluk recorded 5.99 per cent variation in the area of coconut cultivation. For the same period, the rate of variation was 23.94 per cent in production and 21.09 per cent in productivity.

The analysis on growth rate revealed that area under coconut cultivation, production and productivity in Thovalai taluk increased at the rate of 16.18 per cent per annum, 8.61 per cent per annum and 2.70 per cent per annum respectively. Further, the analysis of co-efficient of variation revealed, that the taluk recorded 16.18 per cent variation in the area of coconut cultivation. For the same period, the rate of variation was 27.49 per cent in production and 21.54 per cent in productivity.
5.1.6 Analysis of factor limiting coconut production

The analysis of the most crucial factors limiting coconut production faced by the sample growers in cultivation of coconut, with the help of Garrett ranking technique showed that the inadequate irrigation, problem of labour, pests and diseases, price fluctuations, inadequate finance, and fluctuating Government policy regulations.

5.1.5 Cost and Return Analysis

The cost returns analysis revealed that the total variable costs worked out to Rs.66718.5, Rs.61324.36, Rs.56529.7 and Rs.54768 respectively for marginal, small, medium and large farmers, recording 57.53 percent, 52.78 percent, 49.98 percent and 48.47 percent in the case of marginal small, medium and large farmers respectively. The contribution of fixed cost to the total establishment cost was Rs.42260.4 (42.47%) for marginal farmers, Rs.54874.8 (47.22%) for small farmers, Rs.56582.3 (50.02%) for medium farmers and Rs.58215 (51.33%) for large farmers.

In the case of marginal farmers, of the total variable costs, human labour accounted for the maximum share of Rs.36693.6 (31.63%) followed by cost of fertilizer and manure amounting to Rs.15380 (13.26%). The cost of pesticides valued at Rs.800.16 (0.70%). The cost of watch -wards for about Rs.9936.8 which amounted to 8.5 per cent of total variable costs.

In the case of small farmers, of the total variable costs, human labour accounted for the maximum share of Rs.34304 (29.52%) followed by cost of fertilizer and manure amounting to Rs.13456.8 (15.58%). The cost of pesticides valued at Rs.763 (0.66%). The cost of watch -wards for about Rs.9133.6 which amounted to 7.86 per cent of total variable costs.

In the case of medium farmers, of the total variable costs, human labour accounted for the maximum share of Rs.32811 (28.93%) followed by cost of fertilizer and manure amounting to Rs.1142.88 (9.85%). The cost of pesticides...
valued at Rs.750.5 (0.66%). The cost of watch-wards for about Rs.8543.1 which amounted to 7.55 per cent of total variable costs.

In the case of large farmers, of the total variable costs, human labour accounted for the maximum share of Rs.31891 (28.23%) followed by cost of fertilizer and manure amounting to Rs.10804 (9.56%). The cost of pesticides valued at Rs.736.8 (1.82%). The cost of watch-wards for about Rs.8156.8 which amounted to 0.56 per cent of total variable costs. Of all the variable costs human labour accounted for the maximum share in the case of all the four categories of farmers.

The total fixed costs worked out to Rs.49260.4, Rs.116198.8, Rs.113112 and Rs.112984.4 respectively for marginal farmers, small, medium and large farmers. In other words, the total fixed cost accounted for 42.47 per cent, 47.22 per cent, 50.02 per cent and 51.53 per cent in the case of marginal, small medium and large farmers respectively. The contribution of fixed cost to the net establishment cost was Rs 108004.56 for marginal farmers, Rs.104454.8 for small farmers, Rs.99770 for medium farmers and Rs.96170.8 for large farmers.

In the case of marginal farmers, of the total fixed costs, rental value of land accounted for the maximum share of Rs.28800 (24.83%) followed by other fixed costs amounting to Rs.20110.4 (17.34%). Besides these factors, land revenue accounted for about Rs.350 which was 0.30 per cent of the total fixed costs.

In the case of small farmers, of the total fixed costs, rental value of land accounted for the maximum share of Rs.28800 (24.78%) followed by other fixed costs amounting to Rs.25724.8 (22.14%). Besides these factors, land revenue accounted for about Rs.350 constituting to 0.30 per cent of the total fixed costs.

