CHAPTER - VII
SUMMARY, CONCLUSIONS AND SUGGESTIONS

7.1 Introduction

In the preceding chapters of the present thesis, an attempt is made to study the production and marketing of tomato in Kolhapur District. However, the analysis has been confined to the objectives of the present research work. In this study, the socio-economic background of the tomato producers is examined. This study has brought about many interesting observations throwing light on vital aspects of tomato crop cultivation together with marketing system. The study is concerned with the problems of marketing of the tomato and suggestions in that connection.

7.2 Summary –

1. The first chapter is introductory and deals with research methodology. In it, the role of agriculture in India is considered in details. It explains the significance of tomato crop and other vegetables from the health viewpoint. The history of tomato crop is considered along with its production on national and international levels. No compiled data is available on tomato crop. As such no literary history is at disposal. However, whatever literature was available has been surveyed thoroughly. Four tahasils from Kolhapur district Gadhinglaj, Hatkanangale, Karveer and Shirol were selected as samples with 200 sample tomato growers from these four tahasils. A questionnaire was prepared and tested. The respondents were interviewed. Accordingly, primary and secondary data collection methods were adopted for data collection. In order to interpret the data, various statistical tools such as average, percentage, simple and compound growth rate, were applied along with marketing efficiency, price spread and producer's share in consumer rupee. The different formulae were utilized too. The specific period of five years from 2002-2003 to 2006-2007 was chosen for the research study.
Agriculture has an important role to play in the economic development of an agrarian economy like India. Agriculture accounts for 22 per cent of GDP and provides livelihoods to 58 per cent of the country’s population. India is the second largest producer of vegetables in the world next to China and India accounts for 14.05 per cent of world production of vegetables. Tomato fruits are used for different food preparations such as soups, salads and ketchups etc. Tomato also has medical value. It is an excellent source of vitamin A and C and also called as a ‘Poor Man’s Orange’.

2. The second chapter deals with the agriculture profile of Kolhapur District. The geography of the Kolhapur district has favourable climate conditions for cultivating all types of vegetable produce. A historical background of Kolhapur district is given in this chapter, with reference to geographical location, physical setting, soil profile, climate and rainfall. Kolhapur district is privileged with different rivers like Krishna, Warana, Panchaganga, Dudhganga, Wedganga and Hiranyakeshi. Thus 20.56% of land from Kolhapur district is brought under irrigation. In this chapter various factors like cropping pattern, forest, minerals, fisheries, district administration, demographic features, trade and commerce, industrial profile are dealt with.

Kolhapur district is one of the leading districts in co-operative movement in Maharashtra. Co-operative institutions are functioning in different sectors. Banking is like blood veins in the economic development. Therefore various co-operative banks, private banks and nationalized banks are considered. From Socio-Economic indicators' point of view, educational facilities, electricity supply, drinking water, tourist places, transportation and other such factors are glanced at.

3. Cost and Income Analysis of the tomato production is analyzed in the third chapter. It is observed that tomato crop holds leading rank in the district among the various vegetables grown. Different cost concepts which are used in this study are Cost –‘A’, Cost–‘B’ and Cost–‘C’. The Cost–‘A’ concept consists variable cost and the Cost–‘B’ concept consists fixed cost. The Cost–‘C’
concept consists total cost cultivation. They are dealt
with in this chapter. Overall production cost was
calculated, gross returns per acre were measured,
production cost was subtracted and net return was
obtained. An approach was taken to know taluka-wise
area, production and yield of tomato crop.

Testing questionnaire was prepared to obtain
responses on Socio-Economic characteristics. The
questionnaire was handed over to each of the 200
sample growers. In the light of this questionnaire, a
number of details such as age group, marital status,
type of family, population by gender, income-wise
classification, educational background, ownership of
land, type of soil, size of land holding, cropping pattern,
type of vegetable, experience in tomato cultivation,
variety of seeds, manure, insecticide and fungicide etc.
were studied. An attempt was made to study marketing
practices, intermediators involved, channels of
distribution, seasonal fluctuations in total tomato
production and price etc.

