CHAPTER-I

INTRODUCTION

India is an agricultural country. The Indian economy is basically agrarian. In spite of economic development and industrialization, agriculture is the backbone of the Indian economy. As Mahatma Gandhi said, “India lives in villages and agriculture is the soul of Indian economy”. Nearly two-thirds of its population depends directly on agriculture for its livelihood. Agriculture is the mainstay of India’s economy. It contributes about 13.9 percent of the gross domestic product. Agriculture meets food requirements of the people and produces several raw materials for industries.

From agricultural point of view, India is a unique country. It has vast expanse of level land, rich soils, wild climatic variations suited for various types of crops, ample sunshine and a long growing season. The net sown area in India today is about 141 million hectares. India has the highest percentage of land under cultivation in the world. In spite of the fact that large areas in India, after independence, have been brought under irrigation, only one-third of the cropped area is actually irrigated. The productivity of agriculture is very low. Farming depends mainly upon monsoon rain. Most of the production comprises food crops. About one-third of the land holdings are small, less than one hectare in size. Farmers own their own small pieces of land and grow crops primarily for consumption. Even storage facilities
for crops are inadequate. Now use of pesticides and fertilizers has increased and large areas have been brought under high yielding variety of seeds. This led to green revolution in several parts of India. This has helped in increasing yields per hectare as well as total production of different crops.

India is one of the world’s largest food producers with an annual production of 200 million tones. The most richly endowed nation in Asia, India has a tenth of the world’s arable land. Man must have discovered through necessity that certain wild plants would furnish him food in the form of fruits and seeds. Following this discovery is naturally gone from place to place in search of these food materials. Scientific agriculture really began when India started to grow certain crops for which there was some demand over and above that for home consumption. Trade with the East India Company encouraged the growing of certain crops of export, during its administration. The East India Company actually stimulated the growing of crops such as cotton and sugarcane to meet the home demand.

In India only 40 percent of total cropland has the irrigation facility and rest is rain-fed. As a result Indian agriculture has been depending on monsoon. Indian agriculture plugged by various factors like vagaries of natures, semi commercialized farming, predominance of small farmers, irregular and uneven distribution of monsoon, low-level productivity, vast disguised unemployment, increasing population pressure, excessive use of fertilizer and pesticides, defunct land reforms, poor techniques of agricultural production, etc.
1.1 IMPORTANCE OF AGRICULTURE IN INDIAN ECONOMY

India is the largest producer in the world of milk, cashew nuts, coconut, tea, ginger, turmeric and black pepper. It also has the world’s largest cattle population (281 million). It is the second largest producer of wheat, rice, sugar, groundnut and inland fish. It is the third largest producer of tobacco. India accounts for 10 percent of the world fruit production with first rank in the production of banana and sapota.

Agriculture has always been India’s most important economic sector. Today, India ranks second worldwide in farm output. Agriculture and allied sectors like forestry and logging accounted for 8.2 percent of the GDP in 2011-12, employed 52 percent of the total workforce and despite a steady decline of its share in the GDP, is still the largest economic sector and plays a significant role in the overall socio-economic development of India. Yields per unit area of all crops have grown since 1950, due to the special emphasis placed on agriculture in the five-year plans and steady improvements in irrigation, technology, application of modern agricultural practices and provision of agricultural credit and subsidies since Green revolution in India. However, international comparisons reveal that the average yield in India is generally 30 to 50 percent of the highest average yield in the world.

Agriculture Growth Rate in India GDP has slowed down for the production in this sector has reduced over the years. The agricultural sector has had low production due to a number of factors such as
illiteracy, insufficient finance, and inadequate marketing of agricultural products. Further, the reasons for the decline in Agriculture Growth Rate in India GDP are that in the sector the average size of the farms is very small which in turn has resulted in low productivity. Also the Growth Rate of the Agricultural Sector in India GDP has declined due to the fact that the sector has not adopted modern technology and agricultural practices. Agriculture Growth Rate in India GDP has also decreased due to the fact that the sector has insufficient irrigation facilities. As a result of this the farmers are dependent on rainfall, which is however very unpredictable. Agriculture Growth Rate in India GDP has declined over the years. The Indian government must take steps to boost the agricultural sector for this in its turn will lead to the growth of Agriculture Growth Rate in India GDP.