In the case of medium farmers, of the total fixed costs, rental value of land accounted for the maximum share of Rs.28800 (25.46%) followed by other fixed costs amounting to Rs.27432.3 (24.25%). Besides these factors, land
revenue accounted for about Rs.350 which was 0.31 per cent of the total fixed costs.

In the case of large farmers, of the total fixed costs, rental value of land accounted for the maximum share of Rs.28800(25.49%) followed by other fixed costs amounting to Rs.29065.6(25.73%). Besides these factors, land revenue accounted for about Rs.350 which was 0.31 per cent of the total fixed costs.

Further analysis, regarding average total cost of coconut production, worked out to Rs.3099.37 per acre in the case of marginal farmers, Rs.29013.94 for small farmers, Rs.28536.14 for medium farmers and Rs.28202.13 for large farmers. In other words the total cost of coconut production was the maximum, in the case of marginal farmers, followed by small farmers, medium farmers and large farmers.

Thus it is found that, human labour accounted for the maximum share of operational and maintenance cost in all the four categories of farmers.

Cost analysis has revealed that the total fixed costs per acre worked out to Rs.11202.14, Rs.12280.65, Rs.12563.59 and Rs.12845.26 respectively in the case of marginal, small, medium and large farmers. The proportion of total fixed cost by marginal farmers was 37.22 per cent marginal farmers,42.33 per cent for small farmers,44.03 per cent for medium farmers and 45.55 per cent for large farmers.

The results of the analysis also indicated that the total cost of cultivation of coconut ranged from Rs.30099.37 per acre in the case of marginal farmers, to Rs.28202.13 in the case of large farmers. The cost of production per nut was Rs.4.19 for marginal farmers, 3.88 for small farmer,3.72 for medium farmers and Rs.3.58 for large farmers. Scientific method of cultivation adopted by large farmers must have been the main reason for the larger output and less cost of production.
The analysis of profitability, among the four categories of farmers revealed that the maximum profit of Rs.10273.27, Rs.13787.92, Rs.16023.06 and Rs.18176.13 respectively were realized in the case of marginal farmers, small farmers, medium farmers and large farmers. Similarly, the amounts of fixed cost of production of coconut also ranged from Rs.11202.14 (37.22%) in the case of marginal farmers, Rs.12280.65 (42.33%) for small farmers, Rs.12563.59 (44.03) for medium farmers and Rs.12845.26(45.55%) for large farmers.

Further analysis revealed that the net profit ranged between Rs.18176.13, the highest among large farmers to Rs.10237.27 the lowest among marginal farmers. The net profit ratio was the highest of 30.26 in the case of large farmers and lowest of 17.13 in case of marginal farmers and 22.15 in the case of small farmers. The analysis further revealed that the gross selling price and the net selling price were 5.76, 5.84, 5.92 and 6.00 respectively in the case of marginal farmers, small farmers, medium farmers and large farmers.

The cost and returns analysis revealed that cultivation of coconut was profitable. To ascertain the scope for further increase of net return per acre, resource-use efficiency was analysed. Cobb Douglas type of production function was fitted, to evaluate resource productivity and returns to scale in coconut cultivation.

The relationship between yield of coconut and independent variables, during the yield stage, among marginal farmers revealed that the value of coefficient of multiple determinations ($R^2$) was 0.656, which indicated that 66 per cent variation in the yield could be explained by the independent variables that were included in the function. The regression co-efficient was partial elasticities of production of coconut, with respect to the inputs concerned. The yield of coconut was significantly influenced by the level of labour utilized.

The relationship between the yield and labour level indicated that one per cent increase in the level of labour used, keeping all other factors constant, would increase the yield by 0.322 per cent in its mean level. The coconut yield was also significantly influenced by the level of total cost of fertilizers and total
cost of manure. The analysis indicated that every one per cent increase in the level of fertilizers applied ceteris paribus could increase the yield by 0.206 per cent from its mean level, while one per cent increase in the level of manure used ceteris paribus could increase the yield by 0.400 per cent from its mean level.

The analysis also indicated that relationship between cost of seedling and yield was positive, but not significant statistically. Therefore, the cost of seedling had no significant influence on the yield. The relationship between the number of coconut trees and yield was negative and statistically significant. It implies that one per cent increase in the number of trees would decrease the yield by 0.0657 form its mean level.

