Chapter II

COTTON IN KARNATAKA

General and Geographical Features of Karnataka State

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 Nilgiri Hill complex and confined roughly within 11.5 degree North and 18.5 degree North latitudes and 74 degree East and 78.5 degree East longitudes. Karnataka is bound by Maharastra and Goa states in North and North-West, the Arabia Sea in the West, Keral and Tamil Nadu States in South and the state of Andhra Pradesh in the East. The state extends to about 750 Kms from North to south and about 400 Kms from East to West and covers an area about 1,91,791 square kilometers. The total land area of the state accounts for 5.83 per cent of the total area of the country and ranks eighth among the major states of the country in terms of size.

Karnataka has a population of about 52.74 million with a density of 275 persons per square kilometers (2001 census). During the period from 1991-2001, the population grew at a rate of 17.25 per cent with a sex ratio of 964 females per thousand males. The literacy rate was reported to 67.04 per cent.
The state has varied topographical situations ranging from the narrow coastal plain adjoining the high range of Western Ghats, which give place to gently slopping Eastern plains. A greater part of the state lies between 450 and 900 meters above the Sea level, with an elevation of 1800 meters in the Western Ghats. Within the state, there are considerable temporal and spatial variations in rainfall both in its amount and in distribution. The annual rainfall ranges from 466.5mm to 4694mm, the average being 1354.7mm. The major amount of rainfall is received in the state from South-West monsoon, which commences in the first week of June and continues until the end of September. During this period, coastal and Malnad regions get heavy rainfall. The state also receives rainfall from South-East monsoon during October and December.

The fact that Karnataka is situated in tropical zone made its climate warm through out the year, the average temperature being 24 degree Celsius. Comparing the climatic variation within the state, northern part is hotter than the southern part of the state. The state is mostly covered by red soils. Laterite soils are found in the hilly regions of Western Ghats. The northern part of the state is covered with black soils, which are rich in clay and can retain moisture well, thus are excellent for growing cotton and so are often called black cotton soils.
Status of Agriculture in Karnataka

Being a predominantly rural and agrarian state, agriculture in Karnataka has always held the center stage of the state's economy. Of the 191 lakhs hectare land in Karnataka the net cropped area is 107 lakhs hectares accounting for 66 per cent of the geographical area. The state had an irrigation potential of about 55 lakhs hectares and the net irrigated area is 23 lakhs hectares with a gross irrigated area of about 28 lakhs hectares. This accounts for 24 per cent of the total cultivable area and thus nearly 76 per cent area comes under rainfed agriculture.

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. The major crops grown in the state are rice, Jowar, ragi maize among cereals, groundnut, sunflower, safflower among oilseeds, tur, Bengal gram, green gram, black gram among pulses and cotton, sugarcane and tobacco among commercial crops.

Cotton in Karnataka

Cotton is the major commercial crop of the state. Karnataka is the ninth major cotton growing state in the country. The state accounted for 32.61 per cent of the total cotton area and 22.86 per cent of the total long staple cotton production in the zone (FAO, 2000). At the national level Karnataka accounted for 6.75 per cent of the area under cotton but
it accounted for about 29 per cent of the cotton production. 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.,

In Karnataka, mainly hybrids and high yielding varieties are cultivated in the districts like Raichur, Bagalkot, Bijapur, Bellary, Dharwad and Belgaum under irrigated conditions. While, rainfed cotton (with Assured rainfall) is predominantly grown in Dharwad, Belgaum, Shimoga, Mysore and Karwar. Irrigated cotton accounted for about 20 per cent of the total cotton area in the state. Karnataka accounted for 6.75 per cent of the total country’s cotton area. In Karnataka, the area under cotton (1999-2000) was six lakh hectares with a production of 8.38 lakhs bales (170 Kgs each). The cotton productivity was 250 Kgs per hectare in the same period (Guledgudda et al, 2002).

However, over the years the cotton productivity had improved in Karnataka, when compared to the yield of cotton in important cotton growing states like Tamil Nadu (400 Kgs/ha), Andhra Pradesh (394 Kgs/ha) and Punjab (408 Kgs/ha). Comparatively lower productivity in Karnataka is mainly due to

- Large proportion of cotton area (80%) is under rainfed conditions
- Cultivation of both local and traditional varieties
• Duplicate pesticides
• Lack of adoption of improved production technology
• Lack of quality seeds
• Emergence of new pests and diseases year after year
• Indiscriminate use of irrigation water in command areas

**Distribution of Cotton Based Industries in Karnataka**

Table-2.1 depicts the distribution of cotton-based agro-industries in Karnataka. Cotton being a dry season crop suited to the arid climate of northern Karnataka, most of the cotton area is in the northern part of the state and as such the cotton - based industries are based in the northern districts of the state, in the hinterland of cotton growing area. Cotton is invariably ginned after its production in the field if it to used further. Therefore ginning units where the seeded cotton (kapas) is pressed between rollers to separate the seed and lint is found in the largest number. Lint needs to be pressed into compact form for its further utilization and as such pressing units rank the next highest in number. Pressing also aids transport of lint to factories. Cotton undergoes processes like combing, cleaning etc before it is spun into yarn, which is further utilized for the creation of textiles. Thus spinning units rank the third highest in number followed by cottonseed oil extraction units which has gained popularity as an economical and a
Table-2.1: Distribution of Cotton based industries in Karnataka

<table>
<thead>
<tr>
<th>District</th>
<th>Ginning</th>
<th>Pressing</th>
<th>Cotton seed oil extraction</th>
<th>Spinning units</th>
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<td>36</td>
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health promoting cooking oil during the last decade. However, most of the cotton based agro-industries is centered around textile production.

