SUMMARY, CONCLUSIONS AND RECOMMENDATIONS
CHAPTER - 6
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction:

Non-traditional commodity production and marketing has of late become the prima donna of all the agricultural marketing in India. Initiation of the process of integration of forward and backward linkages in horticultural production in the aftermath of liberalization has given a fresh fillip to horticultural marketing in the country.

Consequently not only the horticultural marketing have improved but it has also resulted in considerable expansion of production agencies initiated in recent years has also contributed to far reaching structural changes in the horticultural economy. There is no doubt that Karnataka has great potential in the horticultural sector and that the production and marketing of non-traditional commodities such as fruits, vegetables and flowers have grown many folds over time. There is no denying the fact that the adoption of several liberal policy measures by the government in more recent times and the application of scientific production techniques have boosted the State’s horticultural production.
However the relevant questions that would strike one are:

a) How did the structure of agricultural production and marketing in Karnataka changed over time

b) What future prospects Karnataka holds in the marketing of non-traditional commodities as against the traditional ones? and

c) In the light of rapidly changing national marketing conditions and in view of various trade policy measures adopted by various developed states, how Karnataka agriculture has adopted these within its fold. These issues are focused mainly in this thesis.

The general objective of the present study is to assess the development of agricultural policies in the post liberalization period, which boosted the agricultural production and marketing.

However the specific objectives of the study are as follows;

1. To review the trade policies of India and to examine the extent of liberalization that has taken place in agricultural exports in India.
2. To examine the changing structure of agricultural production from traditional to non-traditional commodities over time and assess the nature of growth at the national level.

3. To assess the production of non-traditional agricultural commodities in Karnataka and its trends.

4. To examine the benefits of production and marketing of non-traditional agricultural commodities accrued to the farmers in selected districts of Karnataka based on primary data.

5. Finally to identify the problems faced by the farmers in production and marketing of such goods and suggest measures for policy implications.

6.2 Summary and Conclusions:

The liberalization episode can be defined as an extensive use of the price mechanism that would reduce the anti exports bias of the trade regimes. The distortions in the economy should be minimized if not fully abolished. The trade liberalization of outward and inward orientation are two sides of the same coin that serve to show whether
the policy emphasis is put on the domestic markets or on international trade.

In the Third Plan period, some attempts were made to promote the exports; but still the trade policy was highly restrictive and controlled. There were severe restrictions on trade and exchange rates. A renewed emphasis was placed on export promotion with the sharp widening of trade deficits followings the two oil shocks of 1973 and 1978-79. In 1978, the Alexander Committee gave a dimension to import export policy in India by a number of innovative suggestions. The committee recommended that protection through licensing system couldn’t be continued definitely and that there is a merit in exposing Indian industry to competitive environment so that it learns the skills of efficient production and management for cost reduction and improvement in quality of product.

The Alexander Committee introduced the elements of trade-liberalization and globalization in our export import policy in 1978, although, despite liberalization in import and industrial policies, the desired improvement in efficiency of industry did not take place.
Due to failure of the Alexander Committee in achieving its objectives, the Government appointed in July 1984, a high powered committee under the chairmanship of Abid Hussain, then Secretary to Ministry of Commerce, to go into the details of the framework of the import export policy and suggest measures for rationalization and improvement in the policy wherever necessary. The trade policy of 1985-86 has been developed on the basis of 'Abid Hussain Committee'.

The main objectives of the import export policy were as follows:

1) To import continuity & stability in Import export policy;
2) To facilitate production through earner access to imported inputs;
3) To expand the base for export production;
4) To promote efficient import substitution;
5) To reduce licensing, streamline procedures and decentralize decision-making.

In this policy imports were classified into three categories i.e.,
(a) Banned, (b) Restricted, and (C) Open General License (OGL). The
chief criterion for placing the items in these lists was to provide legitimate protection to the domestic industry in which substantial funds are invested. However, there was no rigidity and the policy had been flexible in allowing even a banned item to be imported to encourage faster industrial growth in the country at a competitive cost. Liberalization Policy of 1985-91 has focused on two aspects, pertaining to (a) Foreign Capital, and (b) Trade Policy.

a) Foreign Capital: The industrial policy provides increased opportunities for foreign investment with a view to take advantage of technology transfers, marketing expertise and introduction of modern managerial techniques. It is intended to promote a much-needed shift in the composition of external private capital inflows towards equity away from debt-creating flows. The following measures are adopted:

- Automatic approval is given for direct foreign investment up to 51 percent foreign equity ownership in a wide range
of industries. Earlier all foreign investment was generally limited to 40 per cent.

