CHAPTER – VII

SUMMARY OF FINDINGS, SUGGESTIONS AND CONCLUSION

7.1 INTRODUCTION

Agriculture is one of the most critical sectors of the Indian economy. Growth and development of agriculture and allied sector directly affects the well-being of people at large, rural prosperity and employment and forms an important resource base for a number of agro-based industries and agro-services. The agriculture sector in India has undergone significant structural changes in the form of decrease in share of GDP from 30 per cent in 1990-91 to 13.9 per cent in 2011-12 indicating a shift from the traditional agrarian economy towards a service dominated one. However, this decrease in agriculture’s contribution to GDP has not been accompanied by a matching reduction in the share of agriculture in employment. About 52 per cent of the total workforce is still employed by the farm sector which makes more than half of the Indian population dependent on agriculture for sustenance. Value addition in agriculture, thus, holds huge potential for enhancing the living standard of majority of the people. Improved agriculture marketing offers a major opportunity to achieve this objective.

Indian agriculture is broadly a story of success. It has done remarkably well in terms of output growth, despite weather and price shocks in the past few years. India is the first in the world in the production of milk, pulses, jute and jute-like fibres, second in rice, wheat, sugarcane, groundnut, vegetables, fruits and cotton production and is a leading producer of spices and plantation crops as well as livestock, fisheries and poultry. The Eleventh Five Year Plan (2007-12) witnessed an average annual growth of 3.6 per cent in the GDP from agriculture and allied sector against a target of 4.0 per cent. While it may appear that the performance of the agriculture and allied sector has fallen short of the target, production has improved remarkably, growing twice as fast as population. India's agricultural exports are booming at a time when many other leading producers are experiencing difficulties.

Paddy commends recognition, as a supreme commodity to mankind, because paddy is truly life, culture, a tradition and a means of livelihood to millions. It is an
important staple food providing 66-70 per cent body calorie intake to the consumers. The United Nations General Assembly, in a resolution declared the year of 2004 as the “International Year of Rice”, which has tremendous significance to food security. It was very eloquently upheld the need to heighten awareness for the role of rice in alleviating poverty and malnutrition.

India so far has witnessed 2 per cent growth in population while the growth in rice production was 3 per cent. Growth rate of rice output during the last two decades has remained well above the population growth rate, which has made the country not only self reliant in food grains but also generated surplus for export. Rice is consumed both in urban and rural areas and its consumption is growing due to high-income elasticity of demand. To meet the growing demand, a rapid increase in paddy production is needed. But, there is little scope to increase the area and hence increase in production and productivity with an improvement in efficiency of production act as a technological breakthrough to meet the growing demand.

Though India is one of the leading producers in the world of many major crops like paddy, wheat, pulses, sugarcane, spices, and plantation crops, the comparison in terms of yield levels is not creditable with it achieving a much lower rank in many of these crops. Further, studies indicate that there are wide yield gaps among various crops across the country. Agriculture production can be substantially increased if this yield gap is addressed by adopting technological and policy interventions. Improvement in yields holds the key for India to remain self-sufficient in foodgrains and also make a place for itself in many agricultural crops and products in the international market. Declining per capita availability of food grains has been a major concern in India. For ensuring nutritional security, it is important to increase per capita availability of food grains.

A well organised marketing of agricultural commodities especially for paddy is the need of the day in the whole country to ensure reasonable gains to farmers and consumers by creating a market environment conducive for fair play of supply and demand. It is, therefore, necessary to complete the process of market reforms early in order to provide farmers an alternative competitive marketing channel for transaction of their agricultural produce at remunerative prices.
Another critical issue is supply chain management in agricultural marketing in India. Farmers' access to markets is hampered by poor roads, rudimentary market infrastructure and excessive regulations. Post-harvest handling issues and marketing problems of many agricultural crops affect the farm incomes. It is necessary that there should be some mechanism for linking wholesale processing, logistics and retailing with farm-production activities so as to generate enhanced efficiency, better farm prices, etc.

There has been substantial increase in the Minimum Support Prices (MSPs) of various crops including paddy over the last few years. Though it is considered necessary for incentivising farmers, the MSP signals the floor price for the produce. But MSPs in recent years are remunerative for farmers when compare to the price paid by the private channels.

The better agricultural production and performance of paddy in India is a result of farmers' response to better prices, continued technology gains and appropriate and timely policies coming together. Yet India is at a juncture where further reforms are urgently required to achieve greater efficiency in paddy marketing and greater productivity in paddy production for the sustaining growth.

The present study focused on analysing the growth in area of cultivation, production and productivity of paddy and export of rice, cultivation practices of paddy farmers and cost and returns of paddy, farm mechanisation pattern in paddy cultivation, marketing practices of paddy farmers, marketing efficiency of paddy and the level of satisfaction of farmers on the existing marketing system for paddy in Erode District of Tamil Nadu.

The present chapter is an attempt to summarise the findings that have emerged from the entire study and provide suitable suggestions based on the findings to improve the cultivation and marketing of paddy in the study area.

7.2 FINDINGS OF THE STUDY

This section provides the summary of the findings of the entire study.

7.2.1 Growth in Area of Cultivation, Production & Productivity of Paddy and Export of Rice

Growth in area, production and productivity of paddy at World level, India level, Tamil Nadu level and Erode District level and export of rice in terms of quantity and
value are examined in this chapter with the statistical tools such as Mean, Standard Deviation, Co-efficient of Variation and Compound Growth Rate.

Results revealed that compound growth rate for area of paddy cultivation and production of paddy at world level showed a positive and significant growth. Compound growth rate for productivity of paddy at world level and India level showed a positive and significant growth.

Results showed that the variability in the area under cultivation of paddy is higher in the Erode district (CV = 47.08) when compared to Tamil Nadu State (CV = 15.38), India level (CV =3.24) and World level (CV =2.41).

