CHAPTER - I
INTRODUCTION AND RESEARCH METHODOLOGY

1.1 Introduction

Agriculture is the largest and the most important sector of the Indian Economy. India has made a lot of progress in agriculture since independence in terms of growth in output, yields and area under many crops. It has gone through a green revolution, a white revolution, a brown revolution and a blue revolution. Today, India is the largest producer of milk, fruits, cashew nuts, coconuts and tea in the world, the second largest producer of wheat, vegetables, sugar and fish and the third largest producer of fish and the third largest producer of tobacco and rice. The per capita availability of food grains has risen in the country from 350 gms in 1951 to near about 400 gms per day now, of milk from less than 125 gms to 226 gms per day and of eggs from 5 to 30 per annum despite the increase in population from 35 crores to 102.70 crores (2001). At present, only 23.3 per cent of the farmers are able to derive any benefits of extension services provided by various government agencies and every year about 20 percent of the crop is lost due to mishandling, spoilage, floods, droughts, pests and diseases. In fruits and vegetables the loss is around 30 percent.

1.2 Role of Agriculture in Indian Economy

Agriculture has an important role to play in the economic development of an agrarian economy like India. It has in fact done so, although not satisfactorily. The contribution of agriculture may be explained in terms of the following five propositions:

i) Expansion of goods supplies to match growth of demand; ii) enlarged exports of agricultural products to earn foreign exchange; iii) making available resources for investment and expansion of secondary industries iv) providing employment to labour force; and v) raising cash incomes to stimulate industrial expansion.

Agriculture accounts for 22 per cent of the GDP and provides livelihood to 58 percent of the country’s population. It provides gainful employment to a significantly
large section of Indian society and provides raw material for a large number of industries in the county. Thus, agriculture has a key position in India’s economy both from the view of employment and contribution to the national income over the years. The agriculture sector has not received as much attention as other sectors in services and manufacturing. The emerging areas in agriculture like horticulture, floriculture, organic farming, genetic engineering, food processing, branding and packaging have high potentials of growth. Development of rural infrastructure, of rural extension services, agro-based and food processing industries are essential for generating employment and reducing poverty.

Indian agriculture suffers from a mismatch between food crops and cash crops, low yields per hectare except for wheat, volatility in production and wide disparities of productivity over regions and crops. Domestic production of pulses and oilseeds are still below the domestic requirement and India imports pulses and edible oils to satisfy domestic demand. India is the second largest producer of rice and wheat in the world, first in pulses production and fourth in coarse grain. A distinct bias in agricultural price support policies in favour of rice and wheat has distorted cropping pattern and input usage.

Market for farm output continues to be subject to heavy procurement interventions. A shift from minimum support price system and developing alternative product markets are essential for crop diversification and broad based agricultural development.

In recent years there has been considerable emphasis laid on the development of horticulture and floriculture through the creation of critical infrastructure for cold storage, refrigerated transportation, processing, packaging and quality control. India is the largest producer of coconut, cashew nuts, ginger, turmeric and black pepper and the second largest producer of groundnut, fruits and vegetables. India accounts for 10 per cent of the world fruit production with first rank in the production of banana, spout and acid lime. India is also the largest producer of milk, the fifth largest producer of egg and the seventh largest producer of meat. It is necessary to improve cold storage and
transportation facilities and develop efficient marketing and export networks to optimize the production and export potentialities in respect of these products.

Food management is inefficient with unsustainable level of food subsidies imposing heavy burden on Government finance. The rural economy and the private sector lack the basic infrastructure to build up sufficient buffer stocks and the country remains vulnerable to weather shocks. In recent years, the central Government has provided various fiscal incentives for improving rural storage facilities. The central Government is also providing financial assistance to the state Governments for procurement and distribution of food grains at subsidized rates, particularly to the families below the poverty line.

The enhanced availability of bank credits through priority lending to agriculture and agro-based industries, favourable terms of trade, liberalized domestic and external trade for agricultural product, attraction to private investment in agriculture in recent years. It is likely that with the appropriate policy initiatives, this process will accelerate in the future.

1.3 Importance of Vegetables

India is the second largest producer of vegetables in the world next to China and India accounts for 14 % of world production of vegetables. The area under cultivation has increased from 5.6 million hectares in 1992-93 to 7.2 million hectares in 2005-2006, registering the annual compound growth rate of 9 % in 1992-93 and in 2005-06-8.85 %. In India, the production growth rate is 58.5 million tons in 1991-92 and 110.3 million tons in 2005-06.3

Adoption of high yielding seeds and F1 hybrids and suitable production technologies have largely contributed for higher production and productivity. India, now grows nearly 60 different kinds of vegetables with exception of possible half a dozen vegetable crops like brinjal, cucumber, colocaria, ride Gourd, sponge gourd etc. Most of the crops have been introduced into the country during the various periods before the Christian era to the recent times. India occupies the prime position in the production of most of these vegetable crops.
The vegetables produced in our country are much less than our demand and serves per capita in take of only 135 gms. as against the requirement of 285 g, per capita per day for balanced diet. This is due to prevailing pre and post harvest problems. These realities show that, India has to go a long way to accelerate the vegetable production, considering the demand for vegetables and to overcome the problem of socio-economic inequity. The country has failed to achieve the target of 100 million tons for the supply of 200 gms. vegetables per day per capita to our present population of one billion. The demand by 2030 will be around 250 million tons; to achieve this herculean task, the vegetable production and marketing have to be modified.4

1.3.1 Nutritive value of Vegetables

Vegetables play an important and significant role in the human diet by making it balanced and supply most important natural elements as are generally deficient in other food materials, except fruits. Vegetables are excellent sources of roughage, proteins, vitamins, carbohydrates and minerals required for maintaining perfect health and curing nutritional disorders and hence provide variety and constitute essential part of the balanced diet and make the means more appetizing. Vegetables provide not only the energy rich food but promise supply of protective nutrients. They not only adorn the dining table in the form of appealing salad, but also enrich health from the most nutritive menu and tone up the energy and vigour of mean. They are the cheapest sources of natural nutritive foods. The vegetables provide more flavour, better appearance and satisfaction to the eaters. These not only benefit us in protecting against degenerative diseases but also play a key role in neutralizing the acids produces during digestion of proteins and fully acids, also provide valuable roughage which promise and help in channelising the digestive tract and in preventing constipation and cancer of colon, etc.

The Dieticians recommend consumption of about 300 g of vegetables in duly diet. Out of which 116 g should be leafy vegetables. 85 g of root vegetables and remaining 90 g of fruit vegetables, such as Okra, tomato, chilies, pumpkin etc. we consume about 375 g of cereals against 328 g per head in advanced countries. The daily consumption per
head of starchy roots and fruits in advanced countries is 316 g and 360 g respectively, while in India, it is exceptionally very low (40 and 100 g) India has long tradition of being predominantly a vegetarian country, because of our sages and saints from time immemorial have advocated and preached its carefulness in vegetables contains more water and high percentage of roughage, viz., cellulose or fibre.5

1.4 Scenario of Tomato

Tomato is one of the most popular vegetables grown in India because of its high nutritive value, higher production and wide ecological amplitude. It is a rich source of vitamin and organic acid. Tomato fruits are used for different food preparations such as soups, salads, pickles, chutney, paste, puree and ketchups apart from being consumed in raw form. Tomato also has medicinal value. It is an excellent source of vitamin A and C and also called as a 'Poor man’s Orange'. Tomato is an important vegetable crop and ranks third next only to potato and brinjal in the production of vegetables in the country. Vegetables, especially fruity vegetables like tomato are highly perishable and are subject to loose after harvest.

1.4.1 History of Tomato

Botanical name of tomato is Lycopersieon esculentum and belongs to the family of Lycopersicae. Tomato is native of Peru-Ecuador area, from which it spread mothered in pre-Columbian time to Mexico where it was first cultivated. The Spanish explorers carried the plant to Southern Europe where it was eaten for a long time before it was utilized by the people of Northern Europe and the United States. For many years, it was considered to be poisonous, and was grown only for ornamental purposes under the names 'Tomatl,' 'love apple'. Today it ranks next to potatoes and sweet potatoes in importance.6

Tomatos are coarse, branching, erect or trailing herbs, with a strawberry for a fruit. They differ greatly in habit depending on the environmental relations. Tomato is a warm-season crop, the best soil for tomato is rich loan, with a little sand in the upper layer, and a good clay in the subsoil.
1.4.2 Importance in Diet

Tomato is a rich source of minerals and organic acid, essential amino acids and dietary fibers. Tomato is known as productive as well as protective food. It is a rich source of vitamin A and C, it also contains minerals like iron, phosphorus. Tomato contains lycopene and Beta-carotene pigments. Nutritive value of Tomato has shown in the following table.

