CHAPTER VII

Summary and Policy Implications

The present study relates to the state of Karnataka, one of the major long staple cotton producers of the Southern zone. Karnataka is situated on a table land where Western and Eastern Ghat ranges converging to the Niligiri Hill complex. The fact that Karnataka is situated in tropical zone made its climate warm through out the year, the average temperature being 24 degree Celsius. The northern part of the state is covered with black soils, which are excellent for growing cotton and so are often called black cotton soils. Agriculture at present is the main source of food for the population and fodder for the cattle, besides being the source for livelihood for nearly 65 per cent of the population. Cotton is the major commercial crop of the state. Karnataka is the ninth major cotton growing state in the country. The major varieties/hybrids of cotton grown in the state includes Abhadita, laxmi, LRA-5166, Jayadhar, NHH-44, DHH-11, DCH-32, DHB-105 and release of several hybrids and varieties by private companies like JK, Mahyco etc., there was a wide fluctuation over the years in the cotton area for all the districts from 1970-71 to 1997-98. In the case of Bijapur district, the average area under cotton was 1,93628 hectares during 1970' declined to 1,19,273 hectares during 1980's, while there was a considerable decline in the same during 1990's (48,063 ha). The higher fluctuations in the cotton
area over the years was mainly due to price fluctuations, competition for area from other high valued crops like sugar cane and paddy and severe incidence of pest and diseases. In the case of Bijapur district there was decline in the production from 1970's to 1980's. However, the share increased from 5.89 per cent in 1980’s to 7.36 percent in 1990’s. However, the production of cotton in the state showed increasing trend. Karnataka State as a whole the cotton productivity increased to 297 Kgs/ha during 1990’s from mere 110 Kgs/ha during 1970’s. The improvement in cotton productivity was result of increased cotton area under irrigated conditions and release of several high yielding varieties and hybrids from 1980’s onwards by the public and private sector companies and the State Agricultural Universities.

1. Performance of any crop depends upon the family structure, composition, occupational pattern, educational status and the working population of the farm family. The average age of the sample farmer for the study area as a whole was 41.54 years. The education level of the farmers indicated that for study area as a whole, proportion of literate members was 78.70 per cent. The total family income of the farmers averaged to Rs.1,53,967.06 per annum for the sample as a whole. The proportion of the agricultural income in the total income was 50.05 per cent for small farmers, 73.98 per cent for medium farmers and 82.94 per cent for large farmers. For the study as a whole, it was 77.73 per cent. The family composition of the sample farmers indicated that the average
size of the sample farm family was 7.53 members in which the male members were slightly higher (2.92 members) than the females (2.45 members). The proportion of the workforce in total family workforce that were engaged in own agriculture was the least in the case of small farmer (3.80 out of 4.80 or 95%) followed by 77.5 per cent in the medium farmers and the least of 54.54 per cent in the case of large farmers. The average operational holding size in the case of small, medium and large farmers were 1.68 hectares, 4.93 hectares and 8.08 hectares respectively. The gross cropped area of the sample as a whole was eight acres and it was 2.62 acres for small, 8.02 acres for medium and 14.30 acres for large farmer categories respectively. The cropping pattern indicated that the gross cultivated area and the cropping intensity increased with the holding size. For the small farmer, *kharif* sorghum, sunflower and cotton were the top crops in that order. In the case of medium farmer cotton led the *kharif* area followed by green gram, sunflower, maize, sorghum and groundnut found importance in that order. The cropping intensity was positively related to the holding size. For the sample as a whole, the value of assets was Rs.Rs.12,37,736. The value of land in the case of irrigated land varied between Rs.80,000 to Rs.1,00,000 per care while in the case of dry lands it varied between Rs.20,000 to Rs.50,000 per acre.