The variability in the production of paddy is also found higher in the Erode district (CV = 43.69) when compared to Tamil Nadu State (CV = 21.84), India level (CV = 8.77) and World level (CV = 5.93).

Further it is found that the variability in the productivity of paddy is higher in the Erode district (CV = 16.04) when compared to Tamil Nadu State (CV = 13.10), India level (CV = 6.72) and World level (CV = 3.81).

Compound growth rate for quantity of export of rice (CGR = -3.7) showed a negative and non-significant relationship whereas value of export of rice (CGR = 13.5) showed a positive and significant growth.

The comparison of coefficient of variation between quantity of export (CV = 42.44) and value of export (CV = 40.57) of rice from India revealed that the quantity of export has been highly inconsistent with maximum variability.

7.2.2 Cultivation Practices & Cost and Returns of Paddy Farmers

Existing cultivation practices in paddy cultivation in the study area have been highlighted in this chapter. Further, cost of cultivation and returns from paddy, resource use efficiency, SRI adoption behaviour, comparison of SRI versus traditional farm practices, reasons for preferring and abandoning a particular variety of paddy and adoption of crop management practices have been examined.

Results revealed that 65.8 per cent of the farmers prefer to cultivate paddy in two seasons namely Kharif and Rabi whereas 34.2 per cent of the farmers prefer only one
season i.e. Kharif. It is found that majority of the farmers get their paddy seeds from agro shops, agriculture department and own source. It is found that majority of the farmers are using Deluxe Ponni, AST 16, Idly Kundu and ADT 39 paddy seed varieties. It is also found that majority of the farmers receive their agricultural information from other farmers, agro shops, agriculture department and cooperative banks.

The reasons for preferring paddy cultivation have been explained with the help of factor analysis. The findings showed that the most important variables for preferring paddy cultivation are ‘Shorter duration’, ‘Soil suitability’, ‘Availability of farm machineries’, ‘Climate’, ‘Using straw for livestock feed’, ‘Water availability’, ‘Water logged land’ and ‘Growing demand’ as the correlation coefficients are very high for these variables. The most important factors in preferring paddy cultivation are Nature and Farming as their eigen values are 3.472 and 2.191 respectively.

Garrett ranking analysis has been used to identify the important reasons for preferring SRI method of paddy cultivation by the SRI farmers. It is found that higher production with the mean score of 62.20 and less water requirement with the mean score of 60.17 are the primary factors influencing the adoption of SRI cultivation method.

Garrett ranking analysis has been used to identify the important reasons for not adopting SRI method of paddy cultivation by the paddy farmers. It is found that lack of experience with the highest mean score of 57.05 is the first and foremost reason for not adopting SRI method of cultivation followed by lack of skilled labour and lack of training with the mean scores of 56.22 and 53.56 respectively.

Cost of cultivation of paddy in the study has been analysed by dividing the farmers in to four groups i.e. marginal (upto 2.5 acres), small (above 2.5 acres and up to 5 acres), medium (above 5 acres and up to 10 acres) and large (above 10 acres). Cultivation expenses for each activity in traditional method of paddy cultivation have been collected from the farmers and they are classified as input costs, labour costs and miscellaneous costs.

Cost of Cultivation of Paddy per Acre in Traditional Method

It is found that marginal farmers have incurred more cost for seeds and applying pesticides and weedicides. Small farmers have incurred more cost for pesticides and
applying fertilisers. Medium farmers have incurred more cost for land preparation and pumpset maintenance. Large farmers have incurred more cost for chemical fertilisers, weedicides, farm yard manure, transplanting, weeding, harvesting, scaring of birds and rodents and other expenses. The overall cost of cultivation of traditional farmers per acre is ₹ 22828.67. Farm yard manure and harvesting expenses together contribute the major portion of the total cost incurred by the traditional farmers. The aggregate of labour cost is the largest in the case of overall cultivation cost of paddy per acre in traditional method of paddy cultivation contributing more than 50% of the total cost incurred.

Cost of Cultivation of Paddy per Acre in SRI Method

Results revealed that marginal farmers have incurred more cost for seeds and weedicides. Small farmers have incurred more cost for applying pesticides and weedicides and scaring of birds and rodents. Medium farmers have incurred more cost for chemical fertilisers, pesticides, land preparation, weeding, harvesting and pumpset maintenance. Large farmers have incurred more cost for chemical fertilisers, weedicides, farm yard manure, seeds, transplanting and applying fertilisers. The overall cost of cultivation of SRI farmers per acre is ₹ 20554.25. Farm yard manure and harvesting expenses together contribute the major portion of the total cost incurred by the SRI farmers. The aggregate of labour cost is the largest in the case of overall cultivation cost of paddy per acre in SRI method of paddy cultivation contributing more than 50% of the total cost incurred.

Overall Cost of Cultivation of Paddy per Acre

Findings revealed that marginal farmers have incurred more cost for seeds and scaring of birds and rodents. Small farmers have incurred more cost for pesticides, applying pesticides and harvesting and scaring of birds and rodents. Medium farmers have incurred more cost for chemical fertilisers, land preparation, applying pesticides and weedicides, weeding and pumpset maintenance. Large farmers have incurred more cost for farm yard manure, weedicides, transplanting and other expenses. The overall cost of cultivation per acre is ₹ 22370.14. The average of overall cost of cultivation of paddy per acre is higher than the average cost incurred under SRI method and lesser than the average cost incurred under traditional method of paddy cultivation. Farm yard manure
and harvesting expenses together contribute the major portion of the total cost incurred by the farmers in overall cultivation cost of paddy. The aggregate of labour cost is the largest in the case of overall cultivation cost of paddy per acre contributing more than 50% of the total cost incurred.

*Cost and Returns of Paddy for Traditional Farmers*

The large farmers have earned higher net income (₹ 9286.12) than other category of farmers. On an average, the traditional paddy farmers have earned ₹ 24783.43 as their gross income per acre, incurred ₹ 22828.67 as their cost of cultivation per acre and received ₹ 1954.76 as their net income per acre.

