CHAPTER-VII

SUMMARY OF FINDINGS, CONCLUSIONS AND SUGGESTIONS

In this concluding chapter an attempt has been made to bring out the summary of the present study and important conclusions from the study. Besides, in the light of these findings and conclusions, an attempt is made to suggest the remedial measures for improvement of pulses growing farmers.

7.1 INTRODUCTION

Agriculture is the backbone of our Indian economy. Agricultural development is a precondition of our national prosperity. It is the main source of earning livelihood of the people. Nearly two-thirds of its population depends directly on agriculture. 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, pulses 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-pulses, textile, jute, sugar industries etc by providing pulses, 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.

Pulses are seeds of annual legumes that include plants such as Bambara beans, dry beans, horse beans, dry bengal gram, cow peas, dry lentils, lupins, dry peas, red gram and vetches that are used for feeding humans as well as cattle. Pulses play an important and varying role in farming systems and in the diets of poor people worldwide. They are ideal in achieving three developmental goals in developing countries-improving nutrition and health conditions, reducing poverty through higher food security, and enhancing ecosystem resilience. Besides their nutritional benefits and use as cattle feed, pulses production provides a number of agronomic advantages to the producers. The rotational benefit of pulses tends to raise the supply of soil nitrogen, reducing, as a result, the requirement of not only additional nitrogenous chemical fertilizers for the following crops, but
also that of chemical pesticides and weedicide, disrupting thereby the periodical crop disease and insect cycles. A multi-layer planning horizon by farmers would capture such benefits through pulses cultivation for the crops grown the year after pulses, realizing their optimum yields, and lower, consequently, the cost for herbicides and fungicides.

Historically India is the largest producer, consumer and importer of pulses. Although it is the world’s largest pulses producer, India has been importing 3-4 million tons (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 (1.82MT) 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. For some crops such as oilseeds, earlier experience shows most of the success is short lived if we don’t align production technology with policy support (Reddy 2009). Still, the productivity of pulses in India (694 kg/ha) is lower than most of the major pulse producing countries and yield potential attained at research stations and on-farm demonstrations. The brief discusses strategies followed to increase pulses production in the last decade and the way forward to sustain the increased production. It also examines the factors behind
the fast growth in production of pulses in recent years with bengal gram in Andhra Pradesh as an example. 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 bengal gram into black pulses 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.

Pulses are one of the important segments of Indian Agriculture. Bengal gram, red gram, lentil, green gram, 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). 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. Following are the research impetus for increasing pulses production.

**7.2 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 marketing.

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

7.3 NEED FOR THE STUDY

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. Karnataka is one of the important pulse growing states in south India. In Karnataka only one-fourth 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.

7.4 METHODOLOGY AND SAMPLE DESIGN

7.4.1 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, Myosre, Raychur, Dharwad, Bidar, 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.
7.4.2 Selection of the Taluks

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

7.4.3 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.

7.4.4 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.

7.4.5 Data Source

Present study is based on both secondary and primary data. Required primary data relating to production and sale 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.

7.5 FINDINGS OF THE STUDY

- The average size of land holding of marginal, small medium and Large farmers were 2.19, 4.38, 7.48 and 14.56 acres respectively. The average area under pulses cultivation in case of marginal, small medium and large farmers was 1.41, 3.05, 4.62 and 10.15 acres respectively. The average yield of pulses in the study area varied between highest 4.10 quintals per acre for large farmers followed by medium, small and marginal farmers at 3.70, 3.50 and 3.10 quintals per acre respectively.

- With regard to level of education a wide variation can be observed between the different categories of farmers. For overall farmers 82.82 percent of the sample farmers are literate and remaining 17.15 percent are illiterate. Further, 34.41 percent sample respondents have got primary education but only 9.31 percent respondents have passed graduation. If we observed village-wise level of education, more illiterates are in Morab village and more graduates in Annigeri village, which is 22.85 percent and 25 percent respectively.
There are about 54.16 percent of marginal farmers belongs to nuclear family however for small farmers 60.41 percent, medium farmers 68.75 percent and large farmers 65 percent belongs to nuclear family, rest belongs to joint family. Study found that joint families are very less compared to nuclear families in the study villages.

Average gross as well as net income per household is depending upon proper management of pulses cultivation in the study area.

There was a wide variation with regard to cropping pattern between different categories of farmers. Pulses are the major crop for all categories farmers with more than 59 percent of their crop land allotting to it. The small, medium and large farmers allotted 65.87 percent, 61.76 percent and 69.07 percent of their land to pulses cultivation. Wheat is the second major crop for marginal farmers, small farmers and medium farmers with allotting land 45.66 percent, 45.89 percent and 33.42 percent respectively of their gross cropped area. For large farmers B.T. Cotton (28.15) is second major crop.

