CHAPTER – I

INTRODUCTION

India is bestowed with a varied agro-climate, which is highly favourable for growing a large number of horticultural crops. Horticulture is one of the main agricultural practices in a nation. It is basically the science of cultivating gardens or orchards, that is, it refers to the process of cultivation of fruits, vegetables, flowers and ornamental plants. It involves increasing the area and productivity of farming lands, bringing technological aspect in agriculture, being a source of employment opportunities, improving economic conditions of the farmers and entrepreneurs, enhancing exports and foreign exchange earnings and above all providing nutritional security to the people. Area and production under fruit crops is rapidly increasing enabling the farmers to rejuvenate their economy. With the fast advancement in technology and increase in the place of development, horticulture management has grown a complexity over the years. The interaction and interrelationship between production and marketing of fruits have acquired new dimensions, posing new challenges to management of horticultural production and organization of marketing support system for it. Looking at the export potential, long term effects of exports on domestic availability, prices realized by the farmers and price level at domestic market will have to be considered. In order to increase efficiency of growers, the growers are to be provided with enough incentives in terms of remunerative prices (Bagde and et. al.).

India, with its wide variability of climate and soil, produces a large range and wide variety of fruits. Production of fruits in India witnessed a tremendous change in the last century. The change was brought about not only by technology such as green revolution but also through institutional intervention in delivering farm inputs and marketing of outputs. India ranks second after china in production of fruit crops. Around 12.5 per cent of the world production is accounted by India and leads the world in the production of mango and banana. Among the major apple producing countries India holds third rank after china and U.S.A. In India, the area
and production of fruit crops have increased considerably over time. The total area and production of fruits increased from 2874 (000’ Hectares) and 28632 (000’ Metric Tonnes) during the year 1991-92 to 6383 (000’ Hectares) and 74878 (000’ Metric Tonnes) respectively during the year 2010-11. The total area and production of mango in India increased from 1078 (000’ Hectares) and 8716 (000’ Metric Tonnes) during the year 1991-92 to 2502 (000’ Hectares) and 17650 (000’ Metric tonnes) respectively during the year 2010-11. The total area and production of apple fruit in India increased from 195 (000’ Hectares) and 1148 (000’ Metric Tonnes) during the year 1991-92 to 289 (000’ Hectares) and 2891(000’ Metric Tonnes) during the year 2010-11. The total area and production of Citrus in India increased from 387 (000’ Hectares) and 2822 (000’ Metric Tonnes) during the year 1991-92 to 846 (000’ Hectares) and 7464(000’ Metric Tonnes) during the year 2010-11 (Indian Horticulture Database 2011).

Over the years, horticulture has emerged as one of the potential agricultural enterprise in accelerating the growth of economy. Its role in the country’s nutritional security, poverty alleviation and employment generation programmes is becoming important. It offers not only a wide range of options to the farmers for crop diversification, but also provides ample scope for sustaining large number of Agro industries which generate huge employment opportunities. The domestic demand for fresh fruits has been increasing during last few years due to many reasons such as rising incomes, increase in the number of middle and upper middle class households and negative attitude of consumers regarding soft and fizzy drinks. A large variety of fruits are grown in India. Of these mango, banana, citrus, pineapple, papaya, guava, sapota, jackfruit, litchi and grape, among the tropical and sub-tropical fruits; apple, pear, peach, plum, apricot, almond and walnut among the temperate fruits and aonla, ber, pomegranate, fig, phalsa among the arid zone fruits are important.

Apart from the natural factors of soil and climate, India is located geographically close to important world markets for fruits and vegetables. Global imports are increasing and this should encourage India to strengthen the efforts to supply to global markets by removing various constraints in production and exports. The vast production base offers to India tremendous opportunities for export. Exports of fruits have also increased many folds. During 2010-11, India exported fruits worth Rs. 1255.40 crores and in the year 2011-12, India exported fruits worth Rs.1779.49 crores (APEDA website). It is showing increasing trend of export value of fruits. Large portion of fruits exported from the India are mango,
The major destinations for Indian fruits are Bangladesh, UAE, Pakistan, Malaysia, Sri Lanka, UK, Saudi Arabia and Nepal.