*Cost and Returns of Paddy for SRI Farmers*

The higher net income (₹ 1578.66) is earned by the marginal farmers as they incurred less cost of cultivation (₹ 22129.11). On an average, the SRI paddy farmers have earned ₹ 26978.60 as their gross income per acre, incurred ₹ 20554.25 as their cost of cultivation per acre and received ₹ 6424.35 as their net income per acre.

*Overall Cost and Returns of Paddy*

The large farmers have earned more gross income (₹ 27010.34) and net income (₹ 3607.86) than other category of farmers. On an average, the paddy farmers have earned ₹ 25338.41 as their gross income per acre, incurred ₹ 22370.14 as their cost of cultivation per acre and received ₹ 2968.27 as their net income per acre.

The influence of input factor to increase the production of paddy has been analysed with Cobb-Douglas production function analysis.

*Estimation of Cobb-Douglas Production Function for Cultivation of Paddy under Traditional Method*

It is found that the regression coefficients for Seeds (-0.014) and chemical fertilisers (-0.016) are negative but not significant and the regression coefficient of no single variable is significant at ten and five per cent levels of probability but contribution of farm yard manure (4.437), contribution of weedicides (2.375) and contribution of pesticides (2.514) under paddy cultivation are highly significant at one per cent level of probability. The elasticity of production of variable farm yard manure is 0.670 which
means one per cent increase in farm yard manure increased the output of paddy by 0.670 per cent. Similarly one per cent increase in weedicides and pesticides have increased the paddy yield by 0.342 and 0.040 per cent respectively.

*Estimation of Cobb-Douglas Production Function for Cultivation of Paddy under SRI Method*

It is found that the regression coefficients for farm yard manure (−0.005) is negative but not significant and chemical fertilisers (−0.266) is negative but significant at one per cent level of probability. The result thus indicates that the chemical fertilisers may not be a significantly contributing factor as compared to other factors. The regression coefficient of no single variable is significant at ten per cent level of probability but contribution of paddy land (2.689) is highly significant at five per cent level of probability. On the other hand, contribution of pesticides (8.727) and contribution of labour costs (5.719) under paddy cultivation are highly significant at one per cent level of probability. The elasticity of production of variable paddy land is 0.242 which means one per cent increase in farm yard manure increased the yield of paddy by 0.242 per cent. Similarly one per cent increase in pesticides and labour costs have increased the paddy yield by 0.480 and 0.469 per cent respectively.

*Estimation of Cobb-Douglas Production Function for Cultivation of Paddy under Both Methods Together*

It is found that the regression coefficients for farm yard manure (−0.065), seeds (−0.025) and chemical fertilisers (−0.051) are negative and highly significant at one per cent level of probability. The result thus indicates that the farm yard manure, seeds and chemical fertiliser may not be significantly contributing factors as compared to other factors. The regression coefficient of no single variable is significant at five per cent level of probability but contribution of paddy land (1.881) is highly significant at ten per cent level of probability. On the other hand, contribution of pesticides (7.884) and contribution of labour costs (3.427) under paddy cultivation are highly significant at one per cent level of probability. The elasticity of production of variable paddy land is 0.018 which means one per cent increase in farm yard manure increased the yield of
paddy by 0.018 per cent. Similarly one per cent increase in pesticides and labour costs have increased the paddy yield by 0.678 and 0.117 per cent respectively.

Farmers’ adoption of SRI has been studied using logit model. The results revealed that, out of nine variables subjected for analysis, the variable extension contact is found to be influencing the adoption decision on a high degree tending to increase the rate of adoption by 1.4 times for every contact with extension agency followed by the variables paddy income, family size, farm experience and farm size. Family size has influenced the rate of adoption by 1.3 times and a unit increase in paddy income and farm experience has tended to increase the adoption behaviour by 1.2 times and 1.1 times respectively. Farm size has influenced the rate of adoption by 1.05 times. The negative sign for the education indicated that respondents who are less educated are more likely to adopt SRI method.

Results showed that 81% of the farmers are highly aware on SRI features whereas only 19% of the farmers are less aware in this regard. The results of chi-square test revealed that the variables such as paddy land, extension contact, source of information and land tenure have a significant association with the awareness level of farmers on features of SRI cultivation method at 5% level of significance. The results of ‘F’ test revealed that the variables viz., age, education, extension contact, family size, source of information and land tenure have a significant association with the awareness level of farmers on features of SRI cultivation method at 5% level of significance.

The comparison between SRI farm practice and traditional paddy cultivation practice per acre revealed that the cultivation cost is lesser in case of SRI method (₹ 20554.25) compared to traditional method (₹ 22828.67). The output of paddy per acre is higher in case of SRI (10.10 podhi) as against 9.65 podhi in case of traditional method. The net income derived out of SRI method is ₹ 7398.51 per acre as against ₹ 2953.24 in case of traditional method. The SRI farmers receive ₹ 4445.27 as an additional net income than traditional farmers due to decreased inputs, decreasing cultivation cost and increasing output of paddy per acre.

Garrett ranking analysis has been used to identify the important reasons for preferring particular variety of paddy by the farmers. It is found that higher yield is the
main reason for preferring a particular variety of paddy with the highest mean garret score of 62.32 followed by resistant to disease and pests, high price, market availability and higher profit with the mean scores of 56.07, 55.24, 55.22 and 54.58 respectively.

Mean score ranking analysis has been used to identify the important reasons for abandoning a particular variety of paddy by the farmers. It is found that low yield is the main reason for abandoning a particular variety of paddy with the highest mean score of 4.38 followed by fall of plant due to over grain weight, preferring the variety cultivated by others, less profit and wastage of grains with the mean scores of 4.08, 4.07, 4.02, and 4.01 respectively.