To promote access to international markets, majority foreign equity holdings up to 51 percent equity was allowed for trading companies primarily engaged in export activities.

b) Trade Policy: For several decades, trade policy in India has been formulated in a system of administrative controls and licenses. As a result, the country has a bewildering number and variety of lists appendices and license. This system had led to delays, waste, inefficiency and corruption. Human intervention—described as discretion—at every stage, has stifled enterprise and spawned arbitrariness.

The first major attempt at liberalization was done by the Rajiv Gandhi Government. As a result, in the four years from 1985-86 to 1989-90, exports surged forward and the period witnessed a record average annual growth of 17 percent in dollar terms. Unfortunately and unaccountably, this had declined to 9 percent in 1990-91 and to
only 4.4 percent in April 1991. The Government, therefore, decided that while all essential imports like edible oil should be protected, all other imports should be linked to exports by enlarging and liberalizing the replenishment licensing system.

According to this policy (1991) exports and imports are allowed freely subject to regulation by negative list of exports or a negative list of imports. The number of items in the two lists has been reduced to the minimum. In addition to this the Liberalized Exchange Rate Management System (LERMS) has been introduced from 1st March 1992. The rupee has been made partially convertible for all approved external transactions with effect from 1.3.1992. The discussion of all these trade policies changes establish a fact that Government of India is fully committed to the policy of liberalization and globalization of the Indian economy in order to make it competitive and productive. The amendments of the EXIM policy made during April 2001 further gave importance to the boosting up of the exports. This was mainly done with the view to compensate with the liberalization of the imports. The highlights of the policy included creation of market access initiative, introduction of the new chapter on special economic
zones, extension of annual advance license facility for deemed export and the intermediate supplies, extension of the validity of the duty free replenishment certificate scheme and the procedural simplifications. It gave special importance to the agricultural sector through the creation of the Agricultural Export Zones wherein the state governments may identify product specific agri export zone for end-to-end development for export of development products from geographically contiguous areas. Quantitative restrictions were removed on 111 items at 8-digit level. Tariff policy revised within the bound rates, the customs duties have been enhanced on tea, coffee, copra, coconut and desiccated coconut from 35 percent to 70 percent and on crude and edible oils, the rates range from 45 percent to 75 - 85 percent.

The EXIM Policy Schemes like Duty Exemption Scheme and the Export Promotion Capital Goods Scheme are being made applicable to the agricultural sector. For agriculture, liberalization attempts were made especially from 1994.

Extension of the EXIM scrip facilities for a number of agricultural commodities, decanalization, shifting of commodities
from restricted, prohibited lists to free list, etc were carried out in different phases. The changes in the licensing structure for agricultural commodities from 1995 shows that there is enough liberalization in the agricultural sector too. Good numbers of items are put under the free list. The percentage of free items had increased from 22 percent in 1995-96 to 58 percent in 2000 and further extended in April 2001. Quantitative Restrictions (QRs) were removed for nearly 147 agricultural items in the recent policy.

Foreign trade policy of India, while specifically targeting India's trade share as percentage of global trade to 1.5 percent by 2009, has put an overriding emphasis on foreign trade as a mode for furthering over economic development, especially in rural and semi-urban areas. It is expected the recently (2004) announced policy measures will usher in a new era of foreign trade for India in a multilateral trade setting under WTO. The 1.5 percent share of global exports targeted by his Foreign Trade Policy means that Indian exporters have to bring home $175 billion by 2005.
6.3 Findings from Secondary Data:

The economic importance of horticultural crops such as fruits, vegetables, flowers, plantation crops and spices has been increasing over the years, due to the increasing domestic and international demand. Increasing domestic demand arises from the increase in income, population growth, changing consumption pattern and growing awareness about better nutrition. As effective supplements of nutrition, horticultural crops form an important part of the daily diet. Despite their well-known significance from the economic point and as source of nutritional security, a focused attention towards the horticultural crop production in India has been lacking till very recently.

However, after achieving self-sufficiency in food grain production, there is a change in emphasis towards the non-food and commercial crops with the objective of crop diversification. Hence, due emphasis has been given to horticultural crops since the Seventh Plan period through increase budgetary allocation towards Research & Development. The impact of this focused attention is visible through technology advancement and in an overall increase in production, productivity and export of horticultural produce.
Among the sub-sector, fruits showed a three-fold increase in area and four-fold increase in production over the last five decades. In case of vegetables, India is the second largest producer and contributes to 14.4 per cent of the total world production. India is world number one in mango, banana, cauliflower production, second in onion production and third in cabbage production.