In the case of small farmers it was found that the value of co-efficient of multiple determinations \( R^2 \) was 0.758 which indicated that 76 per cent of variation in the yield could be explained by the independent variables that were included in the function. The regression co-efficient was partial elasticities of production of coconut with respect to the inputs concerned. The yield of coconut was significantly influenced by the level of the labour utilized. One per cent increase in the level of labour used, keeping all other factors constant, would increase the yield by 0.135 per cent in its mean level.

The coconut yield was also significantly influenced by the cost of fertilizers and cost of manure. The analysis indicated that every one per cent increase in the level of fertilizer, applied ceteris paribus could increase the yield by 0.244 per cent from its mean level, while one per cent increase in the level of manures used ceteris paribus, could increase the yield by 0.030 per cent from its mean level.

The analysis also indicated that relationship between cost of seedling and yield was positive, but not significant statistically. Therefore, the cost of seedling had no significant influence on the yield. The relationship between the number of coconut trees and yield was negative and statistically significant. It implies that one per cent increase in the number of trees would decrease the yield by 0.0972 form its mean level.
In the case of medium farmers it was found that the value of coefficient of multiple determinations $R^2$ was 0.670 which indicated that 66 per cent of variation in the yield could be explained by the independent variables that were included in the function. The regression coefficient was partial elasticities of production of coconut with respect to the inputs concerned. The yield of coconut was significantly influenced by the level of the labour utilized. One per cent increase in the level of labour used, keeping all other factors constant, would increase the yield by 0.313 per cent in its mean level.

The coconut yield was also significantly influenced by the cost of fertilizers and cost of manure. The analysis indicated that every one per cent increase in the level of fertilizer, applied ceteris paribus could increase the yield by 0.055 per cent from its mean level, while one per cent increase in the level of manures used ceteris paribus, could increase the yield by 0.056 per cent from its mean level.

The analysis also indicated that relationship between cost of seedling and yield was positive, but not significant statistically. Therefore, the cost of seedling had no significant influence on the yield. The relationship between the number of coconut trees and yield was negative and statistically significant. It implies that one per cent increase in the number of trees would decrease the yield by 0.0842 form its mean level.

The analysis of estimated Cobb-Douglas production function for large farmers revealed, that the value of coefficient of multiple determinations $R^2$ was 0.917 which indicated that 92 per cent of variation in the yield could be explained by the independent variables that are included in the function. The regression coefficient was partial elasticities of production of coconut, with respect to the inputs concerned. The yield of coconut was significantly influenced by the level of labour utilized. One per cent increase in the level of labour used, keeping all other factors constant, would increase the yield by 0.124 from its mean level.

The coconut yield was also significantly influenced by the level of cost of fertilizer and cost of manure. The analysis indicated that every one per cent
increase in the level of fertilizer applied, ceteris paribus, could increase the yield by 0.163 per cent from its mean level. While one per cent increase in the level of manures used ceteris paribus, could increase the yield by 1.358 per cent from its mean level. The analysis also indicated that the relationship between the cost of seedling and yield was positive, but not significant statistically. Therefore, the cost of seedling had no significant influence on the yield. The relationship between the total number of coconut trees and the yield was positive but statistically not significant influence on the yield.

The analysis also revealed that the sum of elasticities for the yield increasing stage was 1.8327 for marginal farmers, 1.9601 for small farmers, 1.6057 for medium farmers and 0.8811 for large farmers in the coconut cultivation in the study area. It has been found that there is no farm which has less than unity of elasticity. On the other hand, the sum of elasticities was greater than unity in all categories. The results showed that there was increasing return to scale in all categories of farmers in the study area.

The analysis of resource-use efficiency, in the case of yield increasing stage revealed, that the marginal physical products of labour, cost of manure and fertilizers and cost of pesticides were 58.872, 0.306 and 1.714 respectively. The marginal value of inputs was also Rs.328.50, Rs.1.71 and Rs.9.56 respectively. It was found that there was scope for the increasing the use of labour, fertilizer and manures to increase the yield of coconut further, in the case of marginal farmers as the ratio of marginal value product to factor cost was more than unity. It also revealed that every rupee additionally spent on those variables would increase the value of yield further by Rs.1.53, Rs.1.71 and 9.56 respectively.