Agricultural development is a precondition of our national prosperity. It is the main source of earning livelihood of the people. Agriculture provides direct employment to 70 percent of working people in the country. It is the main stay of India’s economy. Apart from those who are directly involved in the agrarian sector a large number of the population is also engaged in agro-based activities. Agriculture meets the foods requirements of large population of India. It ensures food security for the country. Substantial increase in the production of food grain like rice, wheat etc. and non-food grains like tea, coffee, spices, fruits and vegetables, sugar, cotton etc. has made India self-sufficient. Agriculture also contributes to the national income of our country. It accounts for 13.7 percent of the gross
domestic product. The growth of most of the industries depends on agriculture. It produces several materials for industries. It forms the basis of many industries of India like-cotton, textile, jute, sugar industries etc by providing cotton, sugarcane, oilseeds etc. People engaged in agriculture also buy the products of industries like-tractors, pesticides, fertilizers, pump-set etc. Agriculture contributes in foreign exchange of our country. India exports agricultural products like tea, coffee, sugar, tobacco, spices etc and earns foreign currency. Exports from the agricultural sector have helped India in earning valuable foreign exchange and thereby boosting economic development. From above mentioned facts it is very clear that in spite of industrial development still agriculture is the backbone of the Indian economy.

1.2 AGRICULTURE AND ECONOMIC DEVELOPMENT

The importance of agriculture in the economic development of any country rich or poor is borne out by the fact that it is the primary sector of the economy that provides the basic ingredients necessary for the existence of mankind. Agriculture also provides most of the raw materials, which transformed into finished products that serve as basic necessities of the human race.

Land is the basis of agriculture. Virtually all types of production depend on land in general. Moreover, all agricultural production depends on it, in particular. Besides land being the resource for crop, fodder and forest production, it also provides space for building, townships, roads, industries, airports, health resorts, schools and so
on. So far the role of land in agriculture is concerned it serves as the source of food and fiber production, pastures and grazing lands and forests.

Labour is the single most factors, which is of primary importance in increasing the production in traditional agriculture. The oldest production industry known to humanity is agriculture and the basic input in this production process has been human labour. At the early stage of human development, since, land was abundant, increase in farm labour led to bringing more land under cultivation.

Importance of agriculture in the national economy has been indicated by many other facts, also. For example, agriculture is the main support for India’s transport system, since, railways and roadways secure bulk of their business from the movement of agricultural goods. Internal trade is mostly in agricultural products. Further, good crops implying large purchasing power with the farmers leading to greater demand for manufacture goods and therefore, better prices for industrial products. In other words, prosperity of the farmers is also the prosperity of industries. Likewise, bad crops lead to a depression in business. Generally, it is the failure on the agricultural front that has led to failure of economic planning in particular periods. Agricultural growth has direct impact on poverty eradication. It is also an important factor in containing inflation, raising agricultural wages and for employment generation.
There are many reasons responsible for the low productivity of agriculture. About one-third of land holdings are very small less than one hectare in size. Due to small size of land holdings we cannot use modern way of cultivation. Even today the farmers are using very old methods, tools and implements for farming. Farmers are not using artificial ways of cultivation. Inputs like-better quality of seeds, fertilizers and pesticides are also not used by most of the farmers. Exploitation of marginal farmers is also responsible. There is also low productivity because of increasing pressure on land and absence of bank credit.