4. Chapter four of the thesis is an attempt to know the
procedure of ‘Marketing Channels of Tomato : Cost and
Efficiencies of Marketing’. In this chapter of the thesis,
an attempt to have conceptual framework of marketing
is made.

This chapter deals with classification of
marketing on the level of taluka wise sample tomato
growers. Accordingly different channels are classified as
under.

Channel – I (Producer -> consumer)

Channel – II (Producer -> retailer -> consumer)

Channel – III (Producer -> marketing by co-operative
vegetable Sangh / private vegetable Sangh-> wholesaler
at up-country market ->retailer at up-country market ->
consumer at up-country market)

Price spread, producer’s share in consumer rupee
are measured. Likewise with the help of Shepherd
Formula Index, marketing efficiency of every individual
channel is measured.
Cost of marketing through co-operative and private trade channels was observed with reference to up-country markets from Pune, Mumbai, Nagpur, Ahemadabad and Delhi. It yielded the fact that per kg marketing cost in private trade channel is comparatively higher.

Co-operative and private trade channels from up-country markets from Pune, Mumbai, Nagpur, Ahemadabad and Delhi were studied independently. And comparative levels in the light of each separate year of the study period 2002-2003 to 2006-2007, marketing cost of every year was measured. Formula was used to gauge price spread and producer's share in consumer rupee. Efficiency of marketing was measured with the help of Shephered Formula Index. Marketing cost per kg in up-country markets from Pune, Mumbai, Nagpur and Ahemadabad was less as compared to Delhi up-country market. As a result, producer's share in consumer rupee and marketing efficiency of private and co-operative channels, it was reasonably high.

Marketing efficiency of co-operative and private trade channel in up-country market center was compared and it, was found that co-operative channel holds high marketing efficiency.

5. The role of institutions and groups in production and marketing of tomato were studied. A study of sample tomato growers from four sample talukas in Kolhapur district was undertaken. It was observed that out of the four tahasils only Shirol had private vegetable producers' purchase-sale sanghs and from co-operative sector called “Nandani Fruits and Vegetable Growers' Co-operative Sangh Ltd.” It was established on 17th August 1990. It is the only co-operative sector sangh in Shirol taluka. Through this sangh tomato production on a large scale is sent for sale in up-country markets like Pune, Mumbai, Nagpur, Ahemadabad and Delhi. For transportation of goods carriers like tempo, truck are made available by the co-operative sangh. The sangh subtracts their commission, transportation cost, loading-unloading charges and expenses of other inputs. The remaining amount of the tomato sale is paid
to the concerned farmers in cash, through cheque or D.D. Moreover, the sangh gives necessary guidance, information and demonstrations to farmers regarding tomato crop via seminars, conferences and exhibitions. This sangh is financially aided by NCDC, APEDA and NHB.

Private vegetable producers’ purchase-sale sanghs are working only in Shirol, out of the four sample tahasils. There are about 32 private sanghs available in village like Udgaon, Umalwad, Nandani, Haroli, Kothali, Jainapur and Danoli. They are neither formally registered under public trust, nor according to any co-operative societies’ act. Hence, its management is done as per private business system. Some sanghs are operating as office-cum-shop to supply inputs to the farmers on credit basis, if they promise to sell producer through groups.

The owner or group leader of private sangh manages to send the tomato products to up-country markets in cities like Pune, Mumbai, Nagpur, Ahemadabad and Delhi for sale. They are packed in wooden boxes. One such box contains 30 kgs. of tomato. Transportation provision is looked after by the leader of the sangh. After its sale in up-country market, transportation cost, loading-unloading charges, commission charges and other input charges are deducted from the sale amount and the remaining amount is paid to the tomato producer.

There are some other ways through which the private sangh sells the tomato production. The sangh leader obtains latest information of tomato prices with the help of communication media like telephone, mobile phone, internet etc. Then he fixes the rate of a carret worth 30 kgs and bargaining is completed in the sangh’s office itself. The producer is paid on the spot in accordance with quantity of tomato. This type of transaction is convenient for the producers too. Hence private sangh has become popular among the producers in Shirol taluka.
6. The sixth chapter deals with problems of tomato cultivation. The problems faced by the sample tomato growers are frequently haunted by problems such as (1) Pre-harvest problems and (2) Post-harvest problems or marketing stage problems. The problems are classified into two groups.