The analysis also indicated that the marginal physical products of labour, cost of manure and fertilizers and pesticides were 41.470, 0.725 and 1.523 respectively. The marginal value of inputs was also Rs.233.48, Rs.4.08 and Rs.8.57 respectively. It is inferred from table 4.12 there was a scope for increasing the use of labour, fertilizers and manures to increase the yield of coconut further in the case of small farmers as the ratio of marginal value product
of factor cost was more than unity. It also revealed that every rupee additionally spent on those variable, would increase the value of yield further by Rs. 1.09, Rs. 4.08 and Rs. 8.57 respectively.

The analysis also indicated that the marginal physical products of labour, cost of manure and fertilizers and cost of pesticides were 46.470, 0.925 and 1.723 respectively. The marginal value of inputs was also Rs. 245, Rs. 2 and Rs. 6 respectively. It is inferred from table 4.13 there was a scope for increasing the use of labour, fertilizers and manures to increase the yield of coconut further in the case of small farmers as the ratio of marginal value product of factor cost was more than unity. It also revealed that every rupee additionally spent on those variable, would increase the value of yield further by Rs. 1.64, Rs. 6.80 and Rs. 16.57 respectively.

It was found that the marginal physical products of labour cost of manure and cost of fertilizers were 17.891, 0.356 and 1.935 respectively. The marginal values of inputs were also Rs. 101.09, Rs. 2.01 and Rs. 10.93 respectively. It is inferred from the table 4.14 that there was scope for increasing the use of labour, fertilizers and manures to increase the yield of coconut further in the case of large farmers as the ratio of marginal value product to factor cost was more than unity except labour. It also revealed that every rupee additionally spent on those variables would increase the value of yield further by Rs. 0.47, Rs. 2.01 and Rs. 10.93 respectively. Thus it can be concluded that the analysis indicated that there was a scope for increasing the coconut yield by better utilization of these variables.

Capital productivity analysis of different market prices indicated that the pay-back period of coconut cultivation was 11.12 years in the case of marginal farmers, followed by 9.53 years in the case of small farmers, 9.12 years in the case of medium farmers and only 8.15 years in the case of large farmers. The pay back period has been less than 10 years in all the categories of farmers except the marginal farmers. As the pay back period is less than the cut-off period in the case of small and large farmers, it can be concluded that coconut
cultivation is viable. It is also viable in marginal farmers and medium farmers as the difference is very meager.

The net present value was estimated to be Rs.38324.94 at 10 per cent discount rate, in the case of marginal farmers, followed by Rs.51512.13 in the case of small farmers, Rs.68236.72 in the case of medium farmers and the highest of Rs.95988.79 in the case of large farmers. Since the net present value is positive and large, it is inferred that the capacity to generate more wealth is large in coconut farms. Therefore, the investment in coconut cultivation is economically beneficial.

The computed value of Internal rate of Return of coconut cultivation was 15.64 per cent for the marginal farmers followed by 16.32 per for the small farmers, 17.60 per cent for the medium farmers and 18.45 for the large farmers. As compared to opportunity cost of capital which was taken as 10 per cent, the rate of return on investment made in coconut cultivation was high. It indicates that there is economic viability of investment in coconut cultivation.

5.1.6 Analysis of Marketing Coconut

The different marketing channels identified in the marketing of coconut in the study area were,

Channel I Producer – Village trader – Wholesaler – Retailer – Consumer
Channel II Producer – Wholesaler – Retailer – Consumer

In the study area, it was observed that the percentage of marketable surplus to the total quantity of coconut produced among the marginal farmers, worked out to 99.04 per cent while for the small farmers it worked out to 99.14 per cent, while for the medium farmers 99.24 and it was worked out to 99.29 per cent among the large farmers. Further, the analysis revealed that all categories of farmers retained only less than one per cent of their coconut production for meeting their family and other requirements.
The analysis of storing habits among the growers revealed that the sample marginal farmers stored 13.1 per cent of the marketable surplus anticipating remunerative prices. It was 24.5 per cent in the case of sample small farmers; it was 36.8 per cent in the case of sample medium farmers and 48.6 per cent in sample large farmers. The percentage of storage losses to the quantity of coconut stored worked out to 1.22 percent, 0.20 per cent 0.30 per cent and 0.36 per cent in the case of marginal, medium, small and large farmers respectively which was less than one per cent of the quantity stored.