1.3 Pulse Economy

Pulses are one of the important segments of Indian Agriculture. Bengal gram, Red gram, Green gram, Lentil, Black gram and Field pea are major pulses grown and consumed in India. The split grains of these pulses called dal are excellent source of high quality protein, essential amino and fatty acids, fibers, minerals and vitamins. India is the largest producer and consumer of pulses in the world contributing around 25-28 percent of the total global production. About 90 percent of the global red gram, 75 percent of bengal gram and 37 percent of lentil area falls in India (FAOSTAT 2011). Total pulse production in India 18.34 million tons (FAOSTAT 2013). Due to stagnant production, the net availability of pulses has come down from 60 gm/day/person in 1951 to 31 gm/day/person in 2010. The production of total pulses in India is presently about 18.45 million covering an area of about
23.47 million hectare majority of which falling under rainfed, resource poor and harsh environments frequently prone to drought and other abiotic stress condition. To meet the demand of pulses, India is at present importing about 4.02 million tons. In order to ensure self-sufficiency, the pulse requirement in the country is projected at 32 million tonnes by the year 2030 which necessitates an annual growth rate of 4.2 percent. This requires a paradigm shift in research, technology generation and dissemination, and commercialization along with capacity building in frontier areas of research.

More than half of Indian population is vegetarian and such people use pulses to fulfill their protein requirement. The majority of people can not afford the animal protein as it is very expensive. The major protein component of Indian diet comes from pulses. The protein from pulses is easily digestible, relatively cheaper and has higher biological values. ‘Dal roti’ or ‘dal bhat’ is the stable food of most of the Indians. The ancient wisdom of the Indians about the value of pulses in human nutrition is perhaps responsible to a large extent for the widespread vegetarianism in our country. Modern nutritionists also support the prudent combination of cereal and pulse in human diet in the form of either ‘dal roti’ or ‘dal bhat’. The essential amino acid profile of pulses complements the protein from cereals. The lysine rich proteins of pulses are considered to supplement the deficiency of this amino acid in cereal dietaries and brings at par with milk's protein in terms of biological efficiency. It is because of this reason that pulses have also been called the “Poor man’s meat”.

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Pulses are, besides, major sources of vitamins like riboflavin, thiamine, niacin and iron. Of late a renewed interest in consumption of vegetable protein is witnessed throughout the world due to its fibre-rich nature in comparison to animal protein which is more in the form of concentrate. Medical consideration encourages the presence of certain quantity of fibre in the human diet.

The average protein content in pulses varies from 18 to 26 percent. Pulses also contain calcium and phosphorus. Indian Population is predominantly vegetarian. The daily protein requirement of human body can be met by pulses, thus substituting fish and meat. Pulse crops belong to the family ‘Leguminosae’ apart from their nutritive value, are associated with nitrogen fixing bacteria; e.g. Rhizobium, Clostridium etc. The nitrogen fixing bacteria living in nodule in the root of pulse crop can fix atmospheric nitrogen and the fertility of soil is increased when they are incorporated in the soil. Beside these, pulse crops provide a dense soil cover through their canopy which checks soil erosion, smothers weeds and reduces evapotranspirational loss of soil, water. Pulse crop can utilize soil moisture efficiently and it can be grown in a land not suited for the cultivation of cereals.

The minimum requirement of pulses is 85grm per day as per the report of W.H.O. But the per capita consumption of pulses has been declining sharply consequent to the growth of population accompanied by stagnant level of production. In terms of minimal physiological requirements, the availability of pulse shows a short fall.
In fact, per capita availability of pulses declined at an annual rate of 1.7 percent. The pulses are more important than cereals for a country like ours where the requirement of protein is generally met through the pulses, especially vegetarians.

**Table-1.1**

**Availability of Energy and Protein from Pulses, Cereals and Others**

<table>
<thead>
<tr>
<th>Pulses</th>
<th>Proteins/100 per gms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mung (dal)</td>
<td>25.5 percentage</td>
</tr>
<tr>
<td>Mung (whole)</td>
<td>24.0 percentage</td>
</tr>
<tr>
<td>Gram (dal)</td>
<td>20.8 percentage</td>
</tr>
<tr>
<td>Gram (whole)</td>
<td>17.1 percentage</td>
</tr>
<tr>
<td>Maize (whole)</td>
<td>11.1 percentage</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cereals</th>
<th>Proteins</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat (hour)</td>
<td>12.15 percentage</td>
</tr>
<tr>
<td>Wheat (whole)</td>
<td>11.8 percentage</td>
</tr>
<tr>
<td>Jowar (whole)</td>
<td>10.4 percentage</td>
</tr>
<tr>
<td>Egg</td>
<td>13.3 percentage</td>
</tr>
<tr>
<td>Meat (Goat)</td>
<td>21.4 percentage</td>
</tr>
<tr>
<td>Milk</td>
<td>7.5 percentage</td>
</tr>
</tbody>
</table>