<table>
<thead>
<tr>
<th>Constituents</th>
<th>Nutritive Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moisture</td>
<td>93.1 g</td>
</tr>
<tr>
<td>Energy</td>
<td>23 K.Cal.</td>
</tr>
<tr>
<td>Protein</td>
<td>1.9 gms.</td>
</tr>
<tr>
<td>Fat</td>
<td>0.1gms.</td>
</tr>
<tr>
<td>Carbohydrate</td>
<td>3.6 gms.</td>
</tr>
<tr>
<td>Fibre</td>
<td>0.7 gms.</td>
</tr>
<tr>
<td>Vitamin A</td>
<td>320 I.u.</td>
</tr>
<tr>
<td>b-carotene</td>
<td>192 mg</td>
</tr>
<tr>
<td>Thiamine</td>
<td>0.7 mg</td>
</tr>
<tr>
<td>Riboflavin</td>
<td>0.01 mg</td>
</tr>
<tr>
<td>Niacin</td>
<td>0.4 mg</td>
</tr>
<tr>
<td>Ascorbic acid</td>
<td>31 mg</td>
</tr>
<tr>
<td>Magnesium</td>
<td>15 mg</td>
</tr>
<tr>
<td>Onalic acid</td>
<td>2 mg</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>36 mg</td>
</tr>
<tr>
<td>Sodium</td>
<td>45.8 mg</td>
</tr>
<tr>
<td>Potassium</td>
<td>114 mg</td>
</tr>
<tr>
<td>Copper</td>
<td>0.19 mg</td>
</tr>
<tr>
<td>Sulphur</td>
<td>24 mg</td>
</tr>
<tr>
<td>Chlorine</td>
<td>38 mg</td>
</tr>
<tr>
<td>Calcium</td>
<td>20 mg</td>
</tr>
<tr>
<td>Iron</td>
<td>1.8 mg</td>
</tr>
</tbody>
</table>

Source – Internet – www.indiaagronet.com
1.4.3 Comparative Analysis and Advantages of Growing Tomato with Other Crops etc.

a) Short duration vegetable crop.

b) Tomato is one of the most widely growing solanaceous vegetable crops grown worldwide under outdoor and indoor conditions.

c) The plant growth characteristics range from indeterminate to highly determinate type. The branches of indeterminate plants keep growing and producing fruits until frost kills the plant.

d) Tomato is well fitted in different cropping system of cereals, grains, pulses and oil seeds.

e) Give more yields, hence high economic values.

f) Tomatoes are nutritionally valuable for their high pro-vitamin A and vitamin C content and rank number one in their nutrient contribution to human diet.

g) Number of processed items are prepared on larger consumption as well as for export purpose.

1.4.4 World Production

In the world, tomato is cultivated in almost all regions. Tomato is the world’s largest vegetable after potato and sweet potato, but it tops the list of channel vegetables. As far as the area under this crop is concerned, China stands first followed by India, Turkey, Egypt, U.S.A., Iran, Italy, Mexico, Spain, Brazil and others. In terms of production also, China is the leading producer followed by U.S.A., Turkey, India, Egypt, Italy, Spain, Iran, Mexico and others. The major tomato producing countries, area, production, productivity and percentage share in the world production is given in table No. 1.2.
### Table No. 1.2

**Country-wise Area, Production, Productivity and Percentage Share of World Production (2005-2006)**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Country</th>
<th>Area (000 ha)</th>
<th>Production (000 mt)</th>
<th>Productivity (tons/ha)</th>
<th>% share of world production</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Brazil</td>
<td>61</td>
<td>3453</td>
<td>56.61</td>
<td>2.70</td>
</tr>
<tr>
<td>2.</td>
<td>China</td>
<td>1305</td>
<td>31626</td>
<td>24.23</td>
<td>24.71</td>
</tr>
<tr>
<td>3.</td>
<td>Egypt</td>
<td>195</td>
<td>7600</td>
<td>38.97</td>
<td>5.94</td>
</tr>
<tr>
<td>4.</td>
<td>India</td>
<td>535</td>
<td>9362</td>
<td>17.50</td>
<td>7.31</td>
</tr>
<tr>
<td>5.</td>
<td>Iran</td>
<td>139</td>
<td>4781</td>
<td>34.40</td>
<td>3.74</td>
</tr>
<tr>
<td>6.</td>
<td>Italy</td>
<td>139</td>
<td>7187</td>
<td>51.71</td>
<td>5.62</td>
</tr>
<tr>
<td>7.</td>
<td>Mexico</td>
<td>119</td>
<td>2800</td>
<td>23.53</td>
<td>2.19</td>
</tr>
<tr>
<td>8.</td>
<td>Spain</td>
<td>72</td>
<td>4810</td>
<td>66.81</td>
<td>3.76</td>
</tr>
<tr>
<td>9.</td>
<td>Turkey</td>
<td>260</td>
<td>10050</td>
<td>38.65</td>
<td>7.85</td>
</tr>
<tr>
<td>10.</td>
<td>U.S.A.</td>
<td>167</td>
<td>11043</td>
<td>66.13</td>
<td>8.62</td>
</tr>
<tr>
<td>11.</td>
<td>Others</td>
<td>1624</td>
<td>35281</td>
<td>21.72</td>
<td>27.56</td>
</tr>
<tr>
<td>12.</td>
<td>Total</td>
<td>4616</td>
<td>127993</td>
<td>27.73</td>
<td></td>
</tr>
</tbody>
</table>

Source: NHB data base (2005-2006)

A global scenario of area, production and productivity of tomato in continents during 2005-2006 is shown in table No. 1.2. The total area under tomato cultivation in the world was 4616 thousand hectares in 2005-2006. The world total production of tomato was 127993 thousand tons in 2005-2006.

It is seen that, in the world China ranks first in area (1305 thousand hectares) and production 31626 thousand tons, followed by India in respect of area (535 thousand hectares) and production 9362 thousand tons. Turkey stands third in respect of area (260 thousand hectares) and production 10050 thousand tons. Egypt with an area (195 thousand hectares) and production 7600 thousand tons. USA with an area (167 thousand hectares) and production 11043 thousand tons and others (1624 thousand hectares and production 35281 thousand tons.

As regards the productivity is concerned, Spain has the highest productivity (66.81 tons per hectare) followed by
U.S.A. (66.13 tons per hectares) Italy (51.71 tons per hectare), Egypt (38.97 tons per hectare), Turkey (38.65 tons per hectare), China (24.23 tons per hectare). However, India has the productivity of 17.50 tons per hectare.

China ranks first all over the world in respect of its share is concerned (24.71%), followed by USA (8.62%), Turkey (7.85 %), Italy (5.62 %), Spain (3.76 %), Iran (3.74%), Brazil (2.70%), Mexico (2.19%) and other countries (27.56%)

1.4.5 Production in India

Tomato is one of the most popular vegetables grown successfully throughout India. In India tomato is cultivated on a large scale - Andhra Pradesh, Orissa, Karnataka, Maharashtra, West Bengal, Bihar, Gujrath, Chattisgarh, Madhya Pradesh, Tamil Nadu, Hariyana and other states. It has been increasing in the country, and attains the steady progress in the production trend. Today tomato has become a very popular fruit vegetable crop and occupies second place in terms of acreage next to potato. The production of tomato in India got a boost when Pepsi promoted its cultivation in Punjab with its high yielding seeds.7

The state wise area, production and productivity of tomato is given in following table No. 1.3
Table No. 1.3  
Statewise Area, Production, and Productivity of Tomato in India (2005-2006)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>State</th>
<th>Area (000 ha)</th>
<th>Production (000 tons)</th>
<th>Productivity (tons/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Andhra Pradesh</td>
<td>76.50</td>
<td>1453.50</td>
<td>19.00</td>
</tr>
<tr>
<td>2.</td>
<td>Bihar</td>
<td>46.00</td>
<td>727.20</td>
<td>15.81</td>
</tr>
<tr>
<td>3.</td>
<td>Chattisgarh</td>
<td>29.20</td>
<td>365.80</td>
<td>12.53</td>
</tr>
<tr>
<td>4.</td>
<td>Gujarat</td>
<td>29.30</td>
<td>650.00</td>
<td>22.18</td>
</tr>
<tr>
<td>5.</td>
<td>Haryana</td>
<td>17.10</td>
<td>257.30</td>
<td>15.05</td>
</tr>
<tr>
<td>6.</td>
<td>Karnataka</td>
<td>44.50</td>
<td>1188.10</td>
<td>26.70</td>
</tr>
<tr>
<td>7.</td>
<td>Orissa</td>
<td>100.40</td>
<td>1332.20</td>
<td>13.27</td>
</tr>
<tr>
<td>8.</td>
<td>Madhya Pradesh</td>
<td>20.40</td>
<td>306.70</td>
<td>15.03</td>
</tr>
<tr>
<td>9.</td>
<td>Maharashtra</td>
<td>35.00</td>
<td>987.00</td>
<td>28.20</td>
</tr>
<tr>
<td>10.</td>
<td>Tamil Nadu</td>
<td>22.00</td>
<td>277.70</td>
<td>12.62</td>
</tr>
<tr>
<td>11.</td>
<td>West Bengal</td>
<td>50.00</td>
<td>857.20</td>
<td>17.14</td>
</tr>
<tr>
<td>12.</td>
<td>Others</td>
<td>64.10</td>
<td>959.10</td>
<td>14.96</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>534.50</td>
<td>9361.81</td>
<td>17.52</td>
</tr>
</tbody>
</table>

Source: NHB data base (2005-2006)

Table No. 1.3 shows the comparative statistics of area, production and productivity of tomato in India. In the year 2005-2006, the total area under tomato cultivation was 534.50 thousand hectares and the total production was 9361.81 thousand tons.