Pre-harvest problems of tomato growers concentrate and analyse the difficulties before the producers. These difficulties are like high cost of pre-cultivation, lack of soil-test facility, lack of manures, seeds, insecticides and fungicides, high labour wages, high irrigation charges, load shedding by electricity board, timely non-availability of inputs, problems of river flood and crop insurance policy.

Post-harvest problems of tomato cultivators are concerned with marketing. They are post-harvest losses, problems of finished good, roads, lack of transportation facilities, lack of storage facility, chain of mediatories, and malpractices, cash payment not received in time, lack of market information, absence of grading and standardization, price fluctuation, high prices of packing material, price risk etc. The abovesaid problems are minutely discussed. Tomato growing farmers were personally interviewed through which these problems were noticed in the course of conversations with them.

7. The study emphasizes importance of agriculture in Indian Economy and inferences regarding tomato crop are elicited. Likewise, points concerning Socio-economic characteristics are viewed. The marketing channels, marketing efficiency in up-country markets of Pune, Mumbai, Nagpur, Ahemadabad and Delhi are considered. The co-operative and private trade channels and their functioning in the study area are viewed from conclusions view point. Pre-harvest and post-harvest problems of the sample tomato growers are considered. In suggestions, and an attempt is made to imply certain solutions. It will definitely favour the sample tomato growers.
7.3 Conclusions

As many as, 200 sample tomato producers were studied during this research study. It throws light on production cost of tomato, marketing channels, co-operative and private purchase sale sanghs etc. Conclusions based on this research study are given as under.

1. Agriculture accounts for 22 per cent of the GDP and provides livelihood to 58 per cent of the country’s population. Tomato has medicinal value. It is a rich source of vitamin A and C, it also contains minerals like iron, phosphorus.

2. Average cost of production per acre is Rs. 61957 and average production per acre is 196.25 q. Out of maximum production cost most of the part goes to human labour (21.79 %), followed by rental value of land (15.33 %), fertilizers cost (14.32 %), staking sticks (8.35%), steel wires (8.30 %), farm yard manure (7.46%), insecticides and fungicides (7.14 %) etc.

3. Taluka-wise area production and yield in the study period of five years 2002-2003 to 2006-2007 are viewed and it is found that Shirol taluka leads the scenario.

4. Out of the total 200 respondents, 187 (93.5 %) belong to age group of 20 to 60 years. Maximum respondents are married (90.50 %). Out of total 200 respondents, 156 (78 %) come from joint family system, with high rate of literacy.

5. Regarding the income level of respondents, out of 200, 106 (53 %) respondents were having income between Rs. 50000 to 150000 income level, whereas 22 respondents having in between the Rs. 150000 to 250000 (11 %).

6. 191 (95.50 %) of the total respondents have their own land. Most of the land from study area is black soiled and black red soiled. Majority of respondents have land between 1 to 3 acres and 153 (76.50 %) of the total respondents grow sugarcane and vegetables. The leading vegetables taken at large scale are tomato, cauliflower, cabbage, bringal, chilli etc.
7. Tomato crop is preferred to other vegetables due to favourable land and weather from study area, economic affordability, availability of local market and low production cost etc. As many as 50 respondents are taking tomato crop from the last six years. 64 are involved in this crop from more than 10 years. Large number of respondents produce tomato once and twice in a year. It is also seen that majority of tomato growers are having good knowledge of hybrid seeds. So 100 % respondents use hybrid seeds.

8. It is observed that tomato production requires less time, productivity per acre is more, and it has high market demand. As a result, the tomato growers use hybrid seeds on a large scale. It is observed that 152 (76%) of the total 200 respondents prepare tomato plants at their own. Other respondents purchase the plants either from local market or from neighboring city.

9. It is seen that 104 (52 %) of total respondents prefer to have soil test and use dung, compost and chemical fertilizers. In order to prevent diseases on tomato crop, the tomato growers generally use Rogor, Indosulphan, Bavistin, Lanet, Spark, Nuvan, Vertimake and such other insecticides and fungicides.

