SUMMARY AND CONCLUSIONS

Potato is one of the important commercial vegetable crops in India. It is quite a cheap food and provides wholesome diet. It contains important nutritive constituents such as carbohydrates, proteins, minerals and vitamins particularly vitamin C. In Europe and America potato is considered subsidiary food crop. But in India it is still considered as a vegetable. The per capita consumption in India is only 15 Kgs as against 85 to 105 Kgs in developed countries.

In India during the year 2001-02 potato was grown 1.23 million in an acre producing 24.08 MT of tubers. Major potato growing states of India are U.P, West Bengal and Bihar.

In Karnataka state potato is grown mainly in the districts of Hassan, Belgaum, Kolar, Dharwad, Chikmagalure and Bangalore. The contribution of Hassan district towards the states, total area and production was 37.1 percent and 31.4 percent during the year 2001-02 respectively.

Hassan and Belur taluk was selected for the study as these together account 73 percent of area in the District (2003-04).

In these taluks potato is grown mainly as commercial crop under both rainfed and irrigated conditions. Considering its economic importance, it was decided to conduct a detailed study to analyze the
growth performance, instability, cost and returns, price behaviors, trade direction and marketing of potato.

OBJECTIVES:

The specific objectives of the study were as follows:

1) To measure the growth in area, production, productivity and the source of instability of potato production in India, Karnataka and Hassan district.

2) To study and analyze costs and returns from potato cultivation with competing crops in Hassan district.

3) To assess the resource productivity, allocative efficiency, technical efficiency of factors used in potato.

4) To identify the marketing channels and price spread in Hassan District.

5) To measure the growth in potato export and find out the trade direction of Indian potato export.

6) To analyze the price behavior of potato in Hassan and Bangalore market.

HYPOTHESES:

The following hypotheses are formed and tested in the study.

1) Growth in area production and productivity of potato crop has increased significantly in Hassan district and also in Karnataka.
2) Potato crop is profitable in Hassan district.

3) Large farmers are more benefited as compared to small and medium farmers.

4) There is a long chain of middlemen in the marketing channel of potato.

5) Potato prices fluctuate very widely

Two Hobbles in each taluks are selected with relatively larger area under potato were purposefully selected for the study. From each hobbli, two villages were selected purposefully which have the larger area under this crop. Totally, 8 villages were selected from these two taluks. Thirty potato farmers were selected from each village at random. Thus a total of two forty potato growing farmers were selected based on the stratified purposefully random sampling technique for the study. The required data were collected through personal interviews using a pre-tested schedule. The reference period of the study was 2003-04.

Detailed information on marketing of potato was collected through personal interviews with various market intermediaries who trade in potato. Totally 50 intermediaries were selected in both Bangalore and Hassan market.

Tabular analysis was used for estimating the input utilization pattern, costs and returns. In order to study the resource productivity,
Cobb-Douglass type of production function was adopted. For to know technical change frontier production function was adopted.

To know the growth and instability in area, production and productivity, Exponential function, Hazzel Decomposition were used. In order to examine the price behavior, Shazeme Integration and ARIMA model have been adopted. To know the trade direction Markove - Chane was employed.

6.1. FINDINGS:

6.1.1 Growth and Instability:

1) The growth rate for Area, Production of potato was positive in all states of the country but it is significant only for U.P, M.P and Punjab. Compound growth rate for yield is also positive but is comparatively lesser than area and production. This yield level is significant only in M.P and Punjab.

2) District wise analysis shows that CGR for Area production was positive and significant for the entire district except Chikmagalure. Here also growth in yield level is comparatively lesser than area and production.

3) In Hassan district growth rate in area, production was positive and significant at 10 percent level except in Arkalgodu and
Channaryapatna. Growth rate in yield level was also positive and significant in all the taluks.

4) Decomposition analysis shows that area effect is stronger than yield and interaction effect. It contributes more (49.17%) in country as a whole, (52.59%) in state as a whole and (57.18%) in district as a whole to change in the total production contribution of yield come next to area effect in all over states of India, Districts of Karnataka and taluks of Hassan District.

6.1.2. Cultivation Aspects:

1) Cost of cultivation was comparatively higher for irrigated forms for both crops. It is Rs.11494.47 per acre of potato and Rs. 3466.95 per acre of ragi.

2) In case of individual costs variable cost incurred by farmers was found to be more for both crops 85.14 percent and 98.66 percent in irrigated condition.

3) The cost of cultivation and marketing cost increased as per increasing the size of holdings. It is highest for large farmers and lowest for small categories of farmers.

4) Expenditure on seeds, farm yard manure and fertilizer was the major constituent of the total variable costs in all the groups of potato
farmers who grow in both conditions. While farm yard manure, human labour and bullock labour is the major items for ragi crop.

5) Net returns and gross returns were also highest for irrigated farmers than rainfed farms for both crops. As compared to ragi crop potato crop gets more benefit Rs. 8575.03 and Rs. 5824.42 in both conditions. Compared with rainfed farm. Irrigated potato gets more benefit nearly 1.44 times more income than ragi crop. As for as cost of production is concerned, net returns was also high as the size of farms increased.

6) The regression co-efficient were less than unity in all sizes of farmers for both crops in both condition, which shows input was operating at a diminishing marginal productivity, which is a common phenomenon in agriculture.