It is found that only 16.4% of the farmers know the crop management practices through Government source and the remaining through Non-Government source. Agro shops are the main sources for knowing the crop management practices by 52% of the farmers, 26.4% of the farmers know through other farmers and 5% of the farmers know the practices through own experience.

It is found that 71.6% of the farmers are using High Yielding Varieties, 70.0% of the farmers are adopting fertiliser management practices, 76.8% of the farmers are adopting weed control practices, 73.2% of the farmers are adopting pest management practices, 68.2% of the farmers are adopting disease management practices, 68.8% of the farmers are adopting water management practices, 75.8% of the farmers are adopting Nursery preparation practices and 81.2% of the farmers are adopting harvesting practices. It is also found that 73.0% of the farmers are not adopting Soil fertility improvement practices.

The chi square test indicated that family size and extension contact have significant relationship with all the nine recommended crop management practices.

Scaling the ranking analysis has been used to analyse the reasons for not adopting recommended crop management practices. It is found that most of the farmers do not exactly know about the recommended crop management practices and this factor has been ranked as the major reason for not adopting crop management practices with the highest mean score of 0.51 followed by no necessary equipments for following crop management practices, not knowing how to follow the recommended practices, not
increasing production or income and crop could not be sold with the mean scores of 0.45, 0.40, 0.12 and 0.05 respectively.

7.2.3 Farm Mechanisation Pattern in Paddy Cultivation

The extent of adoption of farm mechanisation in paddy cultivation and the usage pattern of farm machineries in paddy cultivation, the reasons for preferring mechanisation, farm mechanisation adoption behaviour of the farmers and the constraints faced by the farmers in adopting mechanisation in paddy cultivation have been analysed in this chapter using percentage analysis, mean score ranking analysis, logistic regression analysis and scaling the ranking analysis respectively.

Results revealed that 18% of the SRI paddy farmers alone (as it is more suitable and specially designed for SRI method of cultivation only) own the cono weeder, 17.2% of the paddy farmers own the power sprayer, 15.8% of them own the power tiller, 2.2% of them own the combine harvester, 1.6% of them own the tractor, 0.8% of them own the thresher and no single farmer owns the paddy transplanting machine.

It is found that 81.2% of the paddy farmers have adopted power sprayer, 78.0% of them have adopted power tiller, 70.2% of them have adopted combine harvester, 69.4% of them have adopted tractor, 36% of the SRI paddy farmers alone have adopted cono weeder (as it is more suitable and specially designed for SRI method of cultivation only), 29.8% of them have adopted thresher and only 2.4% of them have adopted transplanting machine in their farm operation.

The findings showed that average hours used is the highest for power tiller with 5.72 hours per acre followed by transplanting machine (4.85 hours per acre), tractor (2.59 hours per acre), combine harvester (1.92 hours per acre), cono weeder (1.46 hours per acre), thresher (1.07 hours per acre) and power sprayer (1.06 hours per acre) in paddy farm operation.

Results revealed that the average cost incurred for a combine harvester per acre is the highest i.e. ₹ 2591.50 followed by ₹ 1997.74 per acre for a tractor, ₹ 1978.56 per acre for a power tiller, ₹ 1945.67 per acre for a paddy transplanting machine, ₹ 712.00 per acre for a thresher, ₹ 320.25 per acre for a cono weeder and ₹ 168.01 per acre for a power sprayer used in the paddy farm operation per acre.
The results of mean score ranking analysis revealed that non availability of manpower, large size of land holding, availability of farm machineries, reduction in production cost and land suitability are ranked as the major reasons for preferring mechanization in paddy cultivation with the highest mean scores of 4.75, 4.29, 4.23, 4.19 and 4.11 respectively.

The results of logit model clearly indicated that farm size, education, farm experience, paddy land and paddy income are positive and highly significant whereas the age and wet land size of the respondents are negative and not significant. The results also showed that the variable paddy land is found to be influencing the adoption decision on a high degree tending to increase the rate of adoption by 1.4 times for a unit increase in the variable followed by the variables farm size, paddy income, education and number of labours. Farm size has influenced the rate of adoption by 1.3 times and an increase in paddy income has tended to increase the adoption behaviour by 1.2 times. The increase in the education level of the respondents has influenced the rate of adoption by 1.15 times.

The results of scaling the ranking analysis revealed that high hiring cost, high cost of fuel for power tiller and tractor, loss due to wastage of straw and wastage of grains are ranked as the major constraints in mechanisation of paddy farm with the highest mean scores of 0.444, 0.309, 0.308 and 0.204 respectively.

7.2.4 Marketing Efficiency and Farmers’ Satisfaction on the Existing Marketing System for Paddy

Marketing channels for paddy, reasons for selling paddy immediately after harvesting and storing for some time, reasons for preferring a particular channel, marketable and marketed surplus, marketing efficiency, price spread and level of satisfaction of the farmers on the existing marketing system for paddy have been examined in this chapter using percentage analysis, mean, sum, mean score ranking analysis, garret ranking analysis, multiple regression analysis, shepherd’s method, acharya and agarwal’s method, composite index method, chi-square test, t test and F test.

The study revealed that 78.2 per cent of farmers are selling their paddy immediately after harvesting and only 10.2 per cent of farmers are storing their entire paddy output and selling in future for getting good price or using for own purpose.
It is found that need of cash has been identified as the major reason for selling the paddy immediately after harvesting by the paddy farmers with the highest mean score of 4.50 followed by the reasons rainy season, higher price and no storage facilities. It is also found that lesser price and for getting better price have been ranked as the major reasons for selling paddy after storing for sometime after harvesting by the paddy farmers with the highest mean scores of 4.44 and 4.43 respectively.