Though, agro climatic suitability permits the production of horticultural crops throughout the country, some regions have been able to specialize in some crops. Maharashtra, Andhra Pradesh and Karnataka specialize in fruit production, while, Orissa, West Bengal, Bihar, Karnataka specialize in vegetable production. Kerala and Karnataka have a special coconut and cashew, while West Bengal and Karnataka specialize in flower production. Besides the agro-climatic suitability, availability of resource endowments, market and price factors as well as non – price factors such as infrastructure appear to provide impetus for such a specialization.

It is estimated that since 1961, area, production and productivity of fruits have increased by 3, 6.2 and 2 times respectively. Vegetable
production has tripled in the last 50 years, making India the second largest producer in the world. Estimates show that the share of hybrids in the total cropped area in case of tomato and cabbage is around 33 per cent. Area, production and productivity of potato have increased by 12, 4.9 and 2.6 times respectively. Most horticulture farmers moved from traditional and confined to a commercial enterprise, which has brought investment and adoption of efficient management, drip irrigation, fustigation, integrated management of insect, pest and diseases, improved post harvest management for high value fruits and vegetable and value added products.

Overall increase in plan investment in horticulture increased both for research and development at Rs. 2105 crores in Tenth Plan compared to 24.5 crores during Eighth Plan period. These investments have created awareness across the country and horticulture has become a priority sector for the development.

Advances made in horticultural crop sector are also reflected in the increase in demand for these crops. The per capita availability of some of the products of this group, such as fruits and vegetables, which are
considered as the cheapest source of nutrition increased from 90gm/day in First Five Year Plan period to over 131gm./day by 1999-2000. The monthly per capita expenditure of rural poor on horticultural crops also increased marginally from 9.50 per cent in 1992-93 to over 10.15 per cent in 1996-97. This increase is also indicative of the increased availability of the horticultural crops.

The impact of horticultural crop improvement has been assessed both at the macro level (national) and micro (individual farmer level). One of the indicators for assessing macro level impact is the increase in area and production of this group of crops and also through increased diversification of agriculture. This is reflected in the change in source of output growth in agriculture. The fact that the non-traditional or non-food crops like fruits and vegetables contributed more towards output growth than those of cereals like rice and wheat is indicative of diversification in agriculture.

There is also a significant increase in productivity level of almost all horticultural crops over the last three decades, which is reflective of
the positive impact of technology advances made through concerted efforts in research and development.

The fruits and vegetables and their processed products have been placed in the high priority sector and lot of incentives have been provided for their improvement. The share of fruits and vegetables in total agricultural exports has been increasing over the years. From 3 percent in 1980, it has reached 5 per cent by 1993-94. Processed fruits and vegetables hold a share of 27 per cent to 57 per cent in the exports of fruits and vegetables products.

Share of export as a percentage of total production of processed fruits and vegetables products indicates a declining trend over the years. The declining trend of export share of processed products is due to changing demand situation in the domestic market, changing preference, increase in disposable income and general increase in the range of products available for consumption.

Technology adoption also depends on other factors such as the incentives provided by the local governments. Besides these, the additional expenditure involved in specific technology adoption, as in
case of 'Hardening Costs' for tissue culture banana appear to play a major role in pushing the adoption levels of specific technologies.

The adoption of these technologies has helped the farmers in a number of ways. The impact of technology adoption ranges from a simple shift in variety grown to the removal of seasonality for fruit or vegetable cultivation and shift in cropping pattern in favour of horticultural crops. One of the greatest achievements of the vegetable sector has been the removal of seasonality of a large number of vegetables. This is visible in the year round availability of a variety of vegetables. Varietal improvement and hybrid technology in vegetables have made it possible to maintain steady supply to the remotest corners of the country.

Horticultural crops being labour and capital intensive, their adoption has also helped the farmers by increased employment opportunities and thereby increased earning capacity. Labour requirement for cultivation of flowers on farmers field results in increased employment to the tune of 1,200 man days for jasmine, followed by 913 man days for crossandra. Among the fruit crops,
papaya was more labour intensive providing around 703 man-days of employment compared to 106 man-days in mango.

Besides the regular labour employed, operations such as ploughing, land preparation or weeding, horticultural crop production involves specialized operations such as thinning, propping and desuckering in banana, hormone application for flower initiation in pineapple, thinning of bunches in grape, pruning of branches etc., which are highly specialized and skill-oriented jobs. Unlike the cereals and other food crops, which come for harvest at one time, horticultural produce has a prolonged harvest period thereby providing additional employment opportunities and drudgery.

Karnataka is one of the leading states producing various fruits viz. mango, banana, sapota and out come of these, banana tops the list followed by mango. The year wise area and production and productivity of various horticultural crops indicate the partial success of the horticulture in the state.