The cost of farmyard manure (FYM) accounted more than 1/4th of total material cost for marginal, small and medium farmers. For large farmers, it was 30 percent of total material cost. The medium farmers spend huge amount for chemical fertilizers both in relative as well as absolute terms. The marginal and medium/large farmers spend more than 1/3rd of their total material cost for chemical...
fertilizers. The total material cost for per acre cultivation of pulses also shows an increasing trend as the size of the land holding increases.

- The harvesting and picking activity consumed thereabout 40 percent of the total labour for pulses cultivation for all categories of farmers in the study area. In absolute terms the total labour cost per acre of pulses cultivation is highest for large farmers at Rs. 4633 followed by medium farmers Rs. 4498, small farmers Rs. 3765 and marginal farmers Rs. 2850. The major reason for this seems to be that the large and medium farmers use labour continuously for which they have to pay higher wages for catch up of the labourers. Marginal and small farmers use the labour occasionally for which they are spending smaller amounts on labour.

- Commission and market fee is the major cost item in total marketing cost for all categories of farmers. This is more or less same among all categories of farmers. For over all farmers the transport cost is accounted 30.54 percent of total marketing cost. There is no wide variation in transport cost for different categories of farmers except large farmers. The cost of packing materials per quintal of pulses in absolute terms almost same for all categories of farmers. But in relative terms packing cost decreased as the size of the farm increased. The total marketing cost per quintal of pulses is higher for large and small farmers at Rs. 273 and Rs. 265 compared to marginal and medium farmers at Rs. 255 and Rs. 254 respectively. This is also more or less same.
On an average per acre of pulse cultivation generated gross income of Rs. 12400, 14000, 14800 and 16400 for marginal, small, medium and large farmers respectively.

A very wide variation can be observed in total cost of pulses cultivation in different categories of farmers. The material cost accounted nearly 1/2 of the total cost for marginal, small, medium and large farmers. Labour cost is the major cost item for small farmers with more than half of the total cost and little less than half of the total cost for large farmer. In case small farmers the marketing cost is more comparatively medium and marginal of farmers. The total cost of production and marketing is higher for large farmers at Rs. 9311 followed by medium, small and marginal farmers with Rs. 7904, 7385.5 and Rs. 6347 respectively.

The benefit cost ratio for pulses at cost ‘A’ was high at 1.03 in case marginal farmers followed by small, medium and large farmers i.e. 0.96, 0.85 and 0.81 respectively. Cost benefit ratio at cost ‘B’ 47.62, 51.83, 55.61 and 59.08 respective farmers.

It is clear that income of farmers with irrigated land is more compared to farmers with dry lands. Four villages come under scope of irrigation and remaining four villages comes under dry zone. Irrigated villages are namely Tadakod, Kamalapur, Morab and Alagawadi. Farmers of these villages have more income compared to villages of dry farmers like Amminabhavi, Hebballi, Annigeri and Bhadrapur.
Pest and diseases, lack of knowledge about pest/diseases, high cost of fertilizer and non-availability of labours were the major problems faced by the sample farmers in the production of pulses in the study area.

In the marketing of pulses the lack of marketing information and high cost of transportation were the major problems as per opinion of the sample farmers in the study area.

There about 40 percent of marginal farmers and 33.33 percent small farmers sold their pulses to local traders, whereas more than 45 percent of medium and large farmers, 31.25 percent of small farmers and 29.16 percent of marginal farmers sold their produce in the regulated markets (APMC) of Hubli and Dharwad.

7.6 CONCLUSION AND SUGGESTIONS

Pulses play an important role in sustaining agriculture through balanced crop mix and in ensuring nutritional security of the masses. Pulses are the cheapest and vital source of protein for vegetarian Indian society. Stagnant production and ever increasing population has lead to declining per capita availability of pulses over the years. Relative increase in domestic prices of pulses due to over dependence of the production on monsoon and dependence of availability on imports has further forced the consumer to switch to other low priced food alternatives. Under such a situation, marketing can play a vital role in consolidating the price behavior and providing the final product at relatively cheaper price mainly in the case of pulses where
marketing channels are characterized by high price spread and participation of large number of small and marginal farmers. The present study was conceived with this background to analyze various dimensions involved in the production and marketing of pulses in Dharwad District.

- The present study reveals that the marginal farmers allot more than half of their total crop land to pulses. The small farmers allot more than 1/3rd of their crop land to pulses. For both marginal and small farmers the pulses is the major crop that gives them better returns due to its suitability to rain fed condition and lower investment. But for medium/large farmers the B.T. Cotton is occupying more than 1/3rd of their total cropland. These farmers economically being powerful had irrigation facility that enables them to grow pulses as major crop and they prefer BT Cotton as a second major crop. Thus the marginal, small, medium and large farmers prefer the pulses as their main crop in the study area.