Source: Ministry of Agriculture, Govt. of India.
Above table indicates that availability of energy from pulses, cereals and others. Observing the above data it is clear that highest energy and protein is available from pulses.

Infact the demand for pulses has gone up considerably due to increase in population and rising consciousness about nutrition. The various studies have shown that with the water need fully satisfied, utilizing better varieties of seeds and modern methods of cultivation it should be possible to attain an yield level of at least 1.5 tonnes per hectare which would mean more than 2½ times increase in the current level. Utmost importance should be given to research and development activities with regard to pulse. Hence there is an urgent need to study in detail the various problems in production incentives and price structures of pulses so that production of pulses can be increased.

Although it is the world’s largest pulses producer, India has been importing 3-4 million tonnes (MT) of pulses every year to meet its domestic demand. Because pulses consumption also more in India. However, during the last decade, growth in pulses production has increased significantly. India achieved a record output in pulses production at 18.5 MT in 2014-15 with an all-time high production achieved in bengal gram (8.25 MT), green gram (1.82 MT) and black gram (1.74 MT). Even though pulses production increased significantly during the last decade, continuing the faster growth is a bigger challenge for researchers, extension agencies and policy makers.
India though a major producer of pulses, it is not in a position to meet its own requirements and take advantage of export market. On the other hand, the country has started importing pulses from other countries like Iran, Turkey, Iraq, Malaysia, Burma, etc. During 1988-89 one lakh tonnes is imported at cost Rs. 554 crores of foreign exchange. Being dominantly agricultural country, India cannot afford the heavy burden of importing pulses and a solution to the problem of production has to be found within the country.

Production of pulses depends on a number of functions like farmers’ decision to allocate land which in turn depends on the price that he is likely to receive for the product, rainfall, availability of improved seed, water facilities in the summer season, price of fertilizers and pesticides and above all relative profitability of pulses over different competing crops. Production of pulses is a seasonal activity and farmers sell most of the product soon after the harvest. This is largely because of lack of storage fertilities withholding power and uncertainty of prices. On the other hand the flow of pulses in the market depends on various factors like pulse production, traders’ profit, managers’, processors’, profit margin and the governments’ indirect measures to control prices, etc. Presently the system of marketing, processing and distribution of much of pulses is done largely through the private sector.
Introduction of bengal gram crop into non-traditional areas like south Indian states is an example of technological and institutional breakthrough to be replicated in other crops. Introduction of black gram into black cotton soils, availability of plenty of rabi fallow lands, adoption of short duration and high yielding varieties like KAK-2 and JG-11, and well developed land lease market to facilitate large scale mechanization to cope with labor shortage in villages are some of the contributing factors for the expansion of bengal gram area into south Indian states. It highlighted the importance of (i) successful government programs like National Food Security Mission in
increasing pulses production, (ii) development and distribution of improved seed through semi-formal seed systems and farmers participatory varietal selection (FPVS), (iii) emphasis on abiotic and biotic stress management to increase stability in area and yields through integrated approach, (iv) increased availability of subsidized improved seed, micronutrients like sulphur, gypsum, popularization of herbicides and farm machinery to cope with labor shortages, and lastly (v) developing market information systems and warehouse infrastructure, enhancing credit availability, establishing markets with state-of-the-art post harvest management and cold storages.