From this, it is clear that the state of Orissa ranks first as far as area is concerned (100.40 thousand hectares), followed by Andhra Pradesh (76.50 thousand hectares), West Bengal (50.00 thousand hectares), Bihar (46.00 thousand hectares), Karnataka (44.50 thousand hectares), Maharashtra (35.00 thousand hectares), Gujarat (29.30 thousand hectares), Chatisgarh (29.20 thousand hectares), Tamil Nadu (22.00 thousand hectares), Madhya Pradesh (20.40 thousand hectares), Harayana (17.10 thousand hectares) and other states (64.10 thousand hectares).
Andhra Pradesh ranks first as far as national production of tomato is concerned (1453.50 thousand tons), followed by Orissa (1332.20 thousand tons), Karnataka (1188.10 thousand tons), Maharashtra (987.00 thousand tons), West Bengal (857.20 thousand tons), Bihar (727.20 thousand tons), Gujarat (650.00 thousand tons), Chattisgarh (365.80 thousand tons), Madhya Pradesh (306.70 thousand tons) and other states (959.10 thousand tons).

In respect of per hectare tomato productivity, Maharashtra (28.20 ton per hectare) ranks first, followed by Karnataka (26.10 ton per hectare), Gujarat (22.18 ton per hectare), Andhra Pradesh (19.00 ton per hectare), West Bengal (17.14 ton per hectare), Bihar (15.81 ton per hectare), Harayana (15.05 ton per hectare), Madhya Pradesh (15.03 ton per hectare), Chattisgarh (12.53 ton per hectare), Orissa (13.27 ton per hectare), Tamil Nadu (12.62 ton per hectare) and other states (17.52 ton per hectare).

Maharashtra is leading in tomato production all over India. In the year 2005-2006, the total area under tomato cultivation in Maharashtra was 34000 hectares with the production of about 8 lakh tons. The top districts viz., Nasik, Pune, Nagpur, Chandrapur, Ahmednagar and Kolhapur contribute for nearly 75% of state’s production.

1.5 Review of Literature

The demand for fruits and vegetables has increased due to growing population, simultaneously, production and marketing are the two important problems of tomato production. Producer’s share in consumer rupee largely depends on marketing efficiency. Experts in this field have studied the production and marketing of fruits and vegetables. The review of literature has evolved on the following lines.

Srinivasa Murthy A. P. and Rameshwari Varma⁸ (1984), in their study highlight that “Agricultural prices and Economic Development” entitled the prices of agriculture commodities, which set the pace for the movement and allocation of resources, assume an important role in shaping the course and character or economic determinant. The movement of agricultural prices vis-a-vis non
agricultural price and their determination are influenced by a complex set of factors, including governmental policies—especially in the context of planning relating to stabilization, fixation of support and procurement prices, the operation of controls, generation of incentives to producers etc, as well as by the former's response to these policy measures.

Kahlon A. S. and George M. V. (1985), in their study, "Agricultural price policy in India" the study highlights that, marketing policies could not be completely divorced from pricing policies One of the important features of this study is the distinction made between the market intervention policies trying to correct inefficient resource allocation under the imperfect market by Govt. control and the market development policies designed to develop more efficient markets through public investment for the improvement of market infrastructure and market institutions.

Acharya S. S. and Agarwal N. L. (1987), studied "Agricultural Marketing in India" This book contains brief analysis of marketing function, institutions, efficiency, cost and margins, government efforts in the improvement of agricultural marketing and market research. Although the main focus of the study is on the performance of India's agricultural marketing system, the methodology and policy implications are equally relevant to many other developing countries.

Singh GMS. N., Singh D. S., Ram Iqbal Singh (1987), The various segments of agricultural marketing in India. The agricultural marketing involves market structure, its nature and scope, marketing management, marketing functions and services, problems of agricultural marketing in India and suggestions to improve them. Pricing policy of farm products, marketing of crops, livestock products and seeds etc. have been discussed at length. The marketing channels, marketing costs, marketing transaction and facilitating activities have been described. The various services (Transport, Storage, Processing, grading and standardization etc.) involved in the marketing of agricultural products and what has been and can be done to improve their efficiency, have also been highlighted.
Acharya S. S. (1988), has focused on integrated analysis of production, marketing and price scene of Pulses sector. Detailed features of market structure, practices, channels, price spread in pulses have been given price fluctuations, seasonality in prices, effect of price and non-price factors, terms of trade for pulses vis-a-vis other crops and relative changes in inter-crops and input-output price parities have been analysed.

Jain V. K. (1989), has analysed, that success of farming is directly related to the quantum of income generated out of input. Farming is influenced by a number of internal and external factors, like cropping pattern, size of farm-business, availability of working capital, efficiency of factors of production, farm layout, land tenure, marketing practices, climate conditions, price level and accessibility of market. The authour has made a successful attempt, as a close observer, to analyse these factors and has forwarded some useful suggestions.

Subbanara SaiahN. (1991), in their study an attempt has been made to analyse the growth of horticultural crops in general and citrus fruit crops in particular in Andhra Pradesh. It delineates the difficulties being faced by citrus fruits growers with regard to economic incentives, prices, transportation, storage and gradingms. The study also offers a few relevant suggestions, which are practical in nature. This book is significant for policy guidelines for the development of horticulture sector and can be a source of stimulus for similar studies.

Nawadkar D. S., Mahandale D. K., Sale D. L. and Dangat S. B. (1991), in their article explained the "Marketing of vegetable in Western Maharashtra" The study shows that the profit of intermediaries margin accounts for quite a large proportion of the price paid by the consumers in both the markets. In order to ensure more and better production, consumption and uplifment of the economy of the vegetable growers will have to be assured of remunerative price. This could be done by regulation of markets, providing storage facilities both in production areas and in the market areas, packing material at subsidized rates, cheaper transportation facilities and reducing a large number of intermediaries who retain quite a large proportion of consumer's rupee.
These measures are necessary to avoid price fluctuation over time and space and to establish fair prices both for producers and consumers.

Koujalagi GMS. B. and Kunnal L. B.16 (1991), have focused on "Marketing of Pomegranate Fruits". In the present study, an attempt is made to identify different channels in the marketing to estimate the cost and assess the problems in the marketing of pomegranate. The commission charges have formed the major item of marketing cost in pomegranate in both the channels of marketingms. It has constituted about 44 per cent of the total marketing cost in both channels. Transportation cost has formed another important component of marketing cost constituting about 22 per cent of total marketing in channel-I and about 26 percent in channel - II. There is a need for an agency to help the growers in marketing of the produce.

Singh L. P.17 (1992), has emphasized the "Economics of Tobacco Cultivation, Production and Exchange". The study has pointed out the economics of tobacco cultivation, specially in India, where the major portion of the population depends on agriculture. It is necessary to know the economics of different cash crops. This study also deals with a comparative study of tobacco growth with other crops—cereals, pulses, oil seeds. Some problems of Tobacco cultivation such as capital, labour, middlemen, storage, marketing and taxation have been highlighted. The author's out-look is progressive and recommends mixed and multiple cropping system for the upliftment of tobacco cultivators.

Devendra Thakur18 (1993), he has studied in depth the Agriculture in Economics Development. He considering the importance of agriculture in economic growth with special reference to Indian economy. This volume contains several reputed articles in the light of economic policy and agricultural developments. It also contains articles regulating economic planning and agricultural policy. All papers in this volume are research papers which are filling the gap of knowledge in the field of agricultural development.

Sadhu and Singh19 (1997), provides an exhaustive discussion on scope and nature of Agricultural Economics
and its Role in Economic Development. The factors of agricultural production, viz., land, labour, capital and management, have been discussed in detail. The study highlights the theory of agricultural production, profit maximization, other aspect of Agricultural Economics such as agricultural prices, farm size, land reforms, finance and marketing have been thoroughly discussed. The study also includes the latest methodology used in Agricultural Economics Such as budgeting and linear programmingms.

Subrahmanyam K. V. 20 (1997), has studied "Mushroom Exports : Problem and Prospects". India has made tremendous progress in both production and export of Mushrooms, but it has to go a long way to meet its competitions from other Asian countries like China, Taiwan, Indonesia etc. The only way for increasing production and exports is by encouraging small / cottage scale production by individuals rather than joint ventures. By taking proper measures, there is ample scope for achieving this as demonstrated by our exceeding targets fixed earlier for years 1991-92 and 1996-97 for exports.

Tripathi R. S. 21 (1997), has made an attempt to focus the "Role of Grading and packing in price spread of Apple Fruit : A Case Study of U. P. Hills." He concludes that, Grading and Packing operations have a great scope for increasing the share of producer in apple fruits under existing marketing practice of the Uttar Pradesh hills. The modern grading and packing means and equipments should be introduced in the enterprise which will certainly reduce per unit cost of the processingms. For increasing the share to producer and minimizing middleman's margin, profit of wholesaler and retailer must be rationalized through making and execution of effective marketing regulation for commission rates.