It is observed that over a period 1993-94 to 2002-03, there is constant increase in area of cultivation, while production trends
fluctuated. The area was 13.47 lakh hectares in 93-94 and has gradually increased to 15.8 lakh hectares. But production of horticulture crops was 106.38 lakh tonnes and decreased to 95.81 lakh tonnes in the same period reflecting the downtrend in the period.

However the decline is not very sharp. On the other hand productivity of horticultural crops in Karnataka has gone down sharply from 7.9 tonnes per hectare in 93-94 to 6 tonnes per hectare in 2002-03 reflecting the cause for concern to the policy makers and agricultural scientists as well as farmers.

Further it is revealed that there is no substantial change in area of fruit's cultivation, flower and other crops, except the vegetables. But there is a substantial decline in production of fruits to the extent of -7.62 percent.

There is a substantial change in both area, and production of flowers at 20 percent and 70.9 percent respectively indicating the fact that Karnataka has became a leader in the development of floricultural products due to emphasis given by the state government during post reform period.
As far as vegetables are concerned, there is an increase of 61 percent in the area and slight decline of -3 percent in the production in the state during the same period. It reveals that despite the increasing area of cultivation of vegetables, the production rather stagnated at 45 to 46 lakh tones.

In order to assess the long-term trends in each of these crops, we look at the data for 10 years period from 1993-94 to 2002-03. It is evident that the trend of production and productivity of fruits in Karnataka has gradually increased first five years and then gradually decreased for next five years. The peak period is 1996-97, where the production reached 51.33 lakh tonnes and productivity reached 17.2 tonnes per hectares.

However year wise production and productivity of vegetables in Karnataka over a period reveals an increasing trend of both area and production and touched the peak production in 2000-01 with 66.54 lakh tonnes. But unfortunately the productivity trend in this case is declining from 20.5 to 12.3 tonnes. Thus there is cause for concern for declining productivity.
The increase in area, production and productivity of flowers in Karnataka is tremendous. It is due to quick marketing and infrastructure facilities for both traditional as well as Hi-tech units. There has been a considerable increase in the production of cut flowers/spikes which is mainly attributed to the cultivation of modern flowers such as red rose, gladiolus, carnation, tuberose and gerbera. It may be noted that during nineties with the policy changes in favor of export oriented horticulture in general and floriculture in particular, Hi-tech units have come up in large scale. They produced flowers under protected environment. Undoubtedly flower production, consumption and trade have grown manifold, and exports have also increased.

Apart from the analysis of overall growth trends in the horticultural crops in the state, we wanted to further analyze at the disaggregate level. Out of 27 districts in the state, it is observed that only eight districts are leading in the development of horticultural crops in the state. Those are, districts of Kolar, Bangalore Rural, Bangalore Urban, Bijapur, Belgaum, Hassan Chikmagalur and Shimoga. Some are leading in growing of fruits, some are in
vegetables and some in growing flowers. Leading eight districts in area, production and productivity of fruits, vegetables and flowers in Karnataka State are for the triennium ending 2002-03.

The ranks have been estimated based on the availability of area of cultivation and quantity of production of various horticultural crops. The district of Kolar stands first in terms of area of cultivation for fruits followed by Bangalore Rural and Bijapur, while the district of Hassan (followed by Kolar and Belgaum) stands first in area for cultivation of vegetables. The district of Bangalore Urban, (followed by Kolar and Bangalore Rural) stands first in the area of cultivation of flowers.

In terms of production of these crops over a period of 10 years, the district of Kolar for fruits and vegetables and Bangalore Urban for flowers and Bijapur for fruits are dominating. But in terms of productivity, high quantity per hectare is found in the district of Bangalore Rural for vegetables, Bangalore Urban for fruits and interestingly Bijapur for flowers. This is due to hot climate condition in the district. It is evident that the production of fruits in the district
was about 1.8 million tonnes during the year 1993-94 and has increased to 3.2 million tonnes by the year 2002-03 indicating the robust change in the production trends compared the production trends of vegetables and commercial flowers. In terms of area there was cultivation of fruits in 0.12 lakh hectares during 1993-94, and increased to 0.19 lakh hectares during 2002-03 indicating the fact that there is a marginal change in the area of cultivation.

In case of Kolar district, the area of cultivation of all the three crops is increasing from 1993-04 to 2002-03. However the total area for fruits is 4.4 lakhs hectares compared to 2.9 lakhs hectares to vegetables and 0.16 lakh hectares for flowers. It indicates that Kolar is well known for production of fruits specially mangos. The mango fruits from Kolar are going abroad through exports and this contributes to earnings of foreign exchange.

As far as production trends of all the three crops in Kolar district are concerned, increasing trend is observed in all crops. But the productions of vegetables are more pronounced than flowers and fruits. Quantity of vegetable production for 10 years period is 61.4
lakhs and 55.5 lakhs for fruits indicates the actual dominance of the district in production and marketing of vegetables. This is due to proximity of Bangalore metro city for supply of vegetables to consumers.