2.1 Area, Production and Yield of Cotton in Karnataka

2.1.1 Area under cotton in major districts of Karnataka state

The area under cotton in the important districts is presented in Table-2.2. It is apparent from the table that there was a wide fluctuation over the years in the cotton area for all the districts from 1970-71 to 1997-98. The decadal analysis revealed that in the case of Belgaum district, area under cotton decreased from 61,139 hectares in 1970's to 55,079 hectares in 1980's, while it again picked up in 1990's recording an area of 78,297 hectares. However, in the case of Bellary, Bijapur, Dharwad, Gulbarga and Raichur district the area under crop declining trend. In the case of Bellary district, the area under cotton reduced from 1, 93,628 in 1970's to 1, 19273 hectares in 1980's and to 1, 71,315 hectares during 1990's. 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 share of Bellary district in the total cotton area during 1990's was the highest (28.09%), closely followed by Dharwad (27.57%), Belgaum (12.84%), Raichur (12.83), Bijapur and Gulbarga District. Area under cotton for a State as a whole showed a declining trend over the years. It was 1061775 hectares in 1970's,
### Table-2.2: District-wise Cotton Area and their share in Karnataka (1970-71 to 1997-98)

(Hectares)

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Year/Particulars</th>
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<th>Bijapur</th>
<th>Dharwad</th>
<th>Gulbarga</th>
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<th>State</th>
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declined to 7,64,382 hectares in 1980’s and to 6,09810 hectares during 1990’s. 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.

2.1.2 Production of cotton in major districts of Karnataka state

In the case of Belgaum district in 1970’s, the average cotton production (Table-2.3) was 32091 bales (5.29 % of State’s total) which increased to 88,039 bales (13.20%) and 116920 bales (13.89%).

The share of Bellary district in the State’s total cotton production was 20.86 per cent which declined to 18.22 per cent during 1980,s and to 10.85 per cent during 1990’s. While, 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 per cent in 1990’s.

In the case of Dharwad district, the production of cotton showed increasing trend over the years. The proportion of cotton production in State’s total increased from 20.28 per cent in 1970’s to 24.43 percent in 1990’s. However, there was a sharp decline in the share of production with respect to Gulbarga district from 11.32 per cent in 1970’s to 1.97 per cent in 1990’s. Same trend was noticed for Raichur district where in it declined from 31.84 percent in 1970’s to 13.39 per cent in 1990’s.
<table>
<thead>
<tr>
<th>Sl No</th>
<th>Year/Particulars</th>
<th>Belgaum</th>
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<td>20.28</td>
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<td>18.22</td>
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<td>5581</td>
<td>105959</td>
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<td>94577</td>
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<td>174066</td>
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<td>91312</td>
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<td>112690</td>
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</tr>
<tr>
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<td>% in state's total</td>
<td>13.89</td>
<td>10.85</td>
<td>7.36</td>
<td>24.43</td>
<td>1.97</td>
<td>13.39</td>
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</tr>
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</table>

However, the production of cotton in the state showed an increasing trend.

2.1.3 Yield of cotton in major districts of Karnataka state

The yield performance of cotton in Karnataka over the years is presented in Table-2.4. It could be observed from the table that during 1970's the cotton productivity was 110 Kgs/ha with relatively higher productivity in the irrigated districts viz., Bellary (129 Kgs/ha) and Raichur (127 Kgs/ha). Except for Bijapur district the productivity was around a 100 Kgs/ha. There was a considerable improvement in the cotton productivity during 1980's. The productivity was the highest in the Belgaum district (295 Kgs/ha) followed by Bellary (241 Kgs/ha), Raichur (154 Kgs/ha) and Dharwad (145 Kgs/ha). However, there was decline in productivity of cotton in Gulbarga district. In the last decade, (1990s) there was improvement in the cotton productivity in all the districts. Belgaum district again recorded the highest productivity of 307 Kgs/ha followed by Gulbarga (337 Kgs/ha), Raichur (302 Kgs/ha), Bellary (256 Kgs/ha), Bijapur (240 Kgs/ha) and the least productivity was observed in the case of Dharwad (240 Kgs/ha). 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
Table-2.4: District-wise Cotton Productivity in Karnataka (1970-71 to 1997-98)

(Kgs/hectares)