2. Irrigated cotton cultivation is known for its heavy use of inputs, especially fertilizers and pesticides. The major inputs required in cotton
include seeds, insecticides, fungicides, seed treatment chemicals, farmyard manure, chemical fertilizers and irrigation water. The human labour input amounted to 229.87 mandays per hectare for the sample as a whole. The highest utilisation was found in the case of large farmers (229.87 mandays) followed by medium (231.31 mandays) and small (211 mandays). Similar trend was noticed in the case of bullock labour and machine labour utilization. Among the material inputs used, the quantity of farmyard manure used was 10.28 tonnes per hectare for the holding as a whole. There was no much variation in the variation in the quantity of seeds used across the holdings and the seed rate was 2.65 kgs per hectare for the sample as a whole. The amount of nitrogen, phosphorous and potash calculated based on the type of complexes used by the farmers worked out to 137.94 Kgs, 71.30 Kgs and 69.44 Kgs per hectare respectively. The quantity of plant protection chemicals used was again the highest in the case of large farmers (18.36 kgs) followed by medium farmers (17.36 kgs) and small farmers (16.38 kgs). Small farmers were most efficient in the case of usage of labour and all other inputs except Nitrogen compared to other two categories. The large farmers were the least efficient with respect to bullock labour, potash usage. The medium farmers were the least efficient when compared on per quintal input basis. The total human labour required for cotton cultivation across the holdings (overall) was 229.87 mandays. Among the different operations in cotton cultivation in the study area, harvesting required the highest
quantity of labour constituting 46.66 per cent of total human labour used for cotton cultivation. The Family labour utilization in the case of small farmers was 162.44 mandays, in the case of medium farmers, it was 129.87 mandays and for large farmers it was 54.32 mandays. The proportion of family labour in the case of small farmer was the highest (76.99%) followed by medium and large farmer categories. Thus, family labour was inversely related to the holding size. The total bullock labour required for cultivation of cotton across the categories was 19.16 pair days. The total Machine (Tractor) labour required across the categories 7.87 hours and most of it was used to transport farm yard manure from the pit to the field. Machine (Tractor) was also used in the case of first preparatory ploughing and first harrowing and these operations constituted 36.42 and 10.80 per cent respectively.