The distance of Bangalore Rural to Bangalore Urban is very near and most of the land is converted into non-agriculture and for housing and commercial purposes. As a result, Bangalore Rural district has less area of cultivation for all three crops compared to area of Kolar district. For instance, ten years data for fruits, vegetables and flowers accounts for 2.9 lakh, 1.9 lakhs and 0.26 lakhs hectares in Bangalore rural against the 4.4 lakhs, 2.9 lakhs and 0.16 lakhs hectares in Kolar district respectively. However area of commercial flowers in Bangalore Rural is more 0.26 lakhs against 0.16 lakhs hectares in Kolar. It indicates that flowers cultivation in and around Bangalore Rural is high due to again proximity of domestic market at Bangalore city.

As far as production trends in all three crops in Bangalore Rural district is concerned, there is a declining trend in quantity of
production of fruits and vegetables (except flowers). It was 5.0 lakhs for fruits 3.2 lakhs for vegetables and 0.06 lakh tonnes of flowers in 1993-94 & had declined to 4.3 lakhs and 2.0 lakh tonnes in 2002-03 respectively. The increasing trend is observed only in commercial flowers from meager 0.06 lakh tonnes in 1993-94 and increased to 0.09 lakh tonnes. Thus we can conclude that district of Kolar has comparative advantage in producing fruits and vegetables just like Bangalore Rural district has advantage in production of flowers.

6.4 Regression Results for the entire Horticulture Crops in Karnataka:

In order to understand the significance of horticulture crops in the state, we analysed the data with regression technique and the results are as follows:

Value of multiple R at 0.50, indicates that there is a positive correlation (of 50 percent) between production of fruits and time ‘t’. Value of multiple R for areas under fruits over a period is 0.76. This value of correlation coefficient indicates that there is a positive and high correlation between growth in area and time over a period of time, high growth is activated by extending area.
The value of $R^2$ for production data is 0.25, which indicates that only 25 percent variation in production can be explained by time ‘$t$’ through this linear model. Hence the remaining 75 percent variation is due to some other factors and time is not the only factor in determining a variation in production of horticultural crops in Karnataka. This also suggests that growth in production of horticultural crops over a period of time is not significant factor.

As far as ANOVA test is concerned, the P value for production (0.17) is greater than 0.05 and hence regression is not significant at 5 percent level of significance. This implies that growth in the production of horticultural crops over a period of 10 years is not significant.

‘a’ is the intercept and has the value of 4.7798. The intercept gives the estimated value of $Y$ when ‘$t$’ is kept Zero. It is the value of $Y$ that holds good even if the effect of ‘$t$’ is removed.

‘b’ is the regression coefficient with a value of -0.0169. Which is negative and shows that production is negatively related to time.

P value for area is 0.017, which is less than 0.05 and hence increase in area over a period of time ‘$t$’ is significant at 5 percent
level of significance. The regression coefficient has the value of 0.011, which shows that growth in area under horticultural crops is significant.

6.5 FINDINGS FROM PRIMARY DATA:

In order to assess the benefits accrued to horticulture farmers, three districts were chosen as sample districts viz., Bijapur for fruits, Kolar for vegetables and Bangalore Rural for flowers. The district of Bijapur is the most backward in northern region of Karnataka. People mostly depend on agriculture and recently alienated to horticulture. The poverty among the agriculture farmers especially agri laborers is very high. In order to know benefit accrued to them from the specific high grown fruits, a survey has been undertaken by choosing sample farms of grapes, banana, and pomegranate, as they are major horticultural crops in the district. The total area cultivated, the area under irrigation, employment generation, gender sensitivity etc., have been ascertained from the sample 180 farmers in the year 2004-05. It is evident that total cultivated area for sample of 80 grape growers is 330 acres, 50 banana growers is 160 Acres, and 50 pomegranate growers is 130 acres, while the adoption of irrigation to these crops, grape owners have more irrigation 4.12 acres per
farm, than banana growers (3.21) and pomegranate. It indicates that grape gardens are more irrigation intensive than others.

Regarding employment generation, more employment is found in Grape farms with 1980 workers working than in the Banana or Pomegranate gardens. As a result, the growing of Grape has more employment potential than others. However return is equally important. As far as nature of employment is concerned, the seasonal employment is found more in Grape Garden than in others. The gender wise analysis reveals that it is the womenfolk who are employed more in all the types of horticultural crops. It indicates the feminization of horticulture in the Dist of Bijapur is underway.