Focused attention to the horticulture was given only during the Eighth Five Year Plan although tune was set in the Seventh Five Year Plan after achieving self-sufficiency in food grains. Contribution of horticulture to GDP of agriculture is estimated to be more than 24.5 per cent from less than 8 percent of cultivated area. The investment in horticulture sector with focused attention has resulted in spectacular change in the horticultural scenario, production and productivity of horticultural crops, which have increased many folds. The issue that is most clearly emerging is that the horticulture sector in the country despite numerous challenges and shortcomings, is moving dynamic and is in a crucial phase of development. The scenario, which has proved the potential of horticulture in agri-business, have encouraged the private sector activities and in this context, quality management has become important. The National Horticulture Mission which provides support for diversification has been expanded. A new Rashtriya Krishi Vikas Yojana (RKVY), has been introduced which provides additional financial resource to state governments to finance agriculture development programmes, emerging from district level agricultural plans which take into account district specific agro-climatic constraints.

Fruits are now getting due importance in the national and international agenda due to increasing commercial importance of horticulture crops. Horticultural crops provide a better alternative for diversification of Indian agriculture in view of higher returns available from them. Conditions for increasing production of horticultural crops are very favourable in the country. This is partly because production of horticultural crops in general is labour-intensive. India endowed with abundant labour in relation to capital has competitive advantage in production and exports. Horticultural products have good potential for generating employment in cultivation, processing, marketing, and distribution. Horticulture products are frequently produced on small farms, thus providing an important source of additional income for poor farmers in developing countries. There are many horticultural products, especially fruits, that fetch high prices in world trade.

Domestic demand for fresh fruits in India has been on the increase in line with rising incomes, population growth, and increased health consciousness among consumers. Fruit consumption in India is anticipated to increase about 4 percent per year according to projected growth rates for income, population, and trends in food preferences. In addition, growth in demand for Indian fresh and processed tropical fruits has been strong in recent years and this trend is likely to continue in
the future. The consumption of tropical and other fruits is largely correlated with per capita income.

The importance of fruits and their nutritive value in the human diet is well-known. Man’s survival has always been dependent on plants as a source of food, raw materials and energy. Even the pre-historic nomads used to lives on wild fruits and berries. The fruits are not only delicious and refreshing but they are also the major source of vitamins (A, B, C and others), minerals (calcium, phosphorus, Iron) fats and proteins. The health giving characters of the fruits had been recognized long before the discovery of the vitamins. These constituents are essential for the normal physical and mental health of the people. Many of the vitamins and other substances contained in the fruits are needed by the human body daily. Carbohydrates and fats provide energy to the human body while protein’s energy is responsible for building up the body tissues. When these important food constituents are either missing or deficient in the human daily diet, the body cannot function efficiently and this may lead to ill health. Fruits are important sources of several vitamins, the deficiency of which leads to various disorders in the human body. Vitamin A is found abundantly in mango, papaya and it is also plentiful in dates and jackfruit. The deficiency of vitamin A leads to susceptibility to various diseases, night blindness and retards growth in young ones. Vitamin B₁ (Thiamine) the lack of which causes beriberi, paralysis, loss of sensitivity of skin, is most abundant in cashewnut, walnut and almond. It is also plentiful in dried apricot, banana, apple, orange and plum. Vitamin B₂ (Riboflavin) is essential for the growth and health of the skin. Its deficiency causes lack of appetite, loss of body weight, sore throat and cataract. It is plentiful in papaya, apple, litchi, pineapple and pomegranate (Dhaliwal and Sandhu).

Fruits typically constitute an essential part of the daily diet. Another helpful benefit of fruits and fruit juices is their ability to promote detoxification in the human body. Pineapples and citruses such as oranges, red grapefruits, lemons are known for their detoxifying properties. While these fruits promote cleansing, they still provide the body with a high boost of vitamin C. Nutrients of fruits are necessary for the maintenance of human health. Fruits have a lot of vitamins like vitamin A (especially apricots and cantaloupe) and vitamin C (especially citrus fruits like, oranges and grapefruits). These two vitamins help heal cuts, assist night vision and create beautiful skin. Apart from vitamins, the fruits are a source of minerals such as calcium, phosphorus, iron, magnesium, sodium, potassium and zinc etc. which serve as catalysts and cofactors of enzymes involved in metabolism, and essential for maintaining proper health. They are also high in fibre. Fibre helps the stomach to digest food and may help to reduce cancer. Most fruits have little fat. They are easily digested and exercise a cleansing effect on the blood and the
digestive tract. According to nutrition experts an individual should consume at least 92 g fruits per day in addition to vegetables, cereals, pulses, milk, meat, eggs, etc. to maintain proper health and resistance against disorders/diseases. But, per capita consumption of fruits in India is only around 46g against a minimum of about 92g recommended.