1.4 FOOD ASSESSMENT

Pulses contain more protein than any other plant. They serve as a low-cost protein to meet the needs of the large section of the people. They have, therefore, been justifiably described as the poor man’s meat. Their low moisture content and hard seed-coat permit storage over long periods. In addition to providing dry pulses, many of the crops are grown for their green edible pods and unripe seeds. Nutritionally, immature fruits have distinctly different properties to those of the mature seed; the protein content is lower but they are relatively richer in vitamins and soluble carbohydrates. The leaves and shoots of some of the crops are used as pot-herbs.

1.5 ASPECTS OF PULSES MARKET

Pulse crops lack of futures market. This is possibly the major reason why prices are negotiated directly by the different market
functionaries, including exporters and importers, through the supply chain of pulses, based on supply and demand factors for each type of pulse crop from year after year. The absence of a price-discovery mechanism due to the absence of futures market in pulses calls for forecasting practices that generate effective price predictions that will help in understanding the future pricing of pulse crops, enhancing the success in producing and improving the distribution mechanism. Because such forecasting practices are difficult to develop, all factors affecting such price predictions are not quantifiable. Price being the major analyzable variable, the factors that influence the supply and demand side of the market need to be examined. The key supply-side determinants that affect prices are productivity and area used for cultivating pulses, globally. These factors are pragmatic in the long run, and cannot have considerable influence over short-run analysis carried over in this study. The demand-side determinants are consumption pattern, population, and income growth, urbanization, changes in food habits, and shifts in trade flows, and so on.

1.6 PRODUCTION CONCERN OF PULSES

World supply is by far the most important factor affecting farm pulse price changes from year after year. For production, though much dependent on weather conditions, the long-run factors are area under cultivation and potential yields. Compared with markets in other commodities like cereals and oil seeds, the pulses market remains a relatively thin market owing to its small aggregate global
output. Global cereal production grew nearly three times in the past half a century, but pulse output has risen at a slow pace of less than one and three-fourths through the same period. In absolute terms, pulse production increased from 41 million tonnes in 1961 to 70 million tonnes in 2012, showing a net increase of only around 29 million tonnes, with a growth of barely 1.4 percent yearly (Table 4.11). However, on the bright side, over the past 15 years, the overall pulse production has increased at a rate higher than the growth rate in population both in developing and developed countries, and there are significant improvements in production due to the increased consumption trends globally. Production of pulses increased from 56 million tonnes in 2001 to 70 million in 2012, representing a growth of 2.2 percent yearly. While pulses markets have improved in recent years, the complexities of pulse production compared with other crops span from agronomic to other problems like policy matters. In major pulse-producing countries, due to the lack of policy attention by the government, investments attracted by pulses are much fewer than those in cereal and other crops. Other factors that have inhibited the productivity growth are lack of irrigation, low application of fertilizers, climatic conditions, and low remunerative prices to the farmers.

India has achieved a significant progress in agricultural production, particularly in cereals. As per the second advance estimates, production of food grains during 2011-12 was estimated at an all time record of 250.42 million tones which is a significant achievement mainly due to increase in the production of two major cereals – rice (192.93 mt) and
wheat (88.1mt). However, of late, necessity for changes in the composition of agricultural production is being highlighted. The production of pulses has been identified as one of the major thrust areas keeping in the view dietary, economic and other considerations.

Labourers engaging in the picking of Greengram

1.7 ADVANTAGES OF PULSE CROPS IN INDIA

Pulses are one of the important segments of food grain production after cereals and oilseeds. These pulses constitute bengal gram, red gram, green gram, lentil, black gram and field pea. The split grains of these pulses called dal are excellent source of high quality protein; essential amino and fatty acids, fibers, minerals and vitamins have a vast multiplicity of uses as food and industrial products. These crops improve soil health by enriching nitrogen status, long-term fertility and sustainability of the cropping systems by fixing large amounts of atmospheric nitrogen through the root nodules and also
through leaf fall on the ground at maturity. It meets up to 80 percent of its nitrogen requirement from symbiotic nitrogen fixation from air and leaves behind substantial amount of residual nitrogen and organic matter for subsequent crops. The water requirement of pulses is about one-fifth that of cereals thereby saving precious irrigation water. It can be used as a fodder; forage can be made in to food, etc. Its forage and cake are excellent nutritive foods for live stock and poultry. Major advantages of pulses are as follows,