Marketing Channels

Results showed that 52 per cent of the farmers sell their paddy to village traders, 16.4 per cent of the farmers sell their paddy to commission agents, each 12 per cent of the farmers sell their paddy to rice millers and Government and only 7.6 per cent of the farmers sell their paddy through regulated markets. Results further showed that majority of the farmers are receiving the market information through agents, through others who visit the market and through newspaper.


It is found that 52.0 per cent of the farmers prefer channel I, 16.4 per cent of the farmers prefer channel III, 12.0 per cent of the farmers prefer channel VI, 7.6 per cent of the farmers prefer channel II, 7.2 per cent of the farmers prefer channel IV and only 4.8 per cent of the farmers prefer channel V. The results also revealed that cash payment and reasonable price are the major factors influencing the selection of a particular marketing channel with the highest mean scores of 59.52 and 58.04 respectively.

Marketable and Marketed Surplus

The marketable surplus is the highest in the case of large farmers (2188.54 kgs) followed by marginal farmers (2055.22 kgs), medium farmers (2005.87 kgs) and small farmers (2003.65 kgs) whereas the total retentions is the highest in the case of marginal farmers (533.48 kgs) followed by small farmers (511.67 kgs), medium farmers (491.43 kgs)
and large farmers (386.09 kgs). Among the purposes for total retentions, retention for home consumption occupies a major share. The quantity of marketed surplus is the highest in the case of large farmers and the least in the case of small farmers and only the small farmers kept stock for future sales.

Multiple regression analysis showed that paddy output is the most important factor affecting the marketed surplus of paddy in the study region.

Marketing Efficiency

Marketing efficiency can be assessed with price, marketing cost, marketing margin and price spread. In the present study, marketing efficiency has been assessed with some formulae given by various authors in their studies.

It is found that price received by the farmers cultivating paddy in the first channel is ₹950.85 per quintal, second channel is ₹975.96 per quintal, third channel is ₹919.93 per quintal, fourth channel is ₹985.86 per quintal, fifth channel is ₹1089.49 per quintal and sixth channel is ₹1160 per quintal.

It is found that the total cost incurred by farmers in marketing of paddy is ₹168.10 per quintal in channel II and ₹164.45 per quintal in channel VI. The cost incurred for gunny bags constitute the major portion of the total cost of marketing of paddy for farmers in both the channels. It is also found that the total cost incurred by the village traders in marketing of paddy is ₹181.42 per quintal in channel I. The cost of gunny bags (₹55.10) is the major cost in the total cost of marketing of paddy for village traders in channel I. It is found that the total cost incurred by the commission agents in marketing of paddy is ₹184.24 per quintal in channel III. The cost of gunny bags (₹54.73) is the major cost in the total cost of marketing of paddy for commission agents.

Results revealed that the marketing cost incurred by the rice millers in Channel V (₹353.87) is found to be higher. Wages & salaries dominate the total marketing cost of rice millers in channel II (₹59.54), channel III (₹58.80) and channel VI (₹56.80). The cost of gunny bags dominates the total marketing cost of rice millers in channel I (₹55.00), channel IV (₹53.84) and channel V (₹52.86).

Results showed that the total marketing cost incurred by the wholesalers in Channel II & III (₹68.38 each) is found to be higher. Damage/spoilage loss dominates
the total marketing cost of wholesalers in all the four channels. Results also showed that
the total cost incurred by the retailers in marketing of paddy is the highest in channel IV
with ₹ 94.46 per quintal and it is the lowest in channel VI (₹ 75.64). Damage/spoilage
loss is the major cost which constitutes the total cost of marketing of paddy for retailers
in all the four channels followed by the transportation cost.

It is found that the total marketing cost incurred is higher in channel III
(₹ 564.03). It is also found that cost incurred by the rice millers contribute the major
portion of total marketing cost in all the six identified marketing channels.

Results revealed that marketing margin is found to be higher in channel III
(₹ 850.73). It is also revealed that marketing margin of the rice millers contribute the
major portion of total marketing margin in all the six identified marketing channels.

Marketing efficiency is analysed with three methods viz., Shepherd’s method,
Acharya & Agarwal method and Composite index method. As per the above methods,
channel V (Farmer - Rice Miller – Consumer) is identified as the most efficient channel
and channel III (Farmer - Commission Agent - Rice Miller - Wholesaler - Retailer –
Consumer) is identified as the most inefficient channel.

Results of price spread analysis showed that the price spread is relatively more in
channel III (₹ 1414.76 per quintal) followed by channel IV (₹ 1306.24 per quintal),
channel I (₹ 1167.49 per quintal), channel II (₹ 1132.82 per quintal), channel V
(₹ 852.23 per quintal) and channel VI (₹ 763.92 per quintal). The producer’s share in
consumer’s price is the highest in channel V (56.11 %) compared to channel VI (51.75 %),
channel I (44.89 %), channel IV (43.01 %) and channel III (39.40 %). The producer’s
share in consumer’s price is the least in channel (38.31 %).

Significance of Socio-Economic Variables on the Level of Satisfaction of Farmers on the
existing marketing system for Paddy

The socio-economic characteristics of farmers have been related with their level
of satisfaction on the existing marketing system. The analysis of variance (F-test) has
been applied to determine as to whether the average scores of more than two groups of
farmers are same. Further, Chi-Square test has been applied to analyse the relationship
between the level of satisfaction and socio-economic characteristics of farmers.
Results of chi-square test revealed that there is no significant relationship between the education, income from paddy and level of satisfaction of farmers on the existing marketing system whereas there exists a significant relationship between the level of satisfaction and age, farm size, farm experience, family size, extension contact, land allocated for paddy, source of market information and marketing channel preferred.

Results of ANOVA test revealed that there is no significant relationship between the education, farm size, land allocated for paddy and level of satisfaction of farmers on existing marketing system whereas there exits significant relationship between the level of satisfaction and age, farm experience, family size, extension contact, income from paddy, source of market information and marketing channel preferred.