Today, as a result of a number of thoughtful researches, technologies, policy initiatives and inputs, horticulture in India, has become a sustainable and viable venture for the small and marginal farmers. Main fruits grown in India are mango, banana, apple, citrus, litchi, orange, papaya, pomegranate, etc. Main fruit growing states in India are Himachal Pradesh, Uttar Pradesh, Maharashtra, Tamil Nadu, Gujarat, Punjab, Jammu & Kashmir etc. As far as Himachal Pradesh state is concerned it is best suited for the production of a variety of fruit crops due to its favourable agro-climate conditions. It is glitters on the map of the country as one of the leading temperate fruit growing states due to the painstaking and sustained efforts of the government, scientists, horticulturists and orchardists (Brij Bala). The growth of horticulture emanates from the fact that the area and production of fruits has increased from 97.2 (000’hectare) and 510.2 (000’ MT) in 2008-09 to 101.5 (000’hectare) and 892.1 (000’ MT) in the year 2010-11. (Horticultural department Himachal Pradesh). The state is successfully growing fruits such as apple, pear, peach, plum, almond, walnut, citrus, raisin grapes etc. There has been tremendous progress in fruit orchards during the last three decades. Commercially, apple is the most important of all the fresh fruits grown in the state.

Punjab state economy is predominantly an agrarian economy and it is popularly known as the wheat basket of India. Wheat and paddy crops were the major crops due to which the economy of Punjab prospered during the initiation of the green revolution in India. The continues rotation of crops (wheat/paddy) paved way to problems like nutrient deficiency and increased salinity of soil. The natural fertility of the soil was affected by the excessive use of fertilizer that was being used in large amounts to increase yield. The water table was continuously depleting and was a matter of major concern, with time. The situation worsened and diversification of agriculture seemed to be the only way to get the problems sorted out. The important components for diversification were considered to be fruits and vegetables. As a result, the area and production of fruits and vegetables in the state has been increasing. Another reason for increase in area and production of fruits and vegetables in Punjab is that recently, the consumption pattern has shifted in favour of fruits and vegetables. If we talk about fruits then, the existing area under fruits in Punjab state contributes only 1.8 per cent of the total cultivated area of the state. But, state offer suitable conditions for the cultivation of horticultural crops. The important fruits produced in the state includes mango, pear, litchi, grapes,
guava and citrus with around 1420 thousand metric tonnes of annual production. In the state area under different fruit crop is 71 thousand hectare, area under kinnow crop is 43 thousand hectare during 2011-12 (Horticultural department Punjab). Kinnow mandarin occupies a prominent position in citrus fruits with respect to popularity, acreage and production, due to high productivity and good processing potential. The ecological conditions with high fertility levels of soil and extensive irrigation facilities, i.e., 94 percent being highest in the country provide ample opportunities for diversification in to profitable horticulture. Successful Kinnow (citrus) cultivation in the state has made it the forerunner state in the citrus production.

Uttar Pradesh state is blessed with diverse agro climatic conditions; those are conducive for cultivation of varied horticultural crops round the year. U.P. is the first State in the country to declare those areas as fruit belts where concentrated specific fruit growing areas exist. Major mango, guava and aonla fruit producing areas have been declare as fruit belts by the State. The present share of Uttar Pradesh in total horticulture production of the country is approximately 26 percent. U.P. ranks third in fruits, Second in vegetable and first in potato production among all states. Important fruits grown in the state are mango, guava, aonla, papaya, banana, litchis, jack-fruit, ber and citrus. The area under fruit has increased from 346 (000’hectares) in 2008-09 to 356 (000’hectares) in 2009-10 and the production of fruits has increased from 4439 (000’ MT) to 5380 (000’MT) during the same period (Indian Horticultural data base 2011).