- Pulses are one of the important constituent of Indian diet after cereals.
- Pulses are one of the major sources of income for all classes of people.
- Pulses are rich in proteins and found to be main source of protein to vegetarian people of India.
- They play important role in crop rotation, mixed and intercropping, as they help maintaining the soil fertility.
- They are helpful for checking the soil erosion as they have more leafy growth and close spacing.
- They supply additional fodder for cattle.
- They add organic matter into the soil in the form of leaf mould.
- They give ready cash to farmer.
- Majority pulses crops are short durational so that second crop may be taken on same land in a year.
- They provide raw material to various industries like. Dal industry, Roasted grain industry, Papad industry.
They can be grown on all types of soil and climatic conditions.

Pulses being legumes fix atmospheric nitrogen into the soil.

Pulses are generally not manured or require less manuring.

Some pulses are turned into soil as green manure crops.

Source: http://www.agriinfo.in

1.8 PULSES SCENARIO

1.8.1 Global Scenario of Pulses

Globally, pulses are grown in more than 171 countries. The pulse crops occupied 73.6 million hectares area and contributed 64.4 million tons with productivity of 893 Kg/hectares in the triennium ending 2012-13. The highest productivity was of France (4219 kg / hectares) followed by Canada (1936), USA (1882), Russian Federation (1643) and China (1596).

1.8.2 National Scenario of Pulses

Pulses remain a major component in the Indian diet. Over 20 percent of the population is strictly vegetarian, with pulses providing the main source of protein for these consumers. However, In India, even non-vegetarians consume pulses in significant quantities. India having the largest shares about 25percentage production, about 33percentage acreage and about 27percentage consuming of total pulses of the world. The acreage ranged from 20.35 (2000-01) to 23.99 million hectares (2012-13) and production varied from 11.08 (2000-01) to 18.45 million tons (2012-13). The productivity has increased
from 544kg/hectares (2000-01) to 750 kg/hectares (2012-13). The country grows a variety of pulse crops such as bengal gram, green gram, black gram, red gram, dry peas and lentil under a wild range of agro-climate conditions.

Among food grains less attention has been given to pulses in terms of irrigation as irrigated area under pulses constituted only 5 percent of the total irrigated area under food grains. Bengal gram is the main pulse grown under irrigation.

Pulse is least preferred by farmers because of high risk and less remunerative than cereals and consequently, the production of the pulses is sufficiently low. To meet the demand of pulses, India is at present importing about 1.42 million tones. Bengal gram continuous to be the largest consumed pulses in this complex comprising of 45-50 percent of the pulses production of India followed by red gram (15-16 percent), black gram and lentil.

The major pulses producing states are Madhya Pradesh (25 percentage), Uttar Pradesh (13 percentage), Maharashtra (12 percentage), Rajasthan (11 percentage), Andhra Pradesh (9 percentage) and other states together (30 percentage) during 2012-13.

Among the pulses, chickpea contributed 48 percentage, Pigeonpea 17 percentage, Bengal gram 10 percentage, green gram 7 percentage and other pulses 18 percentage towards total pulses production.
With stagnant area under cultivation and production, India has permitted unrestricted imports of pulses with low duties for about 20 years. India has been the world’s largest pulses importer. For many pulses, large shares of import, including desi bengal gram, red gram, green gram come from Myanmar. Most kabuli bengal gram come from Mexico, Australia, Canada, Turkey and Iran.

1.8.3 Karnataka Scenario of Pulses

Production of pulses in the State registered a spectacular growth of over 30 per cent in 2012-13 over the previous year’s production (11.16 lakh tonnes in 2011-12). The output was put at 15.29 lakh tonnes in 2012-13.

The implementation of the National Food Security Mission (NFSM) has given a boost to farmers to increase area under as well as production of pulses — tur, bengal gram, horse gram, black gram, green gram, cowpea, and avar. The NFSM is being implemented since 2007-08 in 20 districts—seven districts for promoting rice production and 13 districts for promoting production of pulses.