In order to know the significance of certain costs in overall cost structure, the respondents responded different cost components for fruit crops in the district. It is evident that cost components of three crops, viz., grapes, banana and pomegranate is considered by splitting total cost into, cost on labour, fertilizer, pesticides, interest on borrowed money, borewell repair, energy, planting material and others. The total cost of production of grapes for 80 farms in 330 areas
comes to Rs.156.05 lakhs. Out of this highest amount of Rs.40 lakhs was spent for borewell repair i.e. (25.63 percent of total cost) followed by pesticides (25.37 percent), labour (16.91 percent). It indicates that borewell repair is frequent due to interrupted power supply and lower water table due to poor rainfall. Thus fruits growers, though enthusiastic to grow more fruits, are hesitant in repair of borewell.

In all, the highest cost component in overall costs, stems from three items viz., bore well repair, consumption of fertilizers and pesticides followed by labour. This high cost of production will not attract any small and marginal farmers to this venture. Hence fruit growing in Bijapur is mostly undertaken by medium and large farmers.

Further, a comparative analysis is done to know the per acre, per farm cost of production in all the three fruit crops. It is evident that per acre cost is highest for banana growers with Rs. 70,120 followed by Rs. 47,280 to grapes and Rs. 39,950 to pomegranate farmers. Similar result is observed in per farm cost of production. It indicates that banana growing is more costly per acre/per farm than others.
Similar results are obtained with regard to per farm net income. Banana growers have Rs.4.44 lakhs net income followed by grapes growers Rs. 2.13 lakhs and pomegranate growers 0.27 lakhs. These results are due to nature of sales and turnover of farmers. Since grapes and pomegranate are seasonal crops, the gain accrues only certain months, while banana, sales and turnover are for the most part of the year. Hence the net gain for banana growers is more. However the district of Bijapur is well known for growing grapes and pomegranate than banana due to high cost of cultivation of banana and farmers do prefer the growing of pomegranate and grapes.

The district of Kolar is most backward in southern part of Karnataka due to poor rainfall, lowest water table, dried up tanks and hot climate. However farmers of Kolar district are hard working and tough guys for taking any opportunity knocking at their door. One such opportunity is growing of vegetables and supplying regularly to ever growing Bangalore city (which is just 70 km away).

In order to know the real benefits accrued to the vegetable farmers in Kolar, we have interviewed 200 farmers each growing
potato, tomato, carrot and cauliflowers during 2004-05. The total area cultivated by these 200 farmers is 540 acres, in these lands nearly 8100 workers are employed during that year. The nature and category of employment reveals that temporary employment on contract basis was always more in all the crops than the employment of seasonal and regular character. It indicates that contractual employment has been more popular among the workers. This is due to nature of crops as well as seasonality in growing these crops every year.

The increasing production trend of 2003-04 over 2001-02 is obvious in all vegetables, which has increased more than 9 percent. Thus the quantity of production of vegetables in the Kolar district is satisfactory.

With regards to per acre cost in production of vegetables Rs. 54000 is highest cost with regard to cauliflower followed by tomato with Rs.40,000. However in terms of net cost per farm is concerned, tomato growing accounts for Rs. 1.30 lakhs followed by cauliflower with Rs. 1.19 lakhs.
In order to ascertain the actual benefit accrued to farmers, we calculated the total sales realization minus the total cost of production in all sample farms. The sale price taken for assessment is an average price prevailing during 2003-04. In all it is evident that benefits from vegetable growing are subject to several factors and the profitability depends on certainties. In this case government intervention by way minimum support price is inevitable to stabilize the prices and in turn stabilize the income of farmers, therefore non traditional agricultural products, though attracted recently some farmers, it could not attract many due to unstable price situation, problem of power supply and repair of borewell etc.

Bangalore is the capital of Karnataka State. It is one of India's most charming cities. Today, it is India's fifth largest city. The momentum of its industrial and commercial growth is unequalled in the country. Aptly named the "Garden City", it boasts of an amazing number of flowering trees and parks with splendid pink Cassias and Golden acacias blooming with Jacarandas flowering in purple majesty and the Gul-Mohurs lighting the roads with the flame orange brilliance.
Bangalore is having suitable climate to grow flowers. In order to know the real benefits accruing to the flower growers in Bangalore, we have interviewed 110 farmers growing Gladiolus flowers.

Gladioli flowers have become popular in the domestic markets in India, because of the long vase life, variety of colours. Gladioli are extensively used in bouquets and decoration. The commercial cultivation of gladioli are in the hands of more educated farmers and are grown in the surrounding areas of towns and cities.

In this study Bangalore Rural districts is selected, where large number of progressive farmers are involved in production of cut flowers. We have made an attempt to estimate the average cost and return from cultivation of gladioli in an area of one acre per year by disseminating data collected from sample farms.