In India, green revolution was very much restricted to the production of food grains only, mainly wheat and rice. During the starting few years of green revolution, the economy of India prospered with wheat-paddy rotation. But as the time passed this rotation had resulted in various problems related to soil, such as increased salinity and nutrient deficiency. Over exploitation of water resources and excessive use of fertilizers resulted depleting water level and deteriorating natural fertility of the soil in the states like Punjab and Uttar Pradesh. But, after new economic policy, there is a increasing trend of diversification in Indian agriculture. Horticulture has been the ideal option for diversification in agriculture making way in heralding Golden Revolution. Fruits and vegetables are considered to be one of the most important components in the diversification planning. As a result, the area and production of fruits and vegetables in the state has been increasing. A tremendous boost was given to the development of the horticulture sector during the Eighth and Ninth Plans. The Ninth Plan allocation was raised to Rs.1,400 crore from Rs.1,000 crore in the Eighth Plan, this is the another reason for increase in area and production of fruits and vegetables in different states of India. This sector has had impressive impact in the wake of economic liberalisation. In the recent
years the demand for fresh fruit in India has been increasing at a high rate due to nutritive attributes of fruits, the interest in healthier diets, increased per capita income, high population, increase in urbanization etc.

The share of Uttar Pradesh, Punjab and Himachal Pradesh states in national fruit production is 7.2 per cent, 1.8 per cent and 1.4 per cent respectively (Indian Horticulture Database 2011). Despite the tremendous production potential and increased demand for fruits in the selected states, share of fruit production is very low as comparative to cereals production in Uttar Pradesh and Punjab state. This is due to, fruits do not come with a government minimum support price like wheat and rice. The another reason for less area under fruits are long gestation period, as fruit orchard takes four to five years to grow and bear fruits, lack of proper crop management and soil health techniques. Small land holding is also a big hurdle, as farmers needs a immediate money for their daily needs due to which farmers cannot diversify their land to fruit crops. Inadequate availability of disease free and high quality planting material, lack of post harvest management technology and infrastructure adversely affected the yield of fruits and thereby returns to the farmers. As far as Himachal Pradesh state is concerned maximum area is under horticulture crops. Due to favourable weather for apple crop, this fruit is dominant among different fruits produced in H.P. state. But, climate change and hailstorms adversely affect the apple yield. As apple needs a chilling weather below 7°C in winter and well distributed rainfall of 100-125 cm throughout the growing season is most favourable for its optimal growth and fruitfulness.

Moreover, storage facilities for fresh fruits are inadequate in above mentioned states. The maximum wastage happens during the transportation of fruit produce from the farm gate to mandis and thereafter. Storage solutions can be provided only near the mandis, and this does not solve the problem. The answer lies in minimizing the wastage that happens during transportation. From a farm gate to a consumer, fruit produce passed through different distribution channels, and in every step, there was a loss of five-seven per cent (Kumar,S).

As far as Chandigarh fruit market is concerned it is a big and distant fruit market. Due to the high per capita income and large size of population, demand for fruits is very high. But, the local production of fruits in Chandigarh is negligible. Due to proper geographical location of Chandigarh a large proportion of the fruits arrives in the market from the outside states, i.e., from Punjab, Uttar Pradesh and Himachal Pradesh. Chandigarh market is second big trading platform for Himachal Pradesh apple after Azadpur market of Delhi. There are 163 commission agents and 55 Shop Cum Flats in Chandigarh fruit market.
Despite the tremendous arrival and consumption of fruits in Chandigarh but storage and marketing facilities for fresh fruits are inadequate. The present system of marketing of fruits is full of number of malpractices. It is dominated by middlemen who exploit both the consumers and producers. The auction is an eye-wash, the commission agents are the buyers themselves who then sell the produce to the retailers and sometimes to the consumers also. Transportation is another weak link in post-harvest handling of fruits. Since the fruits come from village, large proportion of the produce is transported by road only. Poor quality rural roads create hazards and enhancing the likelihood of damage. The contract system of sale of these crops has hurt the interests of fruit growers by giving them low returns of their crops. The producer’s share in consumer’s rupee stands very low. Any increase in retail price is reflected in higher share of middlemen through wide profit margins rather than high prices paid to the producer. Also, due to many intermediaries, the sale and distribution procedure has become so complex that growers don’t know the right place and right time to market the produce. Arrivals and prices of fruit crops are also unpredictable. Moreover, there is an evasion of market fee and other charges. In short, the present method of handling and marketing of fruits is insufficient and unsatisfactory.