3. The total cost of cultivation of irrigated cotton for the sample a whole was Rs.34,738.92. It was Rs.38,468.55 in the case of large farmers, Rs.34,902.33 for medium farmers and Rs. 31,360.38 in the case of small farmers. Among the various items of costs, total variable costs constituted about 81 per cent and fixed costs constituted 19 per cent. The marketing cost incurred for the sample as a whole was Rs.2316.70. The cost was Rs.2336.25, Rs.2197.50 and Rs.2472.50 for small, medium and large farmers respectively. Thus, the total cost of production, which includes both the cost of cultivation and the cost of marketing, amounted
to Rs.37,055.62 for the sample as a whole and Rs.33,696.63, Rs.37,099.83 and Rs.40,941.05 for small, medium and large farmers respectively. The per quintal cost of cotton cultivation was Rs.1874.37 for the sample as a whole. It was Rs.1677.91 for small, Rs.1985.34 for medium and Rs.1,944.82 for large farmers indicating that the small farmers incurred less expenses for the unit production of the cotton among all the categories. The gross returns realized on overall farms amounted to Rs.48,234.28. The returns over variable costs were Rs.20199.96, the returns over total cost of cultivation were Rs.13,495.36 and the returns over total cost of production were Rs.11,178.66 with a Benefit Cost Ratio of Rs.1.30. Constraints in cotton presented in Table-5.4 revealed that majority of the farmers in the overall study area reported poor quality of fertilizers and plant protection chemicals (85.2%), non-availability of labour (83.6%) and incidence of pests and diseases (81.6%). Other production problems faced by the farmers were irregular and insufficient supply of electricity (79.60%), water scarcity during critical stages of crop growth (67.60%), lack of knowledge about tackling of pests and diseases (54.00%) and high cost of fertilizers and plant protection chemicals (48.40%). Among the different categories of farmers for medium (96.08%) and large (97.06%) category farmers non availability of labour during peak crop seasons was the major problem. However, comparatively more (90%) of small farmers experience the incidence of peat and diseases problem.
4. The Mudhol Agricultural Produce Market Committee (APMC) is situated not in the taluk headquarters of Mudhol but in the town of Mahalingapur which is one of the leading markets for jaggery in Karnataka State. The main market yard has an area of 27 acres and 36 guntas while Lokapur and Mudhol sub market yards have total area of 8 acres, 19 guntas. Tha main market yard at Mahalingapur has a separate yard of 7 acres 24 guntas adjacent to the main yard that is used for the sale of cattle. The market has brought under regulation totally 18 agricultural produce of which cotton (both kapas and lint) is one of the main crops. The trade in cotton in this market is mainly concentrated in the months of July, August and September when almost 90 per cent of the cotton is traded with some minor quantities also being traded during the months of October and in April and May. During the year 2000-2001 the market traded 16,0806 quintals of cotton worth Rs.3,37,38,182. The modal price of cotton for the year varied around Rs.2100 to Rs.2149. The Agricultural Produce Market Committee of Jamakhandi is situated at Jamakhandi itself and it has submarket yards at Terdal and Savalgi. The area of operation of this market is the entire Jamakhandi and the main market yard has an area of 19 acres 36 guntas with an additional area of 9 acres and 0.9 guntas developed for trade in cattle. The number of notified commodities for regulation at Jamakhandi APMC is 113 including livestock. The market trades mainly in cotton, jaggery and maize. The marketing cost incurred by the farmers for the study region
as a whole was Rs. 2116.70 per hectare. The cost for the small farmers was Rs. 2336.25, for medium farmers it was 2197.50 and for large farmers it was Rs. 2472.20. Among the different component of marketing cost, the cost of packing material claimed 34.36 per cent of the total marketing cost, followed by other charges (22.29%), personal expenses (11.28%), packing labour cost (13.05%) transportation charges (10.77%) and loading and unloading charges (8.6%). The components of other charges include unauthorized charges by the commission agents, charity etc. The marketing channels followed was dominated by commission agent (82.80% of the sample) followed by wholesale traders (10.00%) and retail purchasers (7.20%). Large farmers showed a definite preference for commission agent (91.18%) and did not favour the retail purchaser at all. In the case of medium farmers, there was slightly higher preference for the wholesale trader (13.73%) but the majority favoured commission agent (83.33%). The retail purchaser found preference among the small farmers (18.75%), but even here, the majority favoured the commission agent (75%). Among major constraints only about 42 per cent of the farmers in the study area opined the lack of storage facility. Price fluctuation problem was most severe among large (91.18 %) category farmers followed by small category of farmers (90%) and medium category farmers (83.33 %). While, higher proportion of small farmers (70 %) reported higher interest on cotton sale proceeds advances than large (64.71 %) and medium (49.02 %) category farmers.
Policy implications:

1. The pattern on the area, production and productivity of cotton in Karnataka indicated that cotton production in the state is by and large a function of productivity rather than its area. Such a trend is due to the decline in the dry land cotton area due to uncertain rainfall and to the advent and continued dominance of long staple irrigated cotton varieties designed for cultivation under irrigation in the state. In the absence of any alternative dependable varieties of cotton under dry land conditions, there is no policy option left in the immediate future but to consolidate upon the growth of irrigated long staple cotton area and improve its productivity in order to ensure the supply of cotton in the state.

2. Cotton cultivation is infamous for the extent of pest and disease attack that occur on the cotton plant. Some of the pests have known to prey on the plant since decades. As such, the expenditure incurred on the cotton plant has become an invariable component of the cost of cultivation besides creating environmental hazards. The recent innovations in pest control which are known Integrated Pest Management should be widely publicized among the study area farmers. The Integrated Pest Management package involves the use of biological agents for the control to control cotton pests. Though this measure is advised to
be undertaken in conjunction with chemical measures, it reduces both the costs and environmental measures besides being effective. The lowered use of pesticides would also help the country's cotton to gain popularity in other countries which are resisting Indian garment imports along these grounds of over use of chemicals.

