CHAPTER VII

SUMMARY OF FINDINGS,
CONCLUSIONS AND SUGGESTIONS
Agriculture is an important sector in the Tamil Nadu State. Thoothukudi District is one among the districts in Tamil Nadu where there is significant agricultural development. There are many factors responsible for the agricultural development in the district. The increase in irrigational facilities, nature of soil type, availability of inputs like seeds, fertilizers and finance bring about changes in the area under the cultivation in the district. In the recent years, the area under food crop, namely, paddy has been shifted to the commercial crop banana in the district. Therefore the present study has attempted to compare the production of paddy and banana in terms of cost, returns, income distribution, determinants of yield, yield gap and factors which are responsible for shifting the area from paddy to banana.

The specific objectives of the study are: (i) To examine the factors responsible for the shift of the area from paddy to banana, (ii) To study the cost, returns and income distribution of paddy and banana with different farm groups (iii) To identify the factors determining the yield of banana and paddy (iv) To compare the resource-use efficiency of factor inputs of paddy and banana (v) To study the yield gap and constraints of yield gap.
The first objective is based on secondary information, whereas to examine the other objectives, primary data are collected from 300 sample farmers, 15 each from banana and paddy cultivation from each village of 10 villages in Thoothukudi District. These 10 selected villages are having the characteristics of (i) relatively more area shift from paddy to banana and (ii) a double cropping area of paddy. For comparative purpose, cost and returns of double cropped paddy has been taken into account for the present study. Further, the sample farmers have been classified into small and large farmer groups for each crop.

The period of study is 15 years from 1983-84 to 1997-98 for secondary data whereas the primary data collected pertains to the kharif and rabi seasons for the agricultural year 1997-98.

In the foregoing chapters, the factors which are responsible for shifting from area under paddy to banana, cost and returns, income distribution, yield determinants, yield gap and constraints of yield are discussed in order to understand how far these influence the farmers to shift the area from paddy to banana in Thoothukudi District. The major findings from the analysis along with conclusions and suggestions are now presented in this chapter.
1. **SHIFTING PROCESS**

The study reveals that the area under paddy declines whereas the area under banana swells in the study area. The main reasons are as follows: Irrigation facilities, the red soil prevalent in the area (80%), better marketing, expansion of large size of farms under cultivation and introduction of high-yielding varieties and fertilizers. The growth rate is significant (7.13%) for banana cultivation whereas it is decelerating at (-1.67%) for paddy cultivation. Therefore, it can be concluded that area under banana cultivations is fast expanding and it is dwindling in the case of paddy.

The percentage analysis has been carried out to find how far irrigation facilities are responsible for choosing banana rather than paddy. The result reveals that the irrigational facilities induced farmers to shift the area from paddy to banana in the study area.

The results of Kendall’s Tau rank correlation co-efficient proved that there is a significant and positive correlation co-efficient between farm size and the shift of area. It is inferred that the change in the size of the farm holdings brings about changes in the area under crops. This means large size farm holders have an inclination towards banana cultivation.

The analysis of trend and growth rate of area and production of banana and paddy reveals that the area under banana has increased at a faster rate than the area under paddy in the study area.
Garrett Ranking Technique has been used to examine the impact of agro-biological and economic factors on the shifting of area under crops. The results reveal that the increase in irrigation facilities and suitability of soil are the two major agro-biological factors determining the shifting from paddy to banana. The shifting process may be expected to continue in the study area in the years to come until the net income that accrues to the farmers shows an upward trend in paddy cultivation.

2. PREFERENCE OF BANANA CULTIVATION

The respondents prefer banana cultivation because of the following economic factors as per the order of priorities

i) High net income

ii) Repeated failure of paddy

iii) Uneconomical nature of paddy cultivation

iv) Ready market for banana

Therefore higher net income is the main reason for resorting to banana cultivation. Paddy cultivation, on the other hand, leads to crop failures and low yield

3. INPUT – OUTPUT STRUCTURE

Cost and returns analysis is used to find out the cost and profit margins of banana and paddy. The results reveal that the small farmer group incurs greater
expenses on labour employment compared to the large farmer group in the case of banana whereas in the case of paddy, large farmers incurs greater expenses on labour employment compared to the small farmers. Most of the farm activities have been performed by men in banana cultivation and by women in paddy cultivation in the study area.