It is also observed that the percentage of marketed surplus to marketable surplus worked out to 99.84 per cent in the case of marginal farmers, where it was 99.79 per cent in the case of small farmer, 99.70 per cent in the case of medium farmers and 99.63 per cent in the case of large farmers. The marginal farmers sold 24.45 per cent of their produce, small farmers 18.18 per cent, medium farmers 27.25 per cent and the large farmers sold only 25.00 per cent of their produce to village traders.

Price spread analysis showed that the cost incurred by the producer in marketing one thousand coconuts worked out to Rs.120 in channel I, Rs.220 in Channel II and Rs.120 for channel III, with an overall average of Rs.153.33 per thousand coconuts. The comparative analysis revealed that the commission and brokerage incurred by the producer in marketing coconut was the maximum, when the average is taken into account. This cost was followed by tax and village mahamai and transportation cost, which were more in channel I, and loading and unloading expenses were the least in both the channels but comparatively high in channel II.

The analysis of cost incurred by the middlemen in marketing coconuts was Rs.320 per thousand coconuts, where as it was Rs.380 per thousand coconuts for wholesalers and Rs.210 per thousand coconut in the case of retailers. The producer’s share in the price paid by the consumer is estimated to be around 70 per cent in all the three channels in the study area.
It was found that the marketing cost incurred by the producer was lower in channel I and III compared to channel II, because of the absence of commission charges in the former.

Price spread analysis showed that both, channel I and III were best from the producer's point of view, however, the producer preferred retailers. Between channels I and II, Channel II was more profitable to the producer.

It was observed from the study, that the price-spread in channel II was the lowest with Rs.1260 per 1000 nuts because of less marketing cost and higher producer's price. The producer's price was the maximum in channel I with Rs.6100 per 1000 nuts followed by 5880 per 1000 coconuts in channels I and II. The price-spread in channel I was the highest among all the channels because of the existence of more number of marketing intermediaries and more marketing cost.

Among the three channels, channel III seems to be the most efficient. The efficiency indeed for channel III is the maximum with 10.32, followed by Channel II with 8.09 and channel I with 6.22. The marketing efficiency in Channel III is better than that in the remaining two channels because of less marketing cost.

In the marketing area, it had been identified that most of the farmers faced many problems relating to the marketing of coconuts. The various problems faced by the growers, in marketing of coconut include price fluctuation, absence of Cooperative society, lack of market information, inadequate storage facility and exploitation by middlemen. Further the analysis revealed that price fluctuation was the major problem faced by the growers with a mean score of 55.09. Exploitation by middlemen was found to be the least important problem faced by the growers in the study area, with the lowest mean score of 37.17.

The price of coconut always depends on the national and international demand and supply position. The analysis also shows that there has been a significant increase in the price of coconut over the years. During the study period the average annual price of coconut per quintal, has increased at the rate
of Rs.92.4 per annum. The results of cyclical variation indicated that there were recurrent up and down movements around secular trend levels. The indices of irregular variations for the price of coconut in the Kanyaiumari market, ranged from 0.76 to 1.31. The co-efficient of irregular variation was 16.53 per cent. It could be observed from the seasonal indices, that the lower prices prevailed from April to October and January to March.

5.2 Suggestions

Some useful and highly significant suggestions which can help to improve cultivation process and increase profitability are discussed below in detail

i. Improved and hybrid varieties of coconuts, which are pest resistant and drought-tolerant should be supplied to the marginal, small, medium and large farmers, through the coconut farms or nurseries owned by the Government, at a subsidized rate. In order to develop drought and pest resistant coconut varieties, the latest bio-technologies like Genetic engineering, Tissue culture and Vermiculture may be applied which will achieve the maximum level of productivity.

ii. The scientific methods of coconut cultivation must be made known to the growers of coconut very often by the Government organizations and extension agencies, using all popular media of communication.

iii. Insurance for coconut plantations may be introduced to make good the loss incurred by the growers, when the plantations become a victim to natural calamities like drought, flood and monsoon failure.

iv. Due to global warming, the monsoon patterns seem to be erratic, which reduces the productivity of coconut. Therefore to ensure consistently good yield, various irrigation methods like pump irrigation and drip irrigation, may be followed and the Government can grant subsidy or interest-free loans in this regard.

v. Cooperative farming may be taken up by enclosing large areas for cultivation. In such a case, integrated pest management, effective labour
management and coordinated functioning in all aspects of cultivation are possible.