Multiple regression analysis showed that family size, farm experience, paddy output and marketed surplus are the most important variables positively influencing the satisfaction score of the sample paddy farmers in the study region.

Results showed that majority of the farmers have given preference to reduce the commission rates charged by the intermediaries and to improve the storage facilities to develop the present marketing system for paddy.

7.2.5 Cultivation and Marketing Problems of Paddy Farmers

In this chapter, the problems faced by the farmers in cultivation and marketing of paddy have been analysed using factor analysis and the problems in cultivation of paddy under SRI method has been analysed using Garret ranking analysis.

The problems in paddy cultivation have been explained with the help of factor analysis. The results revealed that the most important paddy cultivation problem variables are ‘Pests and diseases attack’, ‘Lack of improved varieties’, ‘High labour rates’, ‘High input price’, ‘Irrigation and drainage problems’, ‘Lack of modern inputs’, ‘Shortage of labour’, ‘Low yield’ and ‘Scattered land’ as the correlation coefficients are very high for these variables. The most important problem factors in paddy cultivation are Natural, Financial and Farming as their eigen values are 3.378, 2.762 and 2.601 respectively. The highly correlated variable of the Natural factor is Bad climate. It has the factor loading of 0.747. The variable High input price is the highly correlated variable of the
Financial factor as it has the highest factor loading of 0.809. Pests and diseases attack variable of the Farming factor has the highest factor loading of 0.829.

Results disclosed that lack of awareness among the labours has been identified as the most important problem faced by the SRI farmers with the highest mean score of 65.45 followed by weed control and strain in use of cono weeder with the mean scores of 61.74 and 57.38 respectively.

Marketing problems faced by the paddy farmers have been explained with the help of factor analysis. The findings showed that the most important paddy marketing problem variables are ‘Lack of market information’, ‘Lack of training of farmers in marketing’, ‘Increase in production and heavy arrivals’, ‘Lack of appropriate policy support’, ‘Inadequate storage facilities in rural areas’, ‘No cash payment’, ‘Lack of grading facilities’, and ‘Poor market extension service’ as the correlation coefficients are very high for these variables. The most important problem factors in paddy marketing are Infrastructure, Financial and Service as their eigen values are 2.993, 2.209 and 1.978 respectively. The highly correlated variable of the Infrastructure factor is Inadequate storage facilities in rural areas with the factor loading of 0.797. The variable No cash payment is the highly correlated variable of the Financial factor as it has the highest factor loading of 0.760. Lack of appropriate policy support variable of the Service factor has the highest factor loading of 0.820.

7.3 SUGGESTIONS

The following suggestions are provided in the light of the findings of the present study to improve the cultivation and marketing of paddy in the study area.

1. It is found that variation in area of cultivation and production of paddy is higher in the study area (vide Table No.2.4). Hence, it is suggested that farmers should take utmost care in land preparation, application of manures, fertilisers, pesticides and weedicides, using high yielding variety seeds, following proper harvesting practices, adoption of new and improved methods of paddy cultivation for achieving higher and stable production of paddy. For this purpose, Government may organise awareness programs at block level. Further, ensuring remunerative price, providing proper market information in quick time, announcement of reasonable Minimum Support Price before
the cropping system and providing good infrastructure facilities by the Government for marketing of paddy in the study area are essential for having the stability in area of cultivation of paddy in the study area.

2. It is found that there is a high instability in the quantity and value of rice export (vide Table No.2.5). Hence, it is suggested that the measures such as conducting survey to identify export quality zones for production of rice to meet the requirement of exports, strengthening extension activities to educate the cultivators for production of quality rice to match the standards of international markets, developing and popularising low cost of cultivation methods like SRI method to bring down the cost of cultivation to enable the exporters to compete with competing countries in the international markets, making proper arrangements for procurement and processing of rice export as per the requirements of international markets and making proper arrangements for production of pure quality seeds and making them available to the farmers at subsidised rates have to be taken by the Government to enable the rice exporters to sustain their export in future.

3. It is found that lack of experience and lack of skilled labourers are the major factors for not adopting SRI method of paddy cultivation by the farmers in the study area (vide Table No.3.9). It is also found that lack of awareness among the labourers is the major problem faced by the farmers adopting SRI method of paddy cultivation. In spite of efforts made by the extension agents, wide adoption is hard to achieve in the study area because farmers and labourers lack the knowledge to implement certain SRI components. Hence, it is suggested that there is a need to train the farmers and labourers by providing them with more information about the advantages of each SRI component. To ensure fast and full adoption of SRI, more extension personnel, farmers and labourers should be trained on the aspects such as production of healthy and robust seedlings through mat or conventional nursery, using the recommended spacing with the square method of transplanting young seedlings, using the conoweeder by having it available at a reasonable price and conducting demonstrations of its operation, and applying sound nitrogen management through the use of the leaf color chart. These measures will make SRI more interesting and attractive thereby enhancing farmers’ yield and income.

4. It is found that the net income available is higher and the cost of cultivation of paddy is lesser to the SRI farmers than the traditional farmers (vide Table No.3.13 & 3.14).
Hence, it is suggested that the farmers following traditional method of paddy cultivation in the study area may prefer SRI method so as to reduce their cost of cultivation and increase their net income. Further, they may use the services of the extension personnel and attend the training programs to become familiar in the SRI method of paddy cultivation.

5. It is found from the production function analysis that the regression co-efficients for seeds (-0.014) and chemical fertilisers (-0.016) are negative in traditional paddy cultivation method (vide Table No.3.16). It is also found that that the regression co-efficient for farm yard manure (-0.005) is negative in SRI paddy cultivation method (vide Table No.3.17). This means that these inputs are excessively used. Hence, it is suggested that the production could be increased by decreasing the cost on seeds, chemical fertilisers and farm yard manure in the respective cultivation methods. The farmers have to use these resources in an efficient manner in such a way that it leads to increase in productivity of paddy. Proper training given to the farmers in this regard would help them to utilise these resources in an efficient manner. Moreover, the farmers should be made aware of the crop management practices especially the application of fertilisers, farm yard manures and usage of High Yielding Varieties of seeds at optimum level to increase the production of paddy by way of reduced cost of cultivation. Further, the Government should tune up the extension agencies and research development for achieving this objective.