The difference in mean values of inputs used and yield obtained per acre have been statistically significant at 5 per cent level. The requirement of human labour, seed/planting material, fertilizer and manure are found to be higher for banana cultivation compared to paddy. The need of inputs is found to be higher for small farmers than large farmers cultivating banana. In the case of paddy, the requirement of inputs is found to be higher for small farmers than large farmers.

4. **COST AND RETURNS**

The results of cost and returns analysis show that the cost of banana cultivation is 2.5 times greater than that of the cost of paddy cultivation taking into account double cropping cost in the present study. Further, it indicates the labour intensive nature of banana cultivation in the study area. This analysis showed that banana cultivation has produced more yield and net income than paddy cultivation in the study area. Thus it may be concluded from the analysis that banana cultivation is more profitable than paddy in the study area.
Farm size-wise analysis has proved that large size farmers pronounced more yield and net income than small farmers in the cultivation of banana in the study area. Nevertheless, in the case of paddy large farmers have earned higher net income though having proportionately lesser yield than small farmers. The higher net income is due to the less cost of cultivation per acre of large farmers than small farmers. Hence, it is inferred from the analysis of input – output structure, cost returns and economies of cultivation that banana cultivator is in a better economic and institutional position compared to paddy cultivator in the study area. It is also observed that large farmers cultivating both banana and paddy have better economic advantage than that of small farmers.

5. COST – BENEFIT RATIO

The cost – benefit ratio reveal that it is 0.76 for small farmers and 0.83 for large farmers in the case of paddy cultivation whereas it is 0.76 and 1.04 for small and large farmers in banana cultivation. The cost – benefit ratio has also proved that banana cultivation is more economical and profitable than paddy cultivation in the study area.

Regarding farmer groups, the large farmers are having lesser cost of cultivation and production per quintal in banana cultivation. Similar findings have also been arrived at in the case of paddy cultivation in the study area.
6. INCOME DISTRIBUTION

The study on the nature and extent of per acre net income distribution shows that more concentration of frequencies in the distribution of per acre net income is around the lower income group in the case of paddy and the same is found around the middle and higher-income category of banana cultivation.

To compare per acre net income shares of farms in the cultivation of banana and paddy the measures of disparity ratio, Lorenz curve and Gini co-efficient ratio are used. The hypothesis tested reveals that there is a significant difference between per acre net income of banana and paddy cultivation. Besides, the F test reveals that there is a significant difference in the degree of inequality in per acre net income of banana and paddy cultivation.

Farm size-wise analysis of the distribution per acre net income shows that the concentration is found in high-income category of large farmers and middle-income category of small farmers cultivating banana in the study area. In the case of paddy, heavy concentration is found only in lower income category for both small and large farmer groups. Relatively, high-income inequality is observed for large farmers cultivating banana and paddy in the study area.

The F test based on the variance of logarithms also shows that there is a significant difference in the inequality in per acre net income between small and
large farmers producing banana and paddy. Thus, it may be inferred that farm size influences the prevalence of income inequality among the farmers.

7. **YIELD DETERMINANTS**

The results of fitted log - linear multiple regression model for identifying the determinants of yield reveal that the capital flows, farm yard manure and irrigation are found to be more important factor inputs for small, large and pooled category of banana cultivation in the study area. In the case of banana fertilizers, farm yard manure, irrigation and capital flow are positively related to the yield of banana. In the case of small farmers of banana, capital flow has greater influence over the yield. In the case of paddy, human labour and capital flow for small and large farmers respectively have significant influence on the yield in the study area. Farm yard manure has greater influence for large and small farms in determining the yield.

8. **STRUCTURAL DIFFERENCE**

In order to examine the structural difference between small and large farmers, Chow’s test has been applied and the results reveal that natural technical change is found for both small and large farmer groups. That is, there exists structural difference between large and small farms in both crops. One of the study results that shows that large farmers have used enormous funds for cultivating banana compared to small farmers in the study area. Therefore, the
structural differences may be attributed to the difference in the intensity of capital flows.