10. 31 respondents prefer domestic labourers and 111 respondents bring outside labourers and seek their help. As far as agricultural equipments are concerned, it is noticed that 41 respondents have land equipments of their own, whereas 126 respondents bring them on leasehold.

11. The main sources of water for most of the respondents are well, borewell, lift irrigation on river. Electric pumps are utilized prominently to lift water. Various facilities like surface canal, drip system and sprinkler are adopted for tomato cultivation.

12. Regarding source of finance, it is observed that 64 respondents have their own capital. The remaining respondents raise the capital through loans and borrowings. No subsidy and crop insurance policy has been offered by government to the tomato growers.
13. In the study area, not a single tomato processing agro-industry is available. According to 186 (93 %) respondents, such an industry is badly needed. 148 (71.5 %) respondent feel that such a processing agro-industry should be of co-operative nature. 194 (97 %) of total respondents opined that their exists no authentic authority and are not satisfied with the present market control. Sample tomato growers collect information regarding tomato production, market rate from newspapers, daily Agrowan journal, weekly, Radio, T.V., Mobile phone etc.

14. The study reveals that the tomato producers are facing the major constraints like (1) seeds, fertilizers, insecticides and their uncertainties (2) increasing price of labour and resources (3) problems of transaction (4) problems of capital (5) fraud by the agents etc.

15. Sample tomato growers from Gadchinglaj, nearby Hatkanangale and Karveer talukas sell their tomato either personally or through agents in the near by cities. They carry their tomato in self, small bamboo boxes. Its transportation cost per box is Rs. 20 to 40. In Shirol taluka, the tomato growers send their tomato through co-operative or private sanghs to up-country markets of Pune, Mumbai, Nagpur, Ahemadabad and Delhi. Its transportation cost per box / carret is from Rs. 41 to 80. Most of the tomato producers purchase the packaging material from local market and from nearby city. The average marketing cost per kg in co-operative sangh is Rs. 4.67 whereas, in case of private sangh this cost goes upto Rs. 4.92. Delhi market center indicates the highest marketing cost. It is respectively Rs. 5.10 and 6.32.

16. Concerning mode of payment, it is found that 152 (76%) respondents expect to receive their money of sold product in cash, 45 (22.5 %) respondents prefer to have their payment through cheque and 3 (1.50 %) respondents prefer their payment through D.D. Various charges are deducted from after-sale amount. In case of 186 (93 %), respondents such deduction are equal. But in case of 14 (7 %) respondents, they are unequal and illegal. Most of the tomato producers
purchase the packing material from local market and near by city

Majority of the tomato growers from study area have to sell their tomato through agents.

17. The Channel-I, Channel-II and Channel-III are important market channels. 38 (19 %) of the total 200 respondents, sell their tomato production through channel-I, 80 (40.00 %), through channel-II and 82 (41.00 %) through channel – III. Generally, tomato production, price spread is less in channel-I while it is more in channel-II and III. It is observed that, lower the price spread, greater the marketing efficiency and vice-versa. So channel-I is more efficient as compared to channel-II and III.

18. Producer's share in consumer rupee and marketing efficiency is greater in channel-I as compared to channel-II and III, because there is no middlemen involved. The maximum average marketing efficiency is found in Pune market center (1.80 %) and the minimum in Delhi market center (0.95 %). Producer's share in consumer rupee and marketing efficiency in case of products sent through co-operative channel marketing was high as compared to marketing through private trade channel.

19. “Nandani Fruits and Vegetables Growers' Co-operative Sangh Ltd. Nandani Dist. Kolhapur” from Shirol taluka study area is playing a crucial role in tomato marketing through co-operative sector nature

20. It is observed that private vegetable producers' purchase-sale sanghs are available in Shirol taluka. There are more than one such sanghs in a village. But they are not formally registered under Public Trust Act and Co-operative Society Act.