Rangi P. S., Sidhu D. S. and Sidhu M. S. 22 (1997), in their article "Organisational and management Efficiency in Agricultural marketing system in Punjab" suggest organizational and management improvement in the agricultural marketing system in Punjab with a view to improve the economic condition of the Punjab farmers and to bring efficiency in the agricultural marketing system to sub-serve the interest of the consumers and to enhance overall well-being of the society at large.
Sukhpal Singh\textsuperscript{23} (1997)

The foregoing case study analysis shows that the above co-operatives are able to provide a sustainable solution to the marketing problems in horticulture as they are professionally organized and managed under the able supervision and direction of share holders. An additional feature which comes from better managing abilities is to keep marketing options open while working with a few buyers on a long term basis. In many ways these co-operatives come close to the New Generation of Co-operatives. Due to their better marketing abilities, they have been able to gain member loyalty as well as overcome capital constraint which so often is a major problem for co-operative organizations.

Rangrajan C.\textsuperscript{24} (1997) "Emerging Imperatives of Agricultural Marketing in India" in his presidential Address delivered at 11th National Conference on Agricultural marketing held at Chennai. Planners are postulating an increase in agricultural production of the order of 4.5 per cent during the Ninth Plan. The scope for exports for agricultural commodities will also expand in the changing world trade environment. If the country is to take full benefit of the expanding domestic and external markets, agricultural marketing must receive adequate emphasis. The long chain of marketing consumers needs improvement at every state. More efficient marketing will ensure simultaneously better income for the producers and improved satisfaction to the consumers.

Atibudhi H. N. \textsuperscript{25} (1997), in his article analysed "An Estimation of Post Harvest Loss of Onion and its management in Nawapada District of Orissa." The study brought out that in terms of area under onion in Orissa occupied third position, next to Maharashtra and Karnataka with 12.5 percent of the total area in the country. The onion crop losses were very high due to non adoption of post harvest management practices by the farmers of all categories. The adoption index for post harvest management practices was found to be only 36.6 percent. Therefore, the study suggested to give proper attention by the extension workers of Horticulture Department to increase productivity of onion in the state as well as adoption of post harvest
management to reduce post harvest loss and increase net income from onion crop.

Dangat S. B., Rahane R. K. and Kasar D. V.\(^{26}\) (1997), have studied the "Marketing and Export of Grapes from Maharashtra : A Case Study." The study concludes that the Co-operative marketing societies in the area have played an important role in marketing of grapes not only in the domestic markets but also in the sale in export markets. It is, therefore, essential that the grapes produced are of export quality for getting better price. The technique of production of better quality grapes needs to be made available to the large number of grape growers. The co-operative of grape growers. The co-operative societies need to be encouraged for marketing of grapes. The necessary infrastructural facilities including processing need to be created and strengthened.

Atibudhi H. N.\(^{27}\) (1998), explained the "Role of market committee in Regulating malpractices and increasing producer's share in Consumer's Rupee : A Comparative Study in Sakigopal and Satsankh market Orissa." It is concluded that, for any significant increase in producer's share in consumer's rupee and to increase marketing efficiency, there should be strong producer's organization in the form of market committee to protect the interest of the farmers as well as for streamlining better marketing system. The exploitation of farmers by the traders can be minimised by strengthening the market committee. The Government through the market committee and its marketing department must ensure that the functioning of these organizations is to be improved by providing proper marketing facilities, competent staff and strict enforcement of Regulated market Act.

Pujari A. GMS.\(^{28}\) (1998), has studied "Marketing of pomegranate and Ber" The study has shown that Solapur District of Maharashtra could come ahead in adoption of culture of Pomegranate and Ber of these two fruit crops since 1980. Pomegranate and Ber culture is in practice throughout Solapur district. However, Sangola, Pandharpur, Malshiras and Mangalwedha talukas are the major pockets in Solapur district have developed their own system of disposal of pomegranate and ber produce. The cultivation of
pomegranate and ber covered fully the working, capital, managerial and marketing costs and, in addition, provide considerably higher than 20 per cent surplus over and above the aggregate cost of production. As such, growing of pomegranate and ber has been quite a lucrative activity for the farmers in the drought prone areas.

**Agarwal N. L.** (1998), has studied "Marketing costs, margins and price spread for major Agricultural Commodities of Rajasthan" The costs, margins and price spread in marketing of different agricultural commodities (oil seeds, seed spices, fibre crop, vegetable and milk) have been analysed for the State of Rajasthan.

**Shiyani R. L., Kuchhadiya D. B. and Patat M. V.** (1998), "Marketing of vegetable in South Saurashtra zone of Gujrrath." In his article revealed that marketing of vegetable possesses more problems compared to other agricultural commodities as they have a high degree of perishibility, bulkiness, higher proportion of retailer's margin and concentration of trade in a few hands. The findings of this study revealed that the overall marketed surplus was more than 90 per cent of the total vegetable production. The commission charge, transportation cost, imputed value of season and spoilage cost, turned out to be the most important components among all the items of marketing costs. The producer's share in consumer's rupee ranged from 56.87 per cent in tomato to 62.38 percent in cabbage. The marketing efficiency was found to be satisfactory for all the vegetables studied.

**Prem Singh Arya** (2000), The study includes themes related to pre-harvest management and maturity standards, post-harvest handling, transportation, marketing and storage of off-season vegetables. It also describes the identification of suitable pockets for off-season vegetable production, role of various environmental factors, extension education, women, plastic culture, poly / green-house for raising vegetable and nursery in hills particularly show bound areas along with a zone-wise calendar giving sowing, transplanting and harvesting each month and off-season vegetables production etc.
Raut R. C. and Rasane V. S. (2000), have focused "Marketing of Roses in Nasik District (Maharashtra)." To recapitulate the results of the study, it can be concluded that bulk of rose flowers are sold in Mumbai market. Inspite of the high marketing cost in Mumbai market than Nasik markets, farmers were in profit of selling the flowers in Mumbai market as they are getting here higher prices. The commission, packing and transport were in major items of marketing costs for all types of rose flowers in Mumbai market. The requirement of more labour for grading and packing, high cost of packing material, high transport cost, absence of open auction method of sale, low price and the high commission in Mumbai market were the important constraints in marketing of rose flowers as reported by the farmers.

Mohaptra S. C. (1999), has studied the "Production and marketing of onion in Bolongir District of Orissa." In his article the marketing efficiency was estimated by using shephard’s formula. The following marketing channels have been identified in the marketing of onion.

1) Channel - I Producer -> Consumer
2) Channel - II Producer -> Trader -> Consumer
3) Channel - III Producer->Trader->wholesaler->Retailer->Consumer

The producer received less amount as compared to other two channels. The second and third channels were found in interior villages. The values of marketing efficiency for each channel shows it is highest in channel-I followed by channels-II and channel - III. But However, the channel - II was found to be the most efficient.

Dixit Anil, Grover R. K., Rai K. N. and Virenadra Singh (2000), in his article an attempt has been made to study, the nature and extent to risk in production and marketing of tomato and to suggest measures for minimizing these risks. The study also reveals that production loss was caused mainly by fruit borer, mosaic, whitefly and decay, whereas marketing risk mainly embodied price risk caused due to excess arrivals during peek period. The study suggested that the farmers may be rescued from various production risks through availability of good quality
insecticides / pesticides and evolving varieties resistant to fruit borer, whereas, marketing risks may be minimized mainly through establishment of processing unit and co-operative marketing societies, creation of storage facilities and by providing support price facilities to the tomato growers.

**Goyal S. K.**

(1999), has focused on the "Economics of Rose cultivation and its marketing in Sonepat district of Haryana State." Rose cultivation is a profitable enterprise with B-C ratio as 8.48, average annual net returns Rs. 44,457/- and pay-back period as two years. Out of the three channels identified, the channel I was found to be the major channel followed by Channel II. It was further found that retailers were getting higher relative share in consumer’s rupee in case when flowers were sold in loose form as compared to when sold after marketing garlands. It is because of the fact that in the process of making garlands, the intermediary (retailers) incurred heavy cost and retained some portion as profit margin which added to the price spread.

**Varmudy Vigneshwara**

(2001), Marketing of vegetables in India" has studied, India is the Second largest producer of vegetables in the world, but the prevailing system of cultivation, harvesting, storage, marketing etc. are not developed. The marketing of vegetables is still a major problem. As most of the vegetables producers are not tackled the prevailing problems and to have a sound vegetables policy for the future. In this connection it was attempted that the importance of the sector in our economy by noting the various aspects like origin, values and uses, area and production both in the world and in India.

**Varmudy Vigneshwara**

(2001), The study tries to highlight some of the important economic as well as other aspect of the spices of India. It also deals with the various aspects of some of the major spices like Black paper, Cardamom, Ginger, Turmeric etc.; along with some other minor spices. A special focus has been given to the problems of production and marketing of spices along with some of the measures to promote this industry.
Mathur B. L.\textsuperscript{38} (2001), in their study highlight the performance of economic policy in the light of various sectors of economy. The favourable economic policy has helped to agriculture, industry, trade and transport.