9. **YIELD GAP**

The analysis of yield gap reveals that the existences of a gap between potential and actual yield per acre of banana and paddy in the study area. The analysis shows that the yield gap in banana cultivation in large farms is 52.28 quintals and in small farms it is 54.34. There is no significant difference in yield gap. In paddy, it is 4.87 quintals for small farms and it is 8.08 quintals for large farms. There is significant difference showing that the yield gap is higher in the case of large paddy farms. This is due to yield constraints mainly water shortage, insects and credit inadequacy.

10. **YIELD CONSTRAINTS:**

The yield constraints as per ranking is the same for both banana and paddy cultivation i.e. insects (II) and credit inadequacy (III). The main constraint for banana cultivation is heavy wind and water shortage in paddy cultivation.

Of various yield constraints, the banana-cultivating farmers report that heavy wind, disease, insects and credit inadequacy are the major constraints to the attainment of potential yield of banana in the study area. However, paddy
culturators listed water shortage, insects and credit inadequacy to be the main constraints to obtain maximum yield in the study area.

II. RESOURCE – USE EFFICIENCY

Regarding resource—use efficiency the ratios of marginal value product to their respective cost show that in the case of small farmers cultivating banana, fertilizer, farm yard manure, irrigation and in the case of large farms capital and farm yard manure, irrigation and capital are greater than unity.

In paddy cultivation the ratios of marginal value product of their respective cost relating to human labour, fertilizer Irrigation and capital in the case of small farms and human labour, fertilizer and capital in the case of large farms were also found to be greater than unity. It shows that farmers cultivating both banana and paddy are rational in terms of their response to economic opportunities and make adjustments in resource-use. Further the presence of an excess marginal value product over respective factor cost indicate the unexploited economic margins in the cultivation of banana and paddy.

Thus it may be concluded that there is scope for increasing the use of such resource inputs in banana and paddy cultivation for both groups of farmers to maximize their returns in the study area.
SUGGESTIONS

On the basis of the analysis and findings the following suggestions have been offered.

The continuous process of shifting the area of cultivation from paddy to banana may provide solace to the farmers in the short run. In the years to come such shifting will not yield expected dividends due to competition in the marketing of banana. This is evident from the present scenario where glut in the market deescalates the price.

If such shifting is continuous over a long period the production of rice will dwindle and cause food shortage.

Therefore the farmers have to be calculative in allotting the land for raising both the crops in an optimum manner so that it may be good for the individual as well as the nation.

Higher net income is the main reason for resorting to banana cultivation. Farmers are driven by the lure of profit towards banana cultivation. A hike in the price of rice would help the farmers to retain the paddy cultivation.

The need of inputs for small farmers is higher. Therefore small farmers need more financial assistance. Further, the cultivators of paddy need
more attention. They are in need of more help by way of finance and other inputs at subsidized price.

The banana cultivators enjoy more economic advantage and earn more profit than the paddy growers. Most of them are in the middle and higher income category. In the case of paddy there is heavy concentration only in the lower income category. Among the banana cultivators the small farmers need more funds. For them fertilizer, manure and capital flow are more needed. For the paddy cultivators more farm yard manure, human labour and capital flow have significant influence on the yield. Therefore financial aid is the main requirement for them. Among the small farmers there is no significant difference in yield gap.

A study of the small and large farmers in paddy and banana cultivation shows that the yield constraints are insects and credit inadequacy. Therefore, adequate financial help and supply of insecticides should be provided. The main constraint for banana cultivation is destruction by wind. Steps should be taken to safeguard the banana plantation from whirlwind.

Further, to safeguard the standing crops of paddy proper water supply should be ensured by scientific water distribution.
To step up production of both banana and paddy adequate supply of fertilizer and finance should be ensured.

**FURTHER STUDY:**

The researcher finds that there is further scope for research in this area. The researcher has undertaken two major crops cultivated in the same agro-climatic conditions. Crops raised on similar conditions can be undertaken for further study and suggestions could be made to increase total production on the basis of analysis on the lines of the thesis.

What the researcher finds is that the farmer should be properly advised to devote the land in the optimum way by allocating the land to both the uses so that he earns maximum revenue. For this another study could be made.