Relevance of the Study:

The present study is an attempt to examine thoroughly the present system of marketing of fruits and problems faced by the growers in case of the marketing of their produce. An efforts has been made to examine in detail the trends in area, production and yield of fruits. Further the present study examined the trends in arrivals and prices of fruits and to identify the various channels: market costs, margins and price spreads in the marketing of fruits. The study has also identified the constraints in the production and marketing of fruits. The present study also suggest some strategies to improve the existing marketing system and to increase the production of fruits. Therefore, the study would be very useful for researchers and policy makers.

Scope of the Study:

Structurally, there are four aspects namely production aspects, marketing aspects, processing and manufacturing aspects, for a research study on a production and marketing of fruits. The processing and manufacturing aspects of analysis has been expelled due to non availability of published data of processing and manufacturing units.

The present study is consequently structured in two parts:
**Part-I** covers production economics.

**Part-II** deals with marketing economics.

**Objectives**

The main objectives of the study are as follows:

1. To estimate growth in area, production and productivity of fruits.
2. To examine the production and marketed surplus of fruits at farm level.
3. To examine the seasonal behavior of arrivals and prices of fruits.
4. To find out alternative marketing channels in the marketing of fruits.
5. To calculate the marketing costs, marketing margins and price spread in the marketing of fruits.
6. To identify the problems faced by the fruit growers in the marketing of fruits in Chandigarh fruit market.
7. To suggest measures for improving the system of marketing of fruits.

**Hypotheses**

**(A)** *Dealing with production economics*

1. Stable, rather than risky returns, from a crop have a positive influence on the area under crop.
2. Comparative advantage of a crop as compared to substitute crop has a positive impact on the production of a crop.
3. Technological advancement has a positive impact on the area, production and productivity of a crop.

**(B)** *Dealing with marketing economics*

1. Market arrivals are positively co-related with prices.
2. Marketed surplus is positively co-related with scale of production.
3. The distance between the producer price and the consumer price is the index of exploitation of the producer.
4. Non-legal marketing practices abound in fruit marketing.

**Limitations of the study**

Summary of the limitations of the present study are as follow:

1. The scope of the concerned study is limited to apple, kinnow and mango.
2. The subject of the study are the farmers themselves and study majorly depends on the responses of the farmers. The authenticity of the responses given by the farmers cannot be verified, as most of them are illiterate. All efforts have been made to get correct information hence the response considering as close to
reality and informative as well as precise have been used to the purpose of analysis and research.

3. In absence of liable price data over a long period, no detailed study on the arrivals and prices of fruits was possible. One of the factor which seriously handicapped price analysis was the existence of different varieties and absence of standardization. However, the available data on arrivals and average monthly prices from the period 2007 to 2011 were subjected to time series analysis by using multiplicative model.

**Chapter Scheme**

The scope of the study is spread across nine chapters. Introductory chapter covers the relevance, objectives, scope and hypotheses of the study, i.e., chapter first. Earlier literature relevant to the field of production and marketing of fruits are reviewed in the second chapter. To review a relevant literature is essential to make a plan for the present study. Methodology used for present study is discussed in third chapter. Trends in area, production and yield is covered in the forth chapter. Fifth chapter deals with production and marketed surplus. Sixth chapter discuss the seasonality behavior of arrivals and prices of fruit crops. Marketing margins, costs, price spread and alternative marketing channels are discussed in chapter seventh. Chapter eighth investigate the production and marketing constraints of fruits and the policies laid by the government regarding fruits are also discussed. To conclude, chapter ninth tries to summarize the major findings of the study and highlights the policy recommendations for improving the marketing and production system of fruits.