Karan Sing, Grover D. K., Kamal Vatta and Sanjay Kumar\textsuperscript{39} (2001), "Pattern of production and marketing of Fruit crops in Punjab" The study revealed that, Punjab State experienced a large growth in the area and production of horticultural crops. In their article an attempt has been made to highlight the cost production, production and utilisation, structure, marketing channels, marketing channels and post-harvest losses at the farmer level of the three fruits viz., pear, guava and grapes. Thus an efficient market infrastructure for horticulture crops may help the farmer in selling their produce themselves and increasing their returns.

Balaji P., Padmanaban N. R., Shivakumar S. D. and Chinnnaiyan P.\textsuperscript{40} (2001), In their article it is identified that the marketing channels, estimate the price spread for the marketing channels, estimate of the marketing efficiency and to analyse the constraints in marketing of groundnut. The price spread was estimated for three channels only (Channel - I, II and III). Since channel IV and V involved interstate trades. The producers share in consumer's rupee was maximum in channel II (76.48 per cent) The total marketing cost incurred was lowest (10.64 per cent of consumer rupee) in channel - II.

Khunt R. A., Gajipara H. M. and Karkadia B. H.\textsuperscript{41} (2001), have highlighted on the marketing of Kesar mango in Saurashtra region of Gujarat state. In nut shell, the ongoing analysis reveals that there exists a lot of scope of increase profitability of mango orchards by reducing the spoilage losses by providing proper packing and handling technology as well as the cold storage facility and reducing marketing costs by reducing the role of intermediaries. This needs proper and planned interventions of the government to safeguard the interest of mango growers. Well organised and established multipurpose co-operatives will play a pivoted role not only at the stage of whole trade but also at retailing stage.
Radha Y. and Eswara Prasad (2001), "Economics of production and marketing of vegetables in Karimnagar District, Andhra Pradesh" (2001) have studied the four important vegetables viz. tomato, brinjal, ladies finger and cauliflower, identified for the present study. Marketing of vegetables took place through three main channels viz. (I) producer -> consumer, (II) Producer -> Retailer -> consumer. About 90 per cent of the vegetables produced in the district are being marketed through channel III, but the producers share in consumer rupee was high in channel I (88.30 %) followed by channel II (81.69 %) and channel III (79.29 %).

Sawant S. S., Naik V. GMS. and Talathi J. M. (2001), "Marketing of Mushroom", in this article has analyzed maximum quantity of produce with medium size mushroom growers and all these produce with large size mushroom growers as sold in big cities through commission agents, whereas maximum produce with the small size mushroom growers was sold at the farm gate through the commission agents. Share of the producer in consumer rupee was 53.11 per cent direct sale, whereas it was 52.35 per cent in case of farm gate sale go selling directly through the commission agent in big was comparatively more profitable to the producer than the farm gate sale. The study has pointed out the need for support to the mushroom growers and solving their constraints regarding loan, marketing, storage and input supply facility.

Balappa S. R. and Hugar L. B. (2002), In the present paper an attempt has been made to analyse the trends in prices and their variation in six principal vegetable market of Northern Karnataka in the case of onion and potato. This implies that, the variation in arrivals as well as prices over the years were found relatively higher. Similarly, the variations in the arrivals and prices were found to be higher in potato in general. The variation in arrivals was higher than the prices of potato in Belgaum and Dharwad markets, while reverse trend was observed in Hubli market.

Balappa S. R. and Hugar L. B. (2002), In his article, "Economics of production and marketing of tomato in Karnataka" a study was conducted to find out the profitability of cultivation and marketing in North
Karnataka, comprising of Belgaum, Dharwad, Bijapur, Raichur and Gulbarga district. Multistage random sampling design was used for selection of districts, talukas, villages cultivators. The study revealed that farmers incurred a total cost of Rs. 59,880.80 per hectare. A study indicated that producer’s share in consumer’s rupee was found to be 51.15 per cent with similar share in all the markets. It is worth nothing that out of the price spread (48.85 %) in the overall study area, both margins (24.06 %) of different market functionaries shared equally.

Virendra Singh, Shrivastava Pankaj and Kumar Amol\textsuperscript{46} (2002), In their article "Potato marketing pattern in Agra district of western Uttar Pradesh - A Temporal and Spatial Analysis" have analyzed the small and medium farmer utilising a larger portion of their produce in the farm of domestic consumption, seed and wage payment in kind in comparison to their counterparts of large size group of farmers. The reason may be the financial crunch in these categories. Most of the farmers in these categories could not pay wages in cash and are not in the position to replace their seal every year. In such a situation they have to use their own produce as seed. In the length of poor resource base and financial crunch small and medium farmers could not reach the advantages of price gain overtime and space distress sale is a common practice among these categories.

Guladgudda S. S., Vishweshwar Shripal and Olekar J.\textsuperscript{47} (2002), In this study attempts were made to know the economics of banana cultivation and its marketingms. The farmers followed mainly three marketing channels. In the channel - I the farmers share in consumers rupee was 41.54 per cent whereas in channel II and III farmer's share were 49.88 and 54.71 percent respectively. The efficiency index indicates that the channel III was efficient as less number of intermediaries were involved in that channel. Almost all farmers expressed problems of pest and disease, poor quality suckers, lock of technical know-how, exploitation by intermediaries and lack of storage facilities. Hence, farmers must be encouraged to establish banana marketing co-operative societies and thereby eliminate the intermediaries.
Veerakumaran GMS. and Satheesh C. K.\textsuperscript{48} (2002)

In their article "Marketing of fruits and vegetables through co-operatives - An analysis of consumer Behaviour" highlighted that the co-operative marketing societies have got a prominent role to play in safeguarding the interests of the farmers and consumers. Marketing societies as intermediary between consumer and producer ensure regular market and remunerative price to the farmer and quality products at reasonable price to the consumer. In order to play their role of a marketing leader societies must make their operating policies and system consumer friendly and go for vertical and horizontal networking with other producers organizations.

Chole V. M., Talathi M. and Patil H. K.\textsuperscript{49} (2002), The study has focused on "Price spread in marketing of Bitter Gourd and tomato in Panvel tahsil of Raigad District (M.S.) The producers realised maximum share in consumer’s rupee in channel - I (62.38 \%) followed by channel - II (57.22 \%) and channel - III (47.92 \%). The commission agent's net margin share in channel III was 3.58 per cent. The whole saler reaped 6.28 per cent of consumer's price in channel II and 6.96 per cent in channel III. The net share of retailer in consumer's rupee was worked out to 26.73 \% per cent in channel I, 24.30 per cent in channel II and 28.09 per cent in channel III. The marketing efficiency was the highest in channel I (1.65 \%) than that of channel II (1.27) and channel III (0.98).

Killedar N. S., Lahor N. S., Babar V. S. and Ingavale M. T.\textsuperscript{50} (2002), In their study "Economics of production and marketing of Ginger in Satara District of western Maharashtra." highlighted that the cultivators in the Satara pocket of Maharashtra can earn a net profit of Rs. 2,49,687 / ha. by cultivating ginger crop. It indicates that in this area there is a scope for increasing the area under this crop. Near 76 per cent of the per quintal marketing cost (Rs. 402.62) of ginger is commission charges. This can be minimized by following proper marketing channel of gingeer.

Lahor N. S., Babar V. S., Killedar N. S., Ingavale M. T. and Bondar D. S.\textsuperscript{51} (2002), have considered the importance of marketing of vegetables and fruits "Nanadani vegetable
and fruits co-operative society Ltd." was registered on 17-8-1990. The study concluded that the producer’s share in wholesale price in tomato and sweet pepper chilly was more or less similar while it was lower in cauliflower (60.45 per cent). The major sources of finance of the society were loans, share capital and deposits. In order to reduce the cost of transport of the produce, society should undertake transporting activity on its own. This will help in increasing the producer share in consumer rupee.

**Jugale V. B.**\(^{(52)}\) (2004), has made an attempt to focus the "Horticulture Economy of Maharashtra". The study covers the horticulture geography of Maharashtra and the major horticulture pockets in the state. The state has potential opportunity to develop the sector compared to the agricultural practices in the state. The state can be called as horticulture state if the government encounters with suitable policy measures with visionary action. The book explores the marketing system and the marketing channels both in domestic and international markets. The marketing cost and producers share in consumer's rupee has been discussed by the author. Export of horticulture produce has been systematically explored. The government policy alongwith institutional policy for horticultural development has been focused. The role of financial institutions has also been elaborated in the study. The study concludes with some important suggestions for the perspective development of the horticulture sector in the state.

**Sekhon M. S. and Manjeet Kaur**\(^{(53)}\) (2004), In their article have analyzed the "Role of Small farmers in Diversification of Punjab Agriculture with Vegetables." The present study was undertaken in the specialized Okra cultivation pocket; situated in Ludhiana district of the Punjab state. It highlights the production scenario, economics and benefits of okra cultivation. Besides being profitable, its cultivation has many other advantages, viz. it provides scope for diversification, being labour intensive it provides scope for employment, regular source of income to the farmers and source of income to market committee and commission agents.