21. Co-operative and private vegetable sanghs are at work in only one of the four sample talukas i.e. Shirol. They are not available in other three tahasils - Gadhinglaj, Hatkanangale and Karveer. The tomato growers have certain expectations from these sanghs i.e. making loan facility available, pre cultivation of land, issuing seeds and fertilizers and insecticides on credit, timely
sale of production, reasonable and just rates and payment in cash etc.

22. On the basis of observation and survey, it is known that the tomato growers also expect something from the government, e.g. purchase-sale should be done by the regulatory market, fixing of basic price, to compensate during slack season, to aid during disaster and finally to offer crop insurance policy with guaranteed price.

7.4 Suggestions

After analyzing and interpreting the data, the following suggestions are made.

1. The area or pocket selected for tomato growing should be topographically ideal i.e. neither too steep nor too flat. The land should be better, fertile, free from infestation of pests and pathogens, free from chemical residues and the soil reaction neutral to acidic. As a part if pre-cultivation of the farm land wherein tomato crop is planned, soil testing is a must.

2. In order to regain the capital invested in tomato crops, high yielding variety seeds must be utilized.

3. Considering the experience of previous year, the tomato grower determines as which seeds to use, to which market the product for sale is to be sent. He takes final decision on planning all these factors.

4. For tomato production and in order to grow its productivity, farmyard manures, bio-fertilizers, chemical fertilizers, insecticides and fungicides are a must. Accordingly the government should keep their prices under control and also provide subsidy. In order to bring down the tomato production cost, the concerned irrigation charges, labour wages should be lessened.

5. Credit is one of the key parameters for increasing output and resource productivity in agriculture. So to provide adequate short term credit facilities through Primary Agricultural Credit Co-operative Societies (PACS) should be activated. A separate financial Apex
lending institution should be started in order to cover the higher operational cost of tomato production.

6. Wooden boxes should be used for transportation of the product to regional or up-country markets. The required resources like knells, wooden plank, fixtures, holders, rough paper etc. should be controlled in terms of their rate.

7. The farmers use electric pumsets to irrigate the crop land. But due to load shedding, in-time irrigation is becoming impossible. The government should think of providing electric supply to these helpless farmers without break at a minimum rate per unit.

8. In order to sustain productivity of land and essential components in the soil, it should be observed that every year tomato crop is not grown in one and the same land over and over again. Rotational crop method should be adopted and tomato should be grown alternatively.

9. In order to save the tomato production from various pre-harvest, post-harvest and from natural calamities, like droughts, floods, untimely rain etc., 'Crop Insurance Scheme' may be executed by the Government. Hence the government should give subsidy on inputs such as seeds, chemical fertilizers, insecticides and fungicides.

10. There is the need to collect reliable statistics on tomato crops, on area, production, productivity, seed production which will be useful in the preparation and implementation of plants and also in the utilisation of tomato. The tomato growers should be made aware about technical know-how, yields and economical returns through training camps, demonstration, farmer fair, lecturer etc. The market information on various lines should be gathered and provided to farmers through radio, television, news-paper, internet, mobile etc.

11. Transport facilities, storage facilities, processing of tomato facilities should be improved. Again, obligation of middlemen should be taken into account.
12. Standard specification and grading should be designed so as to be useful to tomato producers, traders and consumers. Standards should reflect market needs and wants. The grading should be simple, clear and easily understood.

13. The adoption of Integrated Pest Management (IPM) technology was found effective in controlling both the pests and diseases on tomato. Hence, it is suggested to strengthen the extension network to popularize the IPM technology with the farmer.

14. To reduce the price gap between growers and consumers, there is a need for promoting producers' co-operatives in the state.

15. There should be proper linkages between the private and co-operative organizations for tomato marketing in up-country market centers. Producer's share in consumer rupee and marketing efficiency should be enhanced. Co-operative marketing sanghs should be established in every village.

16. It is needful to identify new markets on the international level for tomato and tomato processed products.

17. It is obligatory on the buyer to make prompt payments to the tomato producers without deductions of any muddal in unregulated market.

18. Farmers are likely to bear financial loss during season time and excess supply. In order to overcome the price fluctuation, the Government has to announce the ‘Minimum Support Price’ for the tomato crop as in case of other crops.