Data on cost and return from the production of gladioli was collected during 2003-04 from 110 flower growers resided in Bangalore (Rural) districts with the help of structured questionnaire/schedule. Data pertains to fixed and operational costs,
yield and return from the cultivation of gladioli. Gladioli flowers are grown in beds and in open fields.

In order to have a comprehensive understanding about the cost and return from the cultivation of gladiolus flower in Bangalore region, we have classified the 110 sample farmers into three categories viz.,

i) Farmers who have cultivated flowers in the land purchased exclusively for that purpose – 30 farmers who constituted 20 percent of the total sample.

ii) Farmers who have cultivated flowers on leased land – 45 farmers who constituted 30 percent of the total sample.

iii) Farmers who have cultivated flowers in their own land – 75 farmers who constituted 50 percent of the sample.

The cost and return naturally differs depending on the type of farm. From our study it is revealed that establishment cost of gladiolus production which includes cost of plant material, irrigation system and of land in case of purchased land (category I) works out to be Rs 3.85 lakhs. In case of leased land (category II) this establishment cost comes to Rs. 2.35 lakhs and on own land (category III) it is Rs 1.85
lakhs. Thus, the initial investment for the cultivation of gladiolus is very high. The cost of planting material i.e. gladiolus bulb Rs. 2.5 per bulb and for one acre of land (average 60,000) bulbs the total cost becomes Rs. 1.5 lakhs. The establishment cost is one time investment and therefore, for calculating the annual average cost of production per year, the interest at 16 percent on the total establishment cost was worked out and put under different items of expenditure incurred in the production of gladioli.

The average cost per acre in case of purchased land works out to be Rs. 98,176 while for leased land Rs. 74,560 and for own land Rs. 66710. As per the responses of farmers the average number of flowers harvested in a year is 85,000 flowers, which is common to all the three types of farmers. The average cost per flower works out to be Rs 1.15 for first type of farm (purchased land), Rs. 0.88 for second type of farm (leased land) and Rs. 0.78 for third type of farm. (Own land). Accordingly the profit margin varies.

The average price received per flower is Rs. 2/- as responded by farmers and profit margin for first category of farmers is Rs.0.85 per
flower (or Rs. 72,250 per annum), for second category of farmers it is Rs. 1.12 (or Rs 95,200 per annum), for third category of farmers it is Rs.1.22 (or Rs. 1,03,700).

This is thus evident that all types of farms could earn minimum profit so as to cover the cost of production of gladiolus. However, in our field study it is noticed that even this profit margin is wiped out for some farmers who could not avail loan from bank but had to depend on money lenders who charge as high as Rs. 40 percent interest. The important difficulty in availing loan from banks is the lack of ownership of land for second category of farmers studied. Banks are hesitant to finance those floriculturists who are producing flowers in leased land.

6.6 Problems Identified in the Study Area:

1. **Problem of Electricity & Bore Well Repair**: From the field study, it is observed that pertinent problem faced by horticultural farmers in the sample districts is the interrupted power supply leading to failure of machine. This in turn put a big burden on farmers for bore well repair. The frequency of bore well repair has reduced
their profit margin (some times wiped out). Hence efforts should be made to supply quality power to farmers with minimum user charges.

2. **Supply Side Problem**: Marketing of traditional flowers is a traditional problem. There are very few exclusive markets for flowers. In many places flowers are marketed in the general market meant for agricultural and horticultural produce. Thus, the marketing of flowers remains highly unorganized. Usually, flowers are marketed through agents in Mandi. The agents pay to farmers after deducting their commissions, charges of hamalis etc., to farmers. And there is also irregular payment for the flowers supplied to mandi. Further, farmers have to bribe bus drivers/conductors to ensure that their produce is transported on time to the market. Once the flowers are transported to the market, farmers have no control on them. They never come to know on what price their flower is sold in the market. They have to accept whatever their agent gives.
3. **Demand Side Problem** : Regarding the demand side, though there is demand for the flowers throughout the year, it is not uniform. During festival and marriage seasons prices range between Rs. 50 to Rs. 200 per one kilogram of flowers. During the off season (particularly in June-July) there is hardly any demand. A kilogram of flowers would just fetch Rs. 10 to 15.

4. **Plucking of Flowers** : Another problem is concerned with the plucking of flowers in the early morning. Since the wages in this field are comparatively low, there is a problem of regular availability of labour. Many labourers have begun to migrate to other places because they get higher wages there. During the harvest season, the demand for labour is very high and many times flowers are left un-plucked in the fields.