<table>
<thead>
<tr>
<th>SI No</th>
<th>Year/Particulars</th>
<th>Belgaum</th>
<th>Bellary</th>
<th>Bijapur</th>
<th>Dharwad</th>
<th>Gulbarga</th>
<th>Raichur</th>
<th>State</th>
</tr>
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<td>1970-71 .</td>
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<td>91</td>
<td>53</td>
<td>68</td>
<td>127</td>
<td>127</td>
<td>95</td>
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<tr>
<td>2</td>
<td>1971-72</td>
<td>94</td>
<td>106</td>
<td>42</td>
<td>75</td>
<td>79</td>
<td>142</td>
<td>98</td>
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<tr>
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<td>1972-73</td>
<td>99</td>
<td>127</td>
<td>99</td>
<td>86</td>
<td>119</td>
<td>119</td>
<td>115</td>
</tr>
<tr>
<td>4</td>
<td>1973-74</td>
<td>107</td>
<td>118</td>
<td>107</td>
<td>100</td>
<td>144</td>
<td>144</td>
<td>125</td>
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<td>100</td>
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<td>1975-76</td>
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<td>89</td>
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<tr>
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<td>69</td>
<td>97</td>
<td>99</td>
<td>127</td>
<td>110</td>
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<tr>
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<td>1988-89</td>
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<td>315.5</td>
<td>314.5</td>
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<td>240</td>
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<td>256</td>
<td>240</td>
<td>232</td>
<td>337</td>
<td>302</td>
<td>291</td>
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</tbody>
</table>

1980's onwards by the public and private sector companies and the Stare Agricultural Universities.

2.2 Growth performance of cotton in major districts of Karnataka state

Growth rate for cotton (Table-2.5) was calculated for Karnataka state for the period 1970-71 to 1999-2000. The entire period was plotted on a graph depicting cotton area and production. Trend equations were used to select cut-off points or break points, if any, in cotton area and production for each of the district of the state and finally, for the state as a whole. Growth rates in area, production and productivity of cotton, in present study, were analyzed by fitting functions using Ordinary Least Squares (OLS) method. Every necessary transformation was made for the non-linear forms to fulfill the assumptions of OLS method. To measure growth rates of area/production/productivity, compound growth rate model was used. Exponential function, compound growth rate was computed for the selected districts and the state as a whole. The exponential functional form was fitted to the data on area, production and productivity of cotton and results are discussed in the following sections.

The compound growth rate analysis was carried out for assessing the general trend in area, production and productivity of cotton in
Karnataka and important cotton growing districts for a period from 1970-71 to 1997-98.

The exponential functional fitted to the data on area, production and productivity of cotton was of the form:

\[ Y = AB^t \]

Where,

\[ Y = \text{area/production/yield as the case may be} \]

\[ t = \text{time period stated as years, and} \]

\[ A, B = \text{parameters to be estimated.} \]

The function was converted into logarithmic form as follows:

\[ \log Y_t = (\log A) + t (\log B) \]

OLS method was used for estimation of parameters from which the compound growth rates were then computed using this relationship. Time series data on area, production and productivity of cotton in major cotton growing districts and the state as a whole.

Results on growth in area, production and yield of cotton are presented in Table-2.4. It could be seen from the table that in spite of decrease in area under cotton in the state by 2.97 per cent, there was increase in the production of cotton by 1.54 per cent due to increased productivity by 5.17 per cent. The decline in area and increase in the
Table-2.5: Compound Growth Rate (CGR) of Cotton Area, Production and Productivity in Major Cotton Growing Districts of the State (1970-71 to 1997-98)

<table>
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<tr>
<th>Sl</th>
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<th>Production</th>
<th>Yield</th>
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<td></td>
<td>‘b’ Value</td>
<td>‘t’ value</td>
<td>CGR (%)</td>
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<td>-1.18</td>
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<td>-3.04</td>
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<tr>
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<td>Raichur</td>
<td>-0.07</td>
<td>-5.92</td>
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</tr>
<tr>
<td></td>
<td>State</td>
<td>-0.03</td>
<td>-7.31</td>
<td>-2.97</td>
</tr>
</tbody>
</table>
production and yield was statistically significant as revealed by the t statistics.

Among the district, there was a increase in the area, production and productivity of cotton in Belgaum district by 1.14 per cent, 7.11 per cent and 6.31 per cent respectively. The above growth rates were statistically significant. However, the magnitude of decline in area (12.92%) and production (8.68%) was the highest in Gulbarga district. But rate of growth in yield was positive (5.13 %). The same trend was noticed in the case of Bijapur and Raichur district where in the growth in area (9.00% and 6.30% respectively) and production (3.33% and 3.42% respectively) and was statistically significant. While in the case of Dharwad district, despite decline in cotton area (2.49%) there was increase in the production by 2.78 per cent due to sharp increase in the yield by 4.73 per cent.

REFERENCES:


2. GIRIMA ABOMA ARITI, 2002, Growth and Instability of Cotton Production in Karnataka. M.Sc.(Agri.)Thesis, Department of
Agricultural Economics, College of Agriculture, University of Agricultural Sciences, Dharwad.