In 2011-12, the Union Government had released Rs. 41.81 crore to the State for taking up two crops under NFSM. Area coverage under pulses increased from 24.79 lakh hectares in 2010-11 to 28.31 lakh hectares in 2012-13, while the output was up from 11.16 lakh tonnes to 14.69 lakh tonnes in the same period.
According to Official information the productivity per hectare increased from seven quintals a hectare to 10 quintals a hectare. The NFSM covered 13 districts — Bagalkot, Belgaum, Bellary, Bidar, Bijapur, Chitradurga, Dharwad, Gadag, Gulbarga, Koppal, Mysore, Raichur and Tumkur.

In 2010-11, under Accelerated Pulses Production Programme (A3P) of NFSM, an attempt was made to increase area as well as production of crops in six major pulses-growing districts — Bidar, Gulbarga, Raichur, Bijapur, Gadag and Dharwad and it has resulted in an increase in the output this year, the officials said.

1.9 METHODOLOGY AND SAMPLING DESIGN

1.9.1 Need for the Study

Pulses have more protein than any other plant. They serve as a low-cost protein to meet the needs of the large section of the people. Karnataka is one of the important pulse growing states in south India. In Karnataka only $\frac{1}{4}$ of the total crop land is irrigated which is less than national average of 40 percent. In India more than 85 percent of the total area under pulses is rain fed. However, Karnataka also pulses are largely grown in rain fed conditions. Under these circumstances to understand various aspects of pulse economy in the study area the present study has been carried out.
1.9.2 Objectives of the Study

➢ To study the growth in area, production and productivity of pulses in the study area.

➢ To estimate the utilization of family and hired labour in the pulses production.

➢ To assess the costs and returns structure and constraints faced by the farmers in the pulses production and marketing.

➢ To identify the marketing channels of pulses.

➢ To suggest appropriate policy measures to minimize costs and higher production of pulses.

1.9.3 Hypothesis

1. Area under pulses cultivation has been declined in the study area.

2. Pests and diseases, natural reason, variation in price are the major reasons for decline in the returns of pulses in the study area.

3. Returns in pulses cultivation decreases in dry land increases in irrigated land.

1.9.4 Selection of the District

Pulses are an important crop which can be grown in all parts of northern Karnataka. It is mainly grown in, Gulbarga, Bijapur, Bagalkot, Yadgir, Raychur, Dharwad, Bidar and Belgaum districts. Among these districts Dharwad district also has good soil and agro-climatic conditions for pulses cultivation. Pulses cultivation is one of
the important sources of income of the farmers in Dharwad district. Dharwad district is convenient for our study like field observations. Hence Dharwad district has been selected for the present study.

1.9.5 Selection of the Taluks

Two taluks have been selected in Dharwad district on the basis of area under total pulses, namely Dharwad and Navalgund.

1.9.6 Selection of the Villages

From the selected two taluks, villages which have larger area under pulses have been selected for the study. Four villages were selected from each taluk. Totally eight villages are selected from two taluks. Two villages with irrigated land and two villages with dry lands are selected from both taluks.

1.9.7 Selection of Sample Farmers

Two hundred farmers are selected randomly from eight villages (four villages from each taluk) for the study. Eight villages namely Amminabhavi, Hebballi, Tadakod and Kamalapur of Dharwad district and Annigeri, Bhadrapur Morab and Alagawadi of Navalgund taluk were selected for sample study. The farmers of these villages were classified in to four categories namely Marginal, Small, Medium and Large farmers on the basis of their size of land holdings.

1.9.8 Data Source

Present study is based on both primary and secondary data. Required primary data relating to production and marketing of pulses
was obtained from the selected sample farmers through personal interview method with the help of questionnaires. Collected data refers to the agricultural year 2012-13. Most of the farmers had not maintained the records of receipts and expenditure on pulses hence, the collection of data is based on the memory re-call method. The opinions of farmers in the study area with regard to problems of production and marketing of pulses were collected.