6. It is found that the adoption behaviour of farmers preferring SRI method is highly determined by the factors like extension contact, paddy income, family size, farm experience and farm size (vide Table No.3.19). Hence, it is suggested that efforts are needed to strengthen these socio-economic factors for the adoption of SRI method of paddy cultivation in the study area. Support services through Government extension agencies for providing knowledge and information of SRI method of cultivation and its viability to increase the yield level should be given to the farmers in the study area in order to increase the ratio of adoption of SRI cultivation method.

7. It is found that the adoption behaviour of farmers preferring farm mechanisation is extremely determined by the factors like education, farm experience, paddy land and paddy income (vide Table No.4.5). Hence, it is suggested that efforts are
needed to strengthen these socio-economic factors for ensuring the adoption of farm mechanisation in paddy cultivation in the study area. This may be done through providing the better financial and support services to the farmers for mechanisation of their farms so as to gain the maximum possible benefits of the modern technological development in agricultural sector. Though the paddy is cultivated by majority of the farmers in the study area, their scientific knowledge about the farm mechanisation in paddy crop and scientific adoption of the farm implements was up to the mark only in certain implements. One of the best ways to overcome this is to vigorously utilise the scientific expertise of Krishi Vigyan Kendras (KVKs) for organizing field and farmers’ day and agriculture machine exhibitions help and encourage the farmers to know about the advantages of adoption of improved farm implements in different agricultural operations.

8. It is found that the major problem in adopting farm mechanisation in the study area is high hiring cost (vide Table No.4.6). Most of the farmers in the study region are hiring the farm machineries for their use. Hence, it is suggested that Government should provide farm machineries at concessional rates through cooperative societies and other Government agencies in order to reduce the financial burden of the farmers. Though this has already been done by the Government in the study area, more efforts have to be taken by the Government to familiarise this concessional scheme. Further, Government should provide liberal and concessional credit to the farmers in the study area for purchasing farm machineries to mechanise their paddy farms.

9. It is found that channel V (Farmer - Rice Miller - Consumer) has been identified as the most efficient channel in the study area as the producer’s share in consumer’s rupee is the highest (56.11%) and the price spread is the second lowest (\text{\textcurrency{852.23}} per quintal) in this channel (vide Table No.5.21). Hence, it is suggested that the paddy cultivating farmers in the study area may prefer channel V for marketing their paddy as it offers more share of profit than the other channels.

10. It is found that marketable surplus of paddy in the study area is 80.21% and 79.90% of the total production of paddy is marketed in the study area (vide Table No.5.8). Further, it is found that paddy output is the most important factor significantly affecting the marketed surplus of paddy in the study region. This shows that the marketable and marketed surplus in the study area is higher. Hence, it is suggested that framing sound
price policies for price support, price control mechanisms, increasing minimum support prices would further increase the marketable and marketed surplus in the study region. Consequently, the production of paddy would be stimulated and increasing production i.e. paddy output, would further increase the marketed surplus which is evident from the present study. Moreover, increasing marketed surplus would ultimately result in increasing the satisfaction level of the sample paddy farmers in the study region which is also evident from the study.

11. It is found that 81% of the paddy farmers in the study region are less satisfied on the existing marketing system for paddy (vide Table No.5.22). This shows that the paddy farmers do not receive remunerative price for their produce and face numerous difficulties in marketing their produce. Hence, it is suggested that the Government should control the intermediaries and restrict the commission charged by them to increase the producer’s share in consumer’s rupee. The Government should establish more number of godowns in rural areas that would help the paddy farmers to store their produce till they get a remunerative price. Developing regulated markets and cooperative societies, providing market training and encouraging the participation of farmers in marketing awareness programs, making proper arrangements for easily accessing market information, increasing the minimum support price for paddy by considering escalating cost of cultivation and creating grading and other infrastructural facilities would certainly increase the satisfaction level of the paddy farmers in the study region and assure them a remunerative price for their produce.

12. It is found from the analysis of the marketing channels for paddy in the study region that they are mainly performed by the private sector whereas the State Government involvement in procurement, storage, processing and distribution has been minimal. Moreover, the producer’s share in consumer’s rupee is the second highest and the price spread is the lowest in the Government’s procurement of paddy (channel VI) in the study region. Hence, it is suggested that the Government should establish more number of paddy procurement centres i.e. at least two procurement centres for a block would facilitate the farmers to sell their paddy through these centres. Besides, increasing minimum support price for paddy, creating awareness about the minimum support price and the Government paddy procurement centres among the farmers and relaxing the fair
average quality norms for paddy fixed by the state Government at these procurement centers would result in preference of this Government channel by more number of paddy farmers in the study region.