vi. Grading and processing facilities may be provided at the production centers so that the coconut growers would get the right price for their produce. Information on marketing should be passed on to the cultivators and traders through the mass media and other means of communication.

vii. Establishment of warehouses at the production centers must be done and this must be maintained by the local government at minimum charges to the growers. It will help the farmers for better prices of the nuts in future.

vii. Value added products must be popularized in domestic markets through organized marketing network. New industries may be started to manufacture value-added products and new systems of marketing may be introduced to sell them at standard prices.

viii. Most of the insect pests in coconut are winged while 90 percent of the fungal diseases are airborne. Old palms affected with pests and diseases when left uncontrolled become a source of spreading the diseases over greater areas. Diseases like Tanjore wilt caused by Ganoderma wilt kills the affected palms within 18 to 24 months. Palms affected by leaf blight, leaf spot, stem spot, stem bleeding, button shedding, rhynoserous beetle, leaf eating caterpillar and rats which are common in the study areas should be eliminated to protect the coconut garden from the death of trees due to pests and diseases. To protect the coconut trees pesticides and other medicines should be applied in the first day of attack.

ix. Irrigation needs vary according to the climatic conditions, cultural operations in practice and their interactions with the other inputs in the soil under water management, different systems are suggested due to the non availability of required rainfall in the region.

x. In study area more than 50 percent of the sample growers are not regular in applying manures and fertilizers to coconut palms. The capacity of the
palms to absorb the nutrients from the manure applied in the soil depends upon the type of manure, the soil and the available moisture. The manure applied to the soil undergoes various chemical changes and a major portion of it is made available to roots and certain portion of it is rot in different forms. It is therefore suggested to split the full dose and apply it at various intervals.

xi. It is suggested that the Coconut Development Board should establish its extension centers in Kanyakumri District to encourage the farmers to cultivate coconuts in a scientific and systematic manner with the new technologies. They should introduce a system of awards to the best cultivator who cultivate in a scientific manner with good hybrid vigor. Cultivator tours should be arranged so that they will get a chance to see the best farms of other areas. Trade fairs should be conducted occasionally to exhibit the products of coconuts and the cultivator should be awarded prizes. The Government along with coconut Development Board should take steps to establish coconut based industries within the public or private sector Industries producing desiccated coconut, coconut cream, spray dried coconut, coconut milk powder, copra units, coir units, preserved coconut water, vinegar, coconut cake, organic manures, coir pith and soil ameliorant, should be established. This enhances employment and income of the people of this district and helps to eradicate mass unemployment.

xii. Further it is suggested that the District Agricultural Department also should provide timely advices to the cultivators on hybrid varieties, application of pesticides and manures, etc. They should also introduce a system of field demonstrations to give training to the growers. Farmer’s participatory demonstrations of improved technologies in traditional and non-traditional areas should be encouraged. Coconut tree climbing device should be advocated to the cultivators. The Government should take effective marketing steps to improve better marketing of coconuts. Then only the producers get better price of nuts.
5.3 Conclusion

Thus, the present study brings to the limelight the enormous prospects of coconut production and marketing in Kanyakumari District. With extension of area there is a bright future for the coconut producers. Available infrastructure, trained manpower and wide range of climatic conditions existing in the study area are indicative of optimistic prospects. Simultaneously these resources have to be effectively utilized for making the coconut production more effective. Therefore it is highly essential to make the entire coconut production highly scientific and modern. Better and Cost minimizing devices can be still included in the cultivation programmes to make the entire coconut industry highly commercial and economical. The policy implications suggested, if properly implemented, may result in increased revenue for the nation and the people concerned. Based on the experience of the researcher, the following issues have been identified for further research.

5.4 Scope for Future Research

There is a plenty of scope for doing further research on

i. Socio-economic conditions of coconut producers and marketers in Kanyakumari district.

ii. A comparative study among the various coconut producers can be made regarding the role in promoting the socio economy of the district.

iii. Socio-economic conditions of the labourers working in various coconut of production farms in Kanyakumari district, is a viable area for further research.

iv. A comparative study can also be made on the government policies of various states of India regarding coconut production and marketing.

The researcher will feel amply rewarded, if the present study paves the way for the above and many more similar studies in future and those studies will definitely contribute a lot to improve the well being of the coconut growers in the country.