3. The problem of irrigation water in cotton can be addressed at the farm level by undertaking a judicious combination of water application and moisture measures. Water application can be applied to cotton plants through improved mechanisms such as drip, or even alternate row surface irrigation can also be undertaken. Plastic mulching of the rows can be undertaken to conserve the soil moisture. The government should continue to provide subsidy to drip irrigation systems and plastic sheets. The farmers should be encouraged to conserve run-off water during rainy season by constructing farm ponds so that the conserved rain water helps to improve the water table in the dug wells or borewells on the farm. At the broader level this requires the creation of watersheds, and even minor irrigation works wherever feasible in order increase both surface as well as groundwater supply.

4. The government should be vigilant towards the sale of spurious pesticides and set up mobile laboratories to randomly test the pesticides sold to the cotton farmers. Effective action should be
taken in cases where false pesticides should be taken. Measures should also be ensured in the case of cotton seeds to ensure their genuineness. Action should be strict and stringent in the case of false seed suppliers.

5. The government should fund and encourage research to develop cotton varieties which are resistant to endemic pests. The Bt variety cotton founded by a multi-national company is such an example. But such varieties should be thoroughly field tested and they should not only produce cotton with desirable economic characteristics but also be available to the farmer at a reasonable price.

6. Though labour saving machines are available nowadays in the case of most of the crops especially for harvesting, this is not so in the case of cotton. Even today cotton in India is harvested manually by labourers and this places a great burden on the producer to ensure that available during that time or suffer total loss of the crop. Adverse weather also threatens the crop during the harvest season. All these factors must be borne in mind when the government announces the support/procurement prices. However labour can be saved in the operations of weeding by adopting the weedicide sprays, mulching and even judicious intercultivation using bullocks.
7. The cost and return structure farmers indicate that cotton cultivation is largely a subsidiary enterprise along with other seasonal crops. Such a measure is a result of the farmer undertaking to avoid the risks associated with cotton production and price and partly due to the costs involved cultivation if large scale cultivation of cotton is undertaken by the farmer. Thus it is necessary for the government to announce re-assuring measures to the farmer such as announcement of procurement/support prices, well in advance of the cropping season. The fixing of such prices should take into consideration the cost of cultivation incurred by the farmers. Such fixing of prices should be flowed up by active market operations.

8. A major effort should be concentrated by the government in the field of cotton marketing. Since a major portion of cotton marketing is concentrated in the hands of commission agents, the government should keep this particular intermediary under observation for any malpractices. The farmer submits to the exploitation of the commission agents only when he has no other alternative in the face of increased requirements of cash soon after the crop or even earlier during cultivations stage. As such special crop loans particularly suited to the peculiarities of the cotton sales should be designed and made available to the farmer at the
village level. The APMCs should conduct surprise checks to detect illegal deductions made from the sale proceeds of the farmer.

9. The problems relating to faulty weighing machines, lack of transport, and expensive transport and dissemination of market information relate to the general infrastructure of the markets. Improvement in these aspects would not only benefit cotton crop in particular but also improve the general marketing conditions of the farmers. The installation of electronic machines (as in the case of silk cocoon markets) would help to gain the correct weights and prevent deductions. Regional grading laboratories should be rejuvenated to standardize cotton grades and popularize the same among the traders. However the standards evolved should be realistic and should relate to the crop characteristics of the cotton grown in the area. Quick assessment results like ginning percentage and staple length should be made available to the farmers for their produce. The APMCs should have its disposal more vehicles at least during the cotton season and they may be made available to the farmers during the cotton season at least

10. The government should undertake steps to rejuvenate the Taluka Agricultural Produce Marketing Committees (TAPCMS) in the study taluks. These institutions, being cooperative bodies will help farmers to realize a better price for their cotton price.