- Pulses has been preferred by the farmers in the study area for the reason that, the pulses crop increases the fertility of the soil by pulses leaves that become organic manure. For marginal and small farmers wheet is second major crop that is also rain fed food grain crop. In this way the farmers who have small land holdings prefer pulses as major crop in the study area.

- It was observed in the present study that the per acre material cost of pulses cultivation was higher for marginal and small farmers
compared to medium/large farmers. The main reason for this is that for marginal and small farmers the pulses is the only crop, which derives them better returns with lesser investment. So they try to get maximum returns combining extreme effort and with higher amount of materials. There is urgent need for combined effort of government, scientists, and economists in convincing the small and marginal farmers to use the inputs such as fertilizer, pesticides, insecticides etc., in judicious manner that will considerably reduce the material cost of pulses production.

- In the study area the labour cost of pulses cultivation was highest for small farmers followed by large and medium farmers and lowest for marginal farmers. This is due to the fact that the medium farmers engage the agricultural labourers continuously with more work that enables them to have cheap labour for agricultural operations. But small farmers engage labourers in the peak agricultural season only when the labour is costly which increases their labour cost. The small and marginal farmers should be provide irrigation facilities so that they can grow more crops and thereby give more work to labourers which decreases the labour cost.

- Per quintal marketing cost of pulses is highest for medium/large farmers followed by small farmers and lowest for marginal farmers. The main reason for this is that the marginal farmers sell their produce to local agents that reduce their marketing cost. In small
and medium/large farmers category majority of farmers sell their product in the APMC’s which increases their marketing cost but also gives them higher returns. As a result the gross as well as net returns from one acre of pulses cultivation were higher for medium/large farmers followed by the small and marginal farmers. Similarly the benefit cost ratio at cost A and at cost B also depict a similar picture that is the positive impact of selling pulses in APMC’s. The government has to make efforts to create systems that enable the marginal farmer to receive a better price for their agriculture produce at local market. Working of seasonal APMC’s in rural area may be helpful in this regard.

- In the study area pest and diseases, lack of knowledge about pests and diseases, high cost of labour were the severe problems faced by the pulses-growing farmers. Almost all sample farmers reported above problems and that needs to be addressed by government. There is urgent need to create mechanism to control as well as identify the pest and diseases at the earlier stage. More than 90 percent of the sample farmers reported about the non-availability of agricultural labourers. The major reason for this seems to be that due to non-availability of full time work in the villages, people migrate elsewhere in search of employment that creates shortage of labourers in agricultural season. The migration of villagers should be checked through measures like taking of local development works in rural areas, which gives the local labourers full employment.
• With regard to marketing there were two major problems faced by the pulses-growing farmers in the study area. They are lack of market information and high cost of transportation. Opinion of the various farmers about the problem faced in marketing of pulses depend on the fact that where actually the farmers sold their agricultural produce. For example all the small and medium/large farmers reported about the lack of market information because they sell in the APMC. Similarly percentage of farmers facing problem of high transportation cost in small and medium/large categories higher than marginal farmer because the majority of the marginal farmer sold their pulses to local agents who do not need any transportation.

• There are many factors affect pulses productivity namely, socio-economic, biological, managerial and physical factors. In the present study, some important factors were taken into account to determine their effect on pulses productivity. These vital factors were schooling years of the respondents, land preparation, irrigation, price of seed, plant protection measures and fertilizer nutrients. However, the effects of schooling year, land preparation, fertilizer and plant protection measures were significant. Reorientation of breeding research is required to develop high yielding, and disease resistant varieties for pulses. Moreover, extension systems should emphasize in training farmers to control weeds and disease and pest attack. Field visits and demonstration
by extension staff could be right steps in the right direction. There is a need to emphasize research and extension strategies. The provision of sufficient resources to research and extension systems is suggested for developing and promoting new technologies to combat disease and pest attack on pulses crop.

- It was observed in the present study that the per acre material cost of pulses cultivation was higher for medium/large and small farmers compared to marginal farmers. The main reason for this is because for medium/large and small farmers the pulses are the only crop, which derives those better returns with lesser investment. So they try to get maximum returns combining extreme effort and with higher amount of materials. There is urgent need for combined effort of government, scientists, and economists in convincing the all farmers to use the priced inputs such as fertilizer, pesticides, insecticides etc., in judicious manner that will considerably reduce the material cost of pulses production.

- Based on the results of present study following policy measures may be suggested for improvement of pulses farmers. Government should ensure timely supply of necessary quantity and quality of pulses seeds. Government should ensure availability of the subsidy on seeds, fertilizers and plant protection chemicals to needy farmers. The government should make arrangements to testing of soil regularly. The government should conduct training programmes on identification and control of pests and diseases of pulses. The
agricultural scientists should be available in the villages. Cheap transportation and storage facilities should be provided to small and marginal farmers so that they sell their product in APMCs at suitable time. Government should encourage the farmers to grow the pulses as a major commercial crop which helps to economic and overall development of the farmers.

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