**Varma Ajay and Singh K. P.**\(^{(54)}\) (2004), has focused on "An Economic analysis of post harvest losses in fresh
vegetables." The study was conducted in Bihar, Jharkand, U.P. and Orissa states during 1999-00 to 2001 and markets were studied to assess the post harvest losses of vegetables in quantitative terms at different stages. The multistage stratified random sampling has been employed to estimate losses at wholesale, retailer and farm level of transportation, storage and sorting level. It is evident from the study that overall losses vary up to 25 % in vegetables viz. tomato, cabbage cauliflower and chili. The post harvest losses of tomato were observed to be very high in quantitative as well as in monetary terms. Estimated monetary losses highlighted the amount of losses faced by persons involved in vegetable transaction.

**Varma L. R.**<sup>55</sup> (2004), explored about "Marketing of Fruits and vegetables in Himachal Pradesh. Strategies for sustainable Development" The present paper on marketing of fruits and vegetables analyzed the state intervention in the marketing of fruit and vegetables in Himachal Pradesh. A study of marketing problem and understanding of the marketing system of fruits and vegetables in Himachal Pradesh would help to improve the marketing process of these products.

**Navalkar D. S., Pagire B. V. and Patole S. D.**<sup>56</sup> (2004), In their article have analyzed "Production, Processing and Trade of Fruits and Vegetables in Himachal Pradesh Vis-A-Vis other states" Andhra Pradesh and Karnataka, which together contribute nearly 35 per cent of the national area. In Himachal Pradesh the area under fruits has increased at the rate of about 6000-7000 hectares every year under the ninth plan bringing 30,000 hectares of additional land under fruit. The state government wants to promote the cultivation of citrus, mango, kiwi, strawberry, grapes etc. as the market for apples has started stagnating in the country. Apples still account for 90 per cent of the fruits produced in the state.

**M. Sudha, D. Shrinivasa Murthy and Gajanana T. M.**<sup>57</sup> (2005), An attempt has been made to asses the influence of an institutional support on the post harvest losses and marketing efficiency of Banana cultivators. Tella Chakkaru Keli (TCK), which is popular for its distinct flavour and is extensively grown in East and West Godavari districts of
Andhra Pradesh. The post harvest losses assessed at the field, market and retail sales levels worked out to be lower at 4 and 3-56 percent in channel I and II. The marketing efficiency worked out to be 1.41 in channel I and 2.04 in channel II. Inclusion of PHL as an additional percentage to marketing cost reduced the marketing efficiency.

Varadarajan R. and Bose A.\textsuperscript{58} (2005), have focused on the "Marketing channels, Marketing cost, price spread and marketing efficiency of Betal-Leaf." Betel-leaf is a perennial creeper commercially cultivated in India’s cash crop. The present study pertains to the Madurai District of Tamil Nadu. Stratified multistage random sampling is adopted for the study with Madurai district as the universe, the taluka and block as the stratum, the village as the primary unit of sampling and betel-leaf farmer as the ultimate unit. The present study makes an attempt to study the existing marketing channels to evaluate the marketing cost, marketing margin, price spread and marketing efficiency of different channels.

Lavleen Kaur, Tejinder Dhaliwal, Rangi P. S. and Nirmal Singh\textsuperscript{59} (2005), Have studied "An Econometric Analysis of Tomato Arrivals and Prices in Punjab." They have shown that Punjab has only one per cent of the grass cropped area under vegetables and total accounts for about seven per cent of the total vegetable area. Being perishable in nature, tomato requires quick and careful marketingms. Due to meager and improper facilities for transportation, processing and distribution there occurred periodic gluts. Prices crash whenever there is an increase in tomato arrivals and to overcome this difficulty agro processing units were established in Punjab. Important of these units laid to growth in the areas, production and yield of tomato as well as the seasonal variations and cycles in the prices and arrivals of tomato were examined.

Gajanana T. M., Sreenivasa Murthy D., Sudha M. and Dakshina Moorthy V.\textsuperscript{60} (2006), had assessed the post harvest loss (PHL) of tomato at different levels of handling in Karnataka State. The aggregate post harvest loss in tomato was to be around 19 percent and the loss at the farmer’s field level was found to be the maximum of at 9 per cent which accounted for more than 50 per cent of the total loss.
in the respective channel. The main causes of losses at this level were the pests (fruit borer) and diseases (leaf spot, stem end rot and TLCV). Hence, pre-harvest management of the crop is very important to reduce the loss. The adoption of IPM technology was found effective in controlling both the pests and diseases in tomato.

**Khaunt K. A., Gajipara H. M. and Vekaria S. B.** (2006), have focused the price behaviour of major vegetables in Gujarat State. They concluded that there is seasonality in arrivals and prices of all the major vegetables produced in the state which indicated the need for storage facilities. The inverse relationship was observed between prices and arrivals of most of the vegetables. Arrivals and prices of major vegetables have increased over the period in most of the regulated markets showing the scope for expansion of vegetables cultivation. There is a lot of scope of inter market transfer of major vegetables in Gujrat. These activities are promoted through farming co-operatives of farmers.

**Srinivas T. and Ramanathan S.** (2006), has analyzed "Production and Marketing of sweet potato in India". Sweet potato is predominantly cultivated as rain fed crops in eastern India especially in Orissa, West Bengal, Bihar, Jharkhand and Utter Pradesh. An attempt is made to estimate the cost of production in major growing states to study the marketing pattern for identifying the marketing channel and to understand the current utilization pattern of sweet potato in India. Sweet potato area is to be stepped up by supplying quality planting material, reducing the cost of production, removing price disparity, popularising as food processed products and diversifying its industrial uses.

**Pandit Arun, Pandey N. K., Rona Rajesh K., Kumor N. R. and Deka C. K.** (2006), have focused on "Production and marketing of Potato in Barpeta district of Assam State" The study shows that among the NEH states Assam contributes maximum potato and the trend of area, production and yield of potato in NEH region during 1990-91 to 2003-04. Potato yield of Assam as well as whole NEH region is very poor. The lack of quantity seed, irrigation facilities, cold storage, knowledge regarding scientific potato production, fertilizers at peak time, finance, low and fluctuating market
price, high input cost and flood problem were the major constraints.

Hatai L.D. and Baig M.A.A. (2007), "Economics of production and marketing strategies of potato in Orissa", an attempt has been made to identify the problems of production and marketing, estimating the cost and returns, resource use efficiency and post harvest losses in potato production. There are many problems related to recurrent price fluctuation, high marketing, storage and transportation costs, inadequate storage facilities and lack of competitive marketing system. In concluding remarks, they say there is an urgent need for promoting producer's co-operatives and providing adequate short term credit facilities particularly in rural areas. In order to hedge the risk of potato production, it is imperative to develop market intelligence services, introduction of support price and insurance scheme in the state.

Murthy C. and Wader L. K. (2007), explained about "Quality characteristics influencing price of important vegetables in Karnataka" The study attempts to determine the quality influencing the price of important vegetables markets in Karnataka. The quality factors namely eye-sight grade and moisture percentage were having negative sign (-18.78 and 19.36), indicating thereby that the pricing in Hubli market did take into account the eye-sight grade and moisture percentage of potato objectively. The eye-sight grade and moisture percentage discounted the price of potato produce to the extent of Rs. 19.36 per quintal with every one unit decrease in eye-sight grade and moisture percentage. The tomato having higher moisture content were useful in determining the most influential factor affecting the prices of tomato.

Nikam A. V., Shendage P. N., Jadhav K. L. and Deokate T. B. (2007), On "Marketing of Kharif Potato in Satara District Maharashtra" the study reveals that Pune and Satara are the major potato growing districts in Maharashtra state. As regards marketing, producer -> hundekari -> whole saler -> retailer -> consumer was observed to be a most prominent marketing channel in the area under study. The study showes that the stored potatoes fetched better prices in the market and provided
higher returns per rupees spent indicating that storage of kharif potato was observed to be economically viable.

**Bhagat Vipal and Sidhu M. S.** (2008), "Migrant Vegetable sellers in Ludhiana city: A Case Study". The study brought out that the major factor which motivated the migrant vegetable sellers to come to the state of Punjab was the economic distress faced by these persons in their native places caused by unemployment, under employment, relatively low wages, etc. It was observed that majority of the selected vegetable sellers came from Utter Pradesh and Bihar. The study brought out that only two per cent of the respondents had permanent shops as vegetable sellers whereas 13 per cent had temporary shelter, 27 per cent had roadside rehri and 15 per cent were hawkers. Another 43 per cent of the migrant vegetable sellers were doing their business in "Apni Mandi" because these mandis are held almost daily in Ludhiana city.

**Sharma Meenakshi and Singh Ranveer** (2008), The study has focused on "Post-Harvest Losses in Fruits and Vegetables in Himachal Pradesh." The study attempts to estimate the extent of post-harvest losses at various levels of marketing for selected fruits and vegetables in Himachal Pradesh. In selected fruits, losses range between 18.31 to 24.85 per cent of the total production. The losses are found to be more at wholesaler's / retailer's level in all the selected fruits except apple. Regarding vegetables losses range between 18.98 to 28.25 per cent of the total production. The losses are found to be more at production level in most of the vegetables. The reduction in post harvest losses is important to increase the availability of fruits and vegetables in the economy.