7) The allocation efficiency shows that most inputs are over utilized and also shows a negative return, seeds, fertilizers, human labour and bullock labour are showed negative returns in some category of farms.

8) Technical efficiency results show that more than 85 percent have the technical efficiency. It is bit high 88 percent for irrigated formers and 87 percent for rainfed potato.
9) Frontier production functions show that seeds, FYM and fertilizer are over used in potato production. There is only scope to increase human labour and plant protection chemical.

10) Decomposition of Output Growth shows that Input Growth effects more (111.22 percent for irrigated potato and 90.12 percent for rainfed potato) than technology change and technical efficiency change for output growth in potato.

11) Logit analysis showed that land holdings would effect on the potato production.

6.1.3. Marketing of Potato:

1) Analysis of cost of marketing for different categories of farmers indicated a directed relationship between area under potato and marketing cost. Small producer incurred lower marketing cost, while it was highest for large farmers. In case of market intermediaries net benefit is more for car vender.

2) The price spread analysis reveals that potato producer got 76.85, 73.17, 76.85, 75.69, present of the consumer rupee in channels, I, II, III and IV respectively channel I III shows the highest net benefit to the farmers.
3) The major problems faced by the producers were non-availability of quality steel tuber lack of capital, inadequate rainfall, fear about fall in price level and high commission charges.

6.1.4. Trade Direction:

1) Growth performance of potato export quantity and value show a positive and significant growth (5.14 percent and 4.64 percent respectively) during the study period (1970 -2002).

2) Sri Lanka and U.A.E are very loyal markets for Indian potato as indicated by the retention of their previous shares of potato exports form India by more than 98.21 & 34.51 percent respectively.

6.1.5. Behaviour of Prices

1) Market integration analysis of potato markets in Hassan and Bangalore revealed that both markets were integrated with one another in a same level of integration, which may be due to the availability of good communication facilities and associated transportation infrastructure like railway and road lines to markets

2) A stochastic seasonal Autoregressive Integrated Moving Process (ARIMA) was found to be the appropriate model for both Hassan and Bangalore market. Non-seasonal AR and MA Process were obtained for both markets. The presence of significant AR terms in selected markets indicated that the current prices of potato were
related linearly to one or more prior values of the previous year, where as the presence of MA terms implied that the current prices were influenced by one or more prior values of the stochastic terms in the previous years. Seasonal AR implying that the values in a particular month were affected by the values of the corresponding months in previous years. Seasonal MA terms also indicted that the current prices of potato were influenced by the error terms of the corresponding months in previous years. The forecasting values of potato prices using ARIMA model showed an increasing trend in both markets.

6.2. POLICY IMPLICATIONS:

The prime policy implications and suggestions which could be instrumental in improving the performance of potato in Hassan District are as follows.

1) In the last three decades productivity of potato register either stagnation or mild positive growth in country as a whole. State as a whole and also in Hassan District as a Whole. Hence concerned efforts should be made to enhance productivity through strengthening the existing research and extension policy in order to develop and disseminate higher yielding varieties.

2) The area-yield-interacting effect was powerful in determining the production of potato, although the effect of area was more as
compared to others. Therefore policy makers should consider to stabilize in the yield level of potato.

3) There is scope to increase the income by popularizing the cultivation of potato on scientific methods. Hence the concerned development departments should educate the farmers on scientific method cultivation of crops by conducting demonstrations in the study area. The potato farmers must be educated on the importance of soil test and efficient use of fertilizers.

4) Potato seed is an important input, the cost which accounts for nearly one fourth of the total cost of cultivation. All producers have to get seed tubers from Punjab for which they have to pay high price. Hence the state department of Horticulture should make necessary arrangements to produce and distribute quality seed tubers at reasonable prices.

5) The allocation efficiency analysis indicated that most of the inputs are over utilized. This indicates the necessity of providing education to farmers on proper utilization of resources.

6) Technical efficiency results show that more than 85 percent of sample farmers had achieved the efficiency level. Hence there is a scope to increase this level.
7) Decomposition analysis shows that contribution of input growth is more than technical efficiency change. Concerned Department should have to take steps to increase the contribution of technical efficiency change and technical change.

8) Further the results of the study indicated that the middle men play dominant role in the marketing of potato and exploit producers. Hence the concerned state departments should take necessary steps to increase the producers share in the consumer rupee.

9) The Markov Chain analysis hinted that Indian potato is likely to lose out its export market in countries such as Nepal, Malaysia, Mauritius and Singapore. Hence, special efforts are needed by agencies like NAFED, APEDA and KAPPEC to tap the market potential and improve the export performance in the future.

10) The market integration study showed that Hassan and Bangalore markets are integrated in the high degree of integration. However, the extent of integration as indicated by the correlation co-efficient showed that there exists a scope for increasing the extent of integration by improving the communication facilities such as market information, transportation etc. which needs to be done. The agencies to bring about such improvement include the Horticulture, marketing and transport.
11) The findings from ARIMA Model suggested that in the long run price support policy is needed to stabilize potato prices in Hassan and Bangalore market.

12) In order to protect the potato growers from high price fluctuations the crop insurance scheme should be implemented for the potato growers.