13. It is found that pests and diseases attack and lack of improved varieties are the major problems faced by the paddy farmers in cultivation of paddy in the study area (vide Table No.6.2). Paddy is grown under different agro-climatic conditions and the crop is damaged by more than hundred species of insect pests and infested by varied diseases. These insect pests and diseases cause enormous grain yield losses which may from 20-50% if not managed in time and because of this India losses 30% yield in paddy every year. The protection of crops from depredations of pests and diseases is a sine qua non for higher agricultural productivity, increased farm incomes and enhanced food security for the nation. This is especially significant for a nation like India which faces the rising demand for food and agricultural produce for a growing population. In a scenario where agricultural productivity in India is below the global benchmarks and the per capita availability of agricultural farm land is diminishing, risk of production loss upto 30% from incursion of pests and diseases needs to be averted. Poor adoption of improved crop production technology and practices due to economic backwardness and lack of awareness of the farmers might be a reason for this. Hence, it is suggested that there is an instant need to replace the low potential, pest and disease susceptible old varieties by new high yielding and improved varieties with promising yield potential and encourage the cultivation of hybrid rice through demonstrations and making the seeds easily available to the farmers in the study area to overcome this problem. This would help to achieve the stabilised yields, increase the farmers’ income, minimise the need for pesticides and promote the adoption of Integrated Pest Management (IPM) practices. IPM is an eco-friendly approach for managing pest and disease problems utilising all possible available methods and techniques of pest control such as cultural, mechanical, biological and chemical methods in as compatible and scientific manner as possible to suppress the pest population below economic injury level. In order to minimise the indiscriminate and judicious use of chemical pesticides, IPM has been formulated as a principle of plant protection in overall crop protection programmes under the National Agriculture Policy of the Government of India for sustainable crop production without affecting the environment.
14. It is found that lack of market information is the major problem faced by the paddy farmers in marketing of paddy in the study area (vide Table No.6.6). Market information is essential for farmers, traders, consumers as well as the Government if market mechanism has to work efficiently. Market information provides details to the farmers in relation to the past and present prices and market arrivals of paddy. But in reality the farmers do not know the existing prices of paddy. By and large, the farmers rely on the price information furnished by the traders. The price information provided generally is quite advantageous to the traders rather than the farmers. Hence, it is suggested that the Government has to establish Market and Trade Information Centres in all the districts and it should be strengthened financially through increased budgetary allocation to enable them collect, store and disseminate market information relating to agriculture produces up to county level. The Government should also establish an effective Agricultural Marketing Information System so as to boost both domestic and export marketing of paddy. Mass communication media should also be effectively used by the Government in this regard to spread the market information especially in rural areas.

15. It is found that lack of training of farmers in marketing is another major problem faced by the paddy farmers in marketing of paddy in the study area (vide Table No.6.6). The farmers in the study area are not trained in marketing system. Training shall improve their skill for better marketing of their produce. Therefore, it is suggested that market training awareness programs shall be conducted by the Government at block level through extension agencies to impart marketing skills to the farmers in the study region.

7.4 SUGGESTIONS FOR FURTHER RESEARCH

The present study focused on examining the cultivation and marketing practices of paddy farmers in the Erode district of Tamil Nadu by considering a sample of 500 farmers and 185 intermediaries. Further, the growth in area, production and productivity of paddy and export of rice and farm mechanisation pattern in paddy cultivation are also studied. Yet, several areas have been identified that warrant further research. Such areas are:

1. A study of this nature can be extended to all the districts of Tamil Nadu where paddy is a major crop so as to get a complete picture about the cultivation and marketing practices of paddy farmers of Tamil Nadu.
2. Research studies may also be undertaken to analyse the cost and returns from different varieties of paddy.

3. Research studies could be undertaken on institutional support for paddy cultivation and marketing.

4. Research studies on the role of intermediaries and the problems faced by them in marketing of paddy could also be undertaken.

5. Research studies could be done on the role of extension agencies in paddy cultivation and marketing and the impact made by those agencies.

7.5 CONCLUSION

Ensuring the food security of rapidly increasing population is the biggest challenge in front of our nation. Food grains production has to be accelerated to achieve this objective. Paddy is one of the major food grains produced in our country. Paddy, as a major food crop in India, has a significant economic and social impact in the country. There is an imperative need to enhance the production and productivity of paddy in a sustainable manner in order to ensure the food security of our nation. Creation of an efficient domestic agricultural marketing system providing real time information and right signal for prices is pre-requisite to achieve this. This alone can incentivise the farmers to adopt scientific package of practices for enhancing the productivity.

Agricultural Marketing in India is undergoing a significant metamorphosis in view of globalisation and economic liberalisation process. As market oriented economic development proceeds, Indian farmers in rural areas continue to experience great disparity in income compared with other sectors. Majority of India’s population still live in rural areas and depend on agriculture and allied activities. A good agricultural production and increasing farm prices would put more money in the hands of the people living in the rural areas. To benefit the farming communities from the new global market access opportunities, the internal agricultural marketing system of the country needs to be integrated and strengthened. Marketing today depends on information system i.e. adequate information about what people want, at what price, and who can supply it. The focus of agricultural growth has been shifted from production front to the processing and marketing front. The investment in agricultural marketing system would, therefore,
go a long way in making agricultural sector vibrant and enable it to face the competition of international trade environment without adversely affecting the livelihoods of those who depend on farming.

The marketing systems also need to address the challenges of lack of market information, high marketing costs and marketing margins, inadequate Market and Procurement centres and inefficient storage and distribution of produce across the country. Domestic market integration with the overseas markets to derive its benefits for our farmers is another area of challenge. It is not enough for the agricultural production to just show an increasing trend in volume but it has to keep pace with the population growth, consumers’ preference and demand in the domestic and international markets by adoption of appropriate policies of market-led production.

The present study has made an attempt to analyse the cultivation and marketing practices of the paddy farmers in Erode district of Tamil Nadu. The results revealed that the natural and financial factors are the highly influencing factors in cultivation of paddy in the study region and vast scope exists for making the paddy farms fully mechanised. The results also showed lack of market information, lack of market training and lack of policy support are the major problems faced by the paddy farmers in the study region. Results further revealed that channel V (Farmer - Rice Miller – Consumer) has been identified as the most efficient channel and majority of the farmers are less satisfied on the functioning of the existing marketing system for paddy in the study area.

Based on the findings of the study, quite a few valuable and fruitful suggestions have been offered to the farmers and the Government. If these suggestions are appropriately taken into consideration by them, paddy cultivation and marketing in the study area would be undoubtedly developed, the income and the standard of living of the farmers would be surely increased and our country’s economic development as well as food security would also be eventually achieved.