**Nalini Ranjan Kumar, Pandey N. K. and Rana R. K.** (2008), "Production and Marketing of Potato in Banaskantha District of Gujarata." The study shows that the annual compound growth rates of area and production of Banashkantha (10.96 and 10.48) were higher than those of Gujarat State (4.32 and 4.20). Potato yield of Banaskantha district and the state of Gujarat were very good and higher than national average but have started to decline in recent past which is point of concern for everyone. Because lack of quantity seed, inadequate
irrigation facility, uncertainty in potato price, costly potato inputs, shortage of labour and lack of latest know-how of potato cultivation were the major constraints faced by farmers in potato cultivation.

1.6 Marketing of Tomato

There is no organized marketing system for tomato in India. A major portion of the product is still handled by the middleman. So the marketing of tomato is a complex process. It consists of all those functions and processes involved in the movement of the product from the place of production to the place of consumption. The marketing activities involve not only the functions of buying and selling, but also the preparation of produce for marketing, assembling, packaging, transportation, grading, storage, processing, retailing etc. The number of functions and its type vary from product to product, from time to time and from place to place. The major goals in marketing are:

a) To meet the domestic requirement of protective foods for the rising population.
b) To provide raw material base for industry,
c) To develop appropriate system for reducing post-harvest losses.
d) To enhance exports.

So as to obtain these goals, an efficient marketing system should have the following objectives, They are :

1) To enable the primary producers to reap the best possible benefits through price mechanism;
2) To provide facilities for lifting of all produce, the farmers are willing to sell at an incentive price.
3) To reduce the price spread between the primary producer and ultimate consumers.
4) To make available all products of farm origin to the ultimate consumers at reasonable prices without impairing the quality of the produce.

The prevailing marketing system for vegetables in India is constituted of a three-tier network of market viz. (i) village markets, (ii) secondary markets and (iii) terminal markets.
Several phases of agricultural marketing practices are undertaken which include.

1) At the farm gate - after harvesting for conversion into the desired form acceptable at the rural or primary market.

2) At the rural markets - for change of hands for the producers to the village merchants or the agents of the buyers or the local consumers.

3) At the assembling market - where the village merchants / producer - seller sell the produce to the wholesalers or the commission agents for onward dispatch to the clients in the upcountry markets.

4) At the secondary markets - where the produce from the assembling markets in the market shed is stored and transacted for distribution to the terminal market for consumption.

5) At the terminal market - for vending through wholesalers and retailers for final consumption or for shipment to other countries.

6) At the retail level to consumption point which may be a processing unit or an individual consumer.

1.7 Statement of the problem

Farm land, climate, rain and market facilities in Kolhapur district favour the crop of tomatoes, which is availed on large scale. The tomato vegetable crop could be harvested within three and half to four months. It benefits the farmers extensively. Tomato is enriched with 'A' and 'C' vitamins and strengthens the health factor. Apart from its use in kitchen, some by-products of tomato like souce, chatani, ketch-up are favoured by people. Tomato is an indispensable fruit - vegetable both for vegetarian and non-vegetarian families. As a result its demand is high, consequently the study of extent of land used for tomato crop; its productivity and production becomes must. It includes the economics of tomato cultivation, market facility, marketing channel, capacity of market and production of tomato crop. Moreover, the practical problems of tomato crop raising problems for farmers and possible remedies to solve them is an inseparable part of the study.
1.8 **Hypothesis**

1) The large scale production of tomato vegetable in Kolhapur District has motivated the farmers in general have adopted the tomato cultivation as a cash vegetable crop.

2) The collective marketing minimizes the cost of marketing of tomato

3) The policy of the institutional finances towards tomato crop is not favourable to the farmers.

1.9 **Objectives of the Study**

1) To examine the area, productivity and crop intensity of the tomato vegetable crop.

2) To study the cost and income of cultivation of tomato production.

3) To find out various marketing channels, efficiency and price spread in tomato marketing.

4) To identify various constraints in tomato production, marketing and to estimate producers share in consumer’s rupee.

1.10 **Research Design**

The above mentioned objectives have critically appraised by using both primary and secondary data. The main source of data however, is field investigations carried out by the scholar. The schedule for farmers is intended to seek information of their background, yield, finance marketing practices and problems, as well as secondary data are also used for study. This research effort comes under the “Survey Method” type of methodology.

1.10.1 **Methodology of the Sampling Selection**

In the recent years, area under tomato cultivation has increased in Kolhapur district. Hence, it is necessary to know profitability of this crop in this area. The list of tahashils where tomato cultivation is concentrated has been obtained from concerned Kolhapur District Superintendent of Agriculture.
There are 12 tahsils in Kolhapur district. Total production area and its average on tahsil-wise basis during the study tenure/period is shown below, Table No. 1.4 with reference to Kolhapur district.

Table No. 1.4 shows the tahasil-wise cultivation of area in Kolhapur district. Among these 12 tahsils of Kolhapur district, the researcher has selected four talukas on the basis of having an average of 50 hect area of land under cultivation of tomato during the year 2002-2003 to 2006-2007. Their breakup in an average area is Gadhinglaj 95.79 hectares, Hatkanangale 180.98 hectares, Karveer 69 hectares and Shirol 1090.20 hectares.
### Table No. 1.4

**Tahsil-wise Cultivation Area in Kolhapur District 2002-2003 to 2006-2007**

(Area in hect)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1)</td>
<td>Hatkanangale</td>
<td>170.00</td>
<td>302.00</td>
<td>199.20</td>
<td>77.70</td>
<td>904.90</td>
<td>904.90</td>
<td>180.98</td>
</tr>
<tr>
<td>2)</td>
<td>Shirol</td>
<td>850.00</td>
<td>1041.00</td>
<td>1010.00</td>
<td>1025.00</td>
<td>1525.00</td>
<td>5451.00</td>
<td>1090.20</td>
</tr>
<tr>
<td>3)</td>
<td>Panhala</td>
<td>17.10</td>
<td>27.90</td>
<td>21.55</td>
<td>30.00</td>
<td>26.00</td>
<td>122.55</td>
<td>24.51</td>
</tr>
<tr>
<td>4)</td>
<td>Shahuwadi</td>
<td>39.15</td>
<td>45.30</td>
<td>42.60</td>
<td>47.10</td>
<td>40.60</td>
<td>214.75</td>
<td>42.95</td>
</tr>
<tr>
<td>5)</td>
<td>Radhanagari</td>
<td>18.00</td>
<td>7.50</td>
<td>12.37</td>
<td>7.80</td>
<td>68.48</td>
<td>114.15</td>
<td>22.83</td>
</tr>
<tr>
<td>6)</td>
<td>Gaganbawada</td>
<td>1.50</td>
<td>1.80</td>
<td>0.90</td>
<td>0.50</td>
<td>1.00</td>
<td>5.70</td>
<td>1.84</td>
</tr>
<tr>
<td>7)</td>
<td>Karveer</td>
<td>37.30</td>
<td>139.00</td>
<td>59.00</td>
<td>61.00</td>
<td>52.00</td>
<td>348.30</td>
<td>69.66</td>
</tr>
<tr>
<td>8)</td>
<td>Kagal</td>
<td>35.00</td>
<td>75.95</td>
<td>21.70</td>
<td>13.00</td>
<td>22.00</td>
<td>167.65</td>
<td>33.53</td>
</tr>
<tr>
<td>9)</td>
<td>Gadhinglaj</td>
<td>79.00</td>
<td>89.50</td>
<td>95.40</td>
<td>124.80</td>
<td>90.00</td>
<td>478.95</td>
<td>95.79</td>
</tr>
<tr>
<td>10)</td>
<td>Bhudargad</td>
<td>3.20</td>
<td>2.50</td>
<td>2.50</td>
<td>3.00</td>
<td>2.00</td>
<td>13.20</td>
<td>2.64</td>
</tr>
<tr>
<td>11)</td>
<td>Ajara</td>
<td>5.20</td>
<td>8.00</td>
<td>7.20</td>
<td>4.00</td>
<td>2.00</td>
<td>26.4</td>
<td>5.28</td>
</tr>
<tr>
<td>12)</td>
<td>Chandagarh</td>
<td>19.20</td>
<td>15.00</td>
<td>2.00</td>
<td>2.00</td>
<td>3.00</td>
<td>14.12</td>
<td>8.24</td>
</tr>
</tbody>
</table>

Source: Kolhapur District Superintendent of Agriculture
At the second stage, simultaneously villages from each tahsils are selected on the basis of highest area under the tomato cultivation among the cluster group of villages in Gadhinglaj, Hatkanangale, Karveer and Shirol talukas. The list of villages growing tomato in each selected tahsils are obtained from the respective revenue and agriculture department. The selected tahsils, villages and number of sample cultivators are as follows.