5. **Cold Storage Facilities** : Lack of cold storage facilities in villages and in transport vehicles (reefer vans/trucks),
flowers cannot be transported to far-off places due to perishable nature of flowers. The frequency of buses from villages to towns/markets is low and growers have to pay heavy payment to middlemen to ensure that their produce is not only transported through vans to the market, but is also auctioned in the market.

6. **Chemicals/Pesticides**: Another problem specific to Bangalore region is the non-availability of specific chemicals/pesticides. When plants get infected they should be immediately attended and sprayed with insecticides/pesticides. But the specific chemicals exclusively for flowers are not available. Farmers have to spray the chemicals that are used for other horticulture crops.

7. **Problem of Tenant Farmers**: An important problem of some producers of flowers is the problem of tenant farming. Even though farmers may get land on lease, they may not get loans particularly from banks on such lands.
Farmers have to depend on merchants, flower agents or moneylenders who charge heavy rate of interest ranging from 3-4 per cent per month.

.7 Recommendations:

In this section, suggestions are offered for improvement in the development of non-traditional agricultural crops in the state in general and selected districts in particular. They are as follows:

Horticulture is an integral part of food, nutrition and economic security of Indians. However, for its economic and safe accessibility to all, there is an urgent need for cost effective and eco-friendly technological up-gradation and its adoption by the farming community specifically by the small and marginal farmers. There is a need to adopt a holistic approach of Integrated Production and Protection Management (IPPM) of horticultural crops, its successful marketing and accessibility to all sections of the society. It involves the judicious and safe use of inputs like water, mineral fertilizers, organic manures, safe pesticides, choice of appropriate cultivars, quality seeds and
water as compared to traditional varieties. Further, productivity enhancement comes through the development of disease resistant varieties/hybrids in vegetable crops like tomato, potato, eggplant, okra, chilies, watermelon, etc., reducing their dependency on agro chemicals, the input cost and damage to environment and human health. More and more area should be brought under improved varieties and hybrids of horticultural crops rather than the traditional varieties.

6. Further boost to horticulture can be brought about through the application of biotechnology. Presently active research work is in progress in tomato, brinjal, cauliflower and cabbage for developing varieties resistant to lepidopterous pest, in tomato, potato and banana for stress tolerant bacteria, fungus and virus diseases, muskmelon and tomato for edible vaccine, potatoes rich in protein and senescence retardation in fruit and vegetable crops to reduce the post harvest losses. However it is not so in case of others in dry and semi arid region.

7. In Karnataka nearly 25 to 30 per cent of the total horticultural produce is lost every year due to improper post-harvest
management causing a loss of thousands crores annually. There is urgent need to minimize the losses by way of coordinated package including infrastructure for the establishment of horticultural parks, processing industries and market outlets in urban areas, development of suitable varieties for processing industry with the matching production technology, creation of pack house facilities at terminal collection centres and training personnel in post harvest management.

Market awareness and area management for the optimum supply of horticultural produce, contract-farming units, which could undertake primary processing grading and cleaning of the produce, rural processing and value addition groups should be promoted. New generation models which synergies the interest of both farmers and processors should be developed for smooth functioning of the processing industries.

Adaptation of rural technologies such as use of eco fridge (cool chambers) and solar dehydration system should be upgradated and popularized. Creation of infrastructure facilities such as cool chain system which included pre cooling units,
refrigerated trucks and storage space, adequate and uninterrupted power supply are the prerequisite for the sustainable development of processing industry.

8. The acute shortage of quality planting/seed materials including seeds of improved varieties is one of the major constraints limiting faster development in many horticulture crops. This is despite the fact that a large number of private and government owned nurseries and seed companies are engaged in production and supply of planting materials. Some unscrupulous nurserymen are even reported to sell seedling plants in place of grafts whenever the demand is heavy. The state departments of Horticulture/Agriculture are the major buyers of such spurious plant materials every year for distribution to the farmers on subsidized costs under various development programmes.

9. One of the serious concerns for improvement of the horticultural crop production is the instability in prices. Being highly perishable these crops face the problem of frequent market gluts leading to frequent and violent fluctuation of prices and thereby reducing the profitability of these crops. The
instability of income being so high, that a number of small and
marginal farmers often tend to shift towards other crops with
stable incomes and leave horticultural crop production. There is
thus, a need to introduce mechanisms for effective price support
and stability in crop production in this group of crops.

0. The supply side and demand side problems can be solved with
the help of farmers and government in establishing more and
more Ryath Bazaars in taluk and hobli places. The problem of
credit and marketing will have to be tackled on war footing by
providing cheap credit at 6 percent rate on interest and by
adopting minimum support prices. The government has to
increase the contribution (in every Budget) to the Agriculture
Development Corpus Fund (ADCF) for farmers in distress.