The secondary sources like District Statistical Offices of Dharwad District, the village level Revenue Officials such as village Accountants (Talaties) were approached for collecting secondary data relating to area, production, yield of pulses, etc.

1.9.9 Tools of Analysis

In the present study, simple averages and percentages have been used to analyze the data collected by the field work.

1.9.10 Limitations of the Study

This is micro level and area specific study. As such, the conclusions of the study may not be applicable to other areas because of differences in agro-climatic and socio-economic conditions. Therefore the generalizations of the conclusions are not possible. Due to limited resource and time constraint the researcher has selected eight villages only for the study. Further, required data obtained by field work is based on the memory of the farmers and it cannot be applied elsewhere. However, the researcher has taken all necessary precautions through cross-questioning the sample farmers several times to collect more reliable information.
1.9.11 **Scope of the Study**

Present study covers pulses production in major countries in the world. Also covers all India level, state-wise in India, district-wise in Karnataka, taluk-wise in Dharwad District and village-wise pulses production in Dharwad and Navalgund taluk. Further, study analysis cost of cultivation, marketing cost of pulses, labour cost and marketing channels of pulses in the study area.

1.9.12 **Research Gap**

Present study deals with comparative analysis about village-wise pulses production in irrigated and dry land farmers in Dharwad and Navalgund taluk. Earlier studies have not covered this aspect. Also study covers the production of pulses from village level to international level.

1.9.13 **Statement of the problem**

Pulses have an important role to play in Indian agriculture and society for various factors like their nutritive value, predominantly vegetarian diet, ability to improve land fertility, low resource requirement and so on. But, the progress of pulses has always been lukewarm in spite of the overall impressive growth of Indian agriculture. The Government has focused on improving pulse production through various programmes and minimum support price policies but no considerable progress in pace with demand has so far been observed leading to rely heavily on imports to bridge the demand-supply gap in pulses. Such an arrangement for an important source of protein in a predominantly
vegetarian society will be a major constraint in achieving food and nutritional security of the country. Some of the factors discouraging pulses sector are stagnation in production, poor area expansion, low yield and low relative profitability, decrease in per capita land availability, increase in demand-supply gap, heavy dependence on imports, inefficient marketing, etc. Keeping in view of above factors and developments like reforms in agricultural production and marketing, it is imperative to study the various aspects of marketing of pulses.

1.9.14 Chapter Scheme

Present study is divided into seven chapters.

Chapter-I: Introduction

In this chapter brief introduction of the study is presented with the focus on significance, with objectives, hypothesis, need for the study, scope of the study, research gap, statement of the problem and limitations of the study are discussed, historical background of the pulses production.

Chapter-II: Review of Literature

This chapter is devoted on review of literature of the previous studies on pulses production and its marketing.

Chapter-III: Profile of the Study Area

This chapter description Karnataka state profile, Dharwad district profile, land utilization pattern in the study area. Also discusses area, production and yield of green gram and bengal gram in major states of
India. Further, analysis of district-wise, taluk-wise and village-wise area, production and yield of pulses.

**Chapter-IV: Trends and Pattern of Pulses**

This chapter deals with village-wise, taluk-wise, Different time periods in Dharwad district, District-wise in Karnataka, Major states in India, All India level, India’s export and import of pulses, production, import and demand for pulses in India and total pulses in the world area, production and yield of pulses.

**Chapter-V: An Analysis of Production of Pulses**

General characteristics of the sample farmers. Some tools of analysis and socio economic condition like education status and family structure of the sample farmers are presented. And also covers cropping pattern, cost of production, gross and net income, labour utilization and problems faced by the sample farmers at the time of pulses production in the study area.

**Chapter-VI: An Analysis of Marketing of Pulses**

In this chapter marketing cost of pulses, place of sale, various marketing channels in the study area are discussed. Gross returns and net income, benefit cost ratio of the farmers and problems faced by the farmers at the time of marketing of pulses are presented.

**Chapter-VII: Summary of Findings, Conclusions and Suggestions**

This chapter consists of summary, conclusions and suggestions, which emerged from the study.