**Table No. 1.5**

**Tahsil and Village-wise Cultivators**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of Sample Tahsil</th>
<th>Name of Sample Villages</th>
<th>No. of Sample Cultivator</th>
<th>Tahsil-wise % to total Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1)</td>
<td>Gadhinglaj</td>
<td>1. Basrge</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Nilaji</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Nagnur</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>2)</td>
<td>Hatkanangale</td>
<td>4. Alate</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Chokak</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6. Herale</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>7. Majale</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>8. Male-Mudshingi</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>3)</td>
<td>Karveer</td>
<td>9. Gad-Mudshingi</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10. Wasgade</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>4)</td>
<td>Shirol</td>
<td>11. Chipri</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12. Gharangutti</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>13. Danoli</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>14. Nandani</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>15. Jambhali</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>16. Jainapur</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>17. Haroli</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>18. Kothali</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>19. Udgaon</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>20. Umalwad</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total = 4</td>
<td></td>
<td>20</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100 %</td>
</tr>
</tbody>
</table>

Source – Field Survey
### Table No. 1.6

**Tahsil-wise Cultivators**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of Sample Tahsil</th>
<th>Name of Sample Villages</th>
<th>No. of Sample Respondents</th>
<th>Tahsil-wise % to total Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1)</td>
<td>Gadhinglaj</td>
<td>3</td>
<td>30</td>
<td>15</td>
</tr>
<tr>
<td>2)</td>
<td>Hatkanangale</td>
<td>5</td>
<td>50</td>
<td>25</td>
</tr>
<tr>
<td>3)</td>
<td>Karveer</td>
<td>2</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>4)</td>
<td>Shirol</td>
<td>10</td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>20</strong></td>
<td><strong>200</strong></td>
<td><strong>100 %</strong></td>
</tr>
</tbody>
</table>

Source – Field Survey

Table No. 1.6 shows that researcher has selected three villages from Gadhinglaj taluka and 30 tomato cultivators accounted to 15 per cent of total respondents, five villages from Hatkanangale taluka and 50 tomato cultivators accounted to 25 per cent of total respondent, two villages from Karveer taluka and 20 tomato cultivators accounted to 10 per cent of total respondent and ten villages from Shirol taluka and 100 tomato cultivators accounted to 50 per cent of total respondents. For the further study, at the end, with 200 beneficiaries / farmers on the random sampling basis.
Map No. 1.1
Sample Tahsils are indicated in the Map of Kolhapur District
Map No. 1.2
Sample Villages from Gadhinglaj tahsil are shown in the Map

Note - Basarge Khurd and Basarge Budruk are the two names of the same village Basarge.
Map No. 1.3
Sample Villages from Hatkanangale tahsil are shown in the Map
Map No. 1.4
Sample Villages from Karveer tahsil are shown in the Map

KARVIR TAHSIL

INDEX
- Other villages
- Study villages
Map No. 1.5
Sample Villages from Shirol tahsil are shown in the Map
1.10.2 Data Collection

Required data was collected from primary and secondary sources.

In order to study the nature of production and marketing of tomato vegetable, the researcher has selected Kolhapur District purposively. The deliberate selection of Kolhapur district has basically two reasons. Firstly, the researcher knows the geographical area of the Kolhapur district and secondly, the area is identified as a large scale production of tomato vegetable in the Kolhapur district. For the selection of the village and farmers, researcher has used multi-stage random sampling technique as and when he needed. The study was mainly focused on the various aspects of production and marketing of tomato.

1.10.3 Primary Data

The primary data was collected through the schedule interview and discussion. The questionnaire or schedule was prepared to collect information. Further, researcher was keenly observed the working condition of farmers and market situation.

1.10.4 Secondary Data

The secondary data was collected from government offices, co-operative marketing organization, research institution and reputed rich libraries and web sites on internet. They are as follows –

I) Offices and Department

1) Talathi and Circle Offices of concerned villages of Gadchinglaj, Hatkanangale, Karveer and Shirol talukas.

2) Talasil Offices of Gadchinglaj, Hatkanangale, Karveer and Shirol talukas.

3) The Kolhapur District Superintendent of Agriculture.


5) District Statistical Office, Kolhapur.
6) Directorate of Horticulture, Maharashtra State, Pune.
7) National Horticultural Board, Regional Office, Vashi, Mumbai.
8) The Registrar, District Co-operative Board, Kolhapur.
9) Web sites related to Tomato Production and Marketing.
10) Research Papers, Projects Reports, Ph.D. Thesis, etc. were referred.

II) Libraries
1) BARR Balasaheb Khardekar Library, Shivaji University Kolhapur.
2) ND. Patil Night College, Sangli.
3) GMS.A. College of Commerce, Sangli.
5) Smt. GMS.K.GMS. Kanya Mahavidyalaya, Jaysingpur.
6) Jaysingpur College, Jaysingpur.
7) Shri. Chh. Shahu Institute of Business and Management, Kolhapur.
8) Agriculture College, Kolhapur.

1.1.1 Data Analysis

Analysis of data is one of the important steps in research process. The collected data was classified and tabulated in the light of objectives and chapter scheme. The data was interpreted with the help of various statistical tools such as averages, percentages, simple growth rate etc. simultaneously marketing efficiency, price spread and producer's share in consumer rupee was used with the help was of various formulas as stated below.

The Commission of Agricultural Cost and Price (ACACP) methodology was applied to estimate the cost of cultivation of tomato.
1.11.1 Marketing Channel

Channel - 1 - Producer -> Consumer
Channel - 2 - Producer -> Retailer -> Consumer
Channel - 3 - Producer -> Private and Co-operative vegetables organization-> Wholesaler -> Retailer -> Consumer.

1.11.2 Marketing Efficiency - (Channel Wise)

Marketing efficiency was computed using Shephard’s formula giving below.

\[
ME = \frac{V}{I} - 1
\]

Where,  
ME = the index of marketing efficiency.  
V = the value of goods sold / (consumer's price per k.g.m.s.)  
I = total marketing cost and margins (Rs. per k.g.m.s.)

Above mentioned formulas are used for the purpose to study the producer's share in consumer's rupee and marketing efficiency etc. regarding vegetable marketing product in the study area.

1.11.3 Producer's share in the consumer rupee

PSCR = PNP / RP × 100

PSCR = Producer's share in consumer rupee (Rs. per kg)  
RP = Retailers selling price (Rs. per kg)  
PNP = Producer's net price (Rs. per kg.m.s.)

1.11.4 Price Spread

Price spread is the difference between the price paid by the consumer and that received by the producer of commodity.

\[
PS = RP - PNP
\]

PS = Price Spread (Rs. per kg)  
RP = Retailers Selling price (Rs. per kg)  
PNP = Producers Net Price (Rs. per kg)
1.12 The Scope of Study

The scope of the study is limited to the analysis of growth of tomato cultivation, production, inputs of tomato, transports, marketing, pricing and various problems of production and marketing. Though the area of Kolhapur district is vast and it is difficult task to collect information, the researcher has taken efforts to collect the information with the help of sampling method. The survey was conducted to investigate and to collect the information of selected samples. The Geographical scope of the study is limited to Kolhapur district only as is suitable to the researcher. Generally the tomato production is done during the kharif season in study area. Hence the cost of cultivation of tomato is calculated with a special reference of tomato cultivation in kharif season.

1.13 Research Period

The study was covered in only five years period i.e. 2002-2003, 2003-2004, 2004-2005, 2006-2007. This period was the best periods for evaluation and assessment of production and marketing of tomato in this region.

1.14 Chapter Scheme

Keeping in view, the objectives, the present study is divided into seven chapters excluding summary, conclusion and suggestions.

First chapter which is entitled as "Introduction and Research Methodology" includes introduction, role of agriculture in economic development, importance of vegetables, marketing of tomato, scenario of tomato, review of literature, statement of the problems, hypothesis, objective of the study, research methodology, data collection, data analysis, the scope of study, limitations of the study and research period.

Second Chapter highlights the "Agricultural Profile of Kolhapur District". It gives an overview of the historical background of Kolhapur district; geographical location and physical setting, soil profile, climate, rainfall, rivers in Kolhapur district, irrigation in Kolhapur district, land use pattern in Kolhapur district, district administration, demographic features, trade and commerce, industrial
profile, co-operative movement in Kolhapur district, banking socio-economic indicators functionaries.

The third chapter is entitled as "Cost and Income Analysis of the Tomato Production." This chapter covers production trend, income cost analysis of the tomato.

The fourth chapter highlights the marketing channels of tomato: Cost and Efficiencies of marketing" it also consists of introduction and working of tomato marketing, market scenario; local marketing and up-county marketing study by the channel wise price spread, producer's share in consumer's rupee and marketing efficiency.

The fifth chapter entitled as "Role of Institutions and Groups in Production and Marketing of Tomato" explains the co-operative and private Kharedi - Vikree Sanghs.

Chapter six entitled "Problems of Tomato Cultivators" deals with the problems of tomato producers in Kolhapur district.

The last, seventh chapter is "Summary, Conclusions and Suggestions." In this chapter the researcher concludes the analysis with some suggestions.

1.15 Conclusion

Tomato is the forefront and indispensable crop among of all fruit vegetables. It is hygienically conducive and beneficial to human beings. It contains vitamin ‘A’ and ‘C’. India’s contribution to the world-level tomato production is 7.31%. Maharashtra State leads India in tomato production. The researcher undertook a comprehensive review of literature concerning tomato and vegetable production and marketingms. He determined constituent parts related to his research methodology. He also had decided as which formula to apply in order to measure marketing efficiency, price spread and producer share in consumer rupee. And accordingly the researcher had designed the relevant chapter scheme.
References


