Growth of Cotton Cultivation: A Study in Tamil Nadu

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Abstract: Cotton is an important cash crop and source of livelihood for nearly 15 million farmers in 10 India States. In India, 60% of the total cropped area is classified as dry land or rain fed area representing 40% of the total agricultural production. Tamil Nadu is one of the major producers of the cotton in India along with Maharashtra (35.50 %) followed by Gujarat (16.32 %), Karnataka (9.20 %), Andhra Pradesh (8.17%), Punjab (8.51 %), Madhya Pradesh (7.21 %), Haryana (5.91 %), Rajasthan (5.45 %), Tamil Nadu (3.16 %). during 2012-2013. Cotton one of the principal crops in India and enjoys pride of place and unique position in our country. Against this background, this study is focused on growth rate of cotton. Cotton is one of the most important textile fibres in the world, accounting for 35% of the world fibre use. Cotton was first cultivated in the Old World about 7,000 years ago, by the inhabitants of the Indus Valley Civilization. This civilization covered a huge swath of the north-western part of the Indian subcontinent, comprising today parts of eastern Pakistan and north-western India.

Keywords:- Cotton, Area, Production and Productivity.

Introduction

India is the largest producer of the cotton in the world. Cotton plays a considerable role in economy in various countries. It provides both direct and the indirect employment to various people through its various operations. Cotton is cultivated in various countries and it is cultivated about 12.19 million hectares with production of 37.10 million bales ranking second next to China. Cotton is an important cash crop and source of livelihood for nearly 15 million farmers in 10 India States. In India, 60% of the total cropped area is classified as dry land or rain fed area representing 40% of the total agricultural production. The area, production and productivity of the cotton are subject to fluctuations depending upon various factors viz., Climate condition, Availability of the technology, Lack of the Government support, Industrial development and the Real estate.

Cotton is the world’s most popular textile raw material and referred to as the King of fibers or White gold. Worldwide cotton is grown in over 100 countries. The cotton is grows well under (warm) tropical climate, with long dry season (over three months) followed by sufficient rains. Originally from India, cotton has been around for over 7,000 years. The maximum area is covered by the hybrids. Cotton is grown in the nine major states in three different zones. Punjab, Haryana and Rajasthan in north zone. Maharashtra, Gujarat and Madhya Pradesh in central zone and Andhra Pradesh, Karnataka and Tamil Nadu in the south zone are the major cotton growing states in India.

Review of literature

A large number of research studies have been conducted on growth of cotton cultivation both in India and the abroad. The available literature on the selected topic reveals that the research studies of cotton cultivation back to early forties up to the present period. An attempt is made here to review some of the selected works in this direction.

Edwin Kenamu et al. (2014) made a study to analyse the performance of the cotton sub-sector in Malawi, in terms of output, area and productivity, since independence. For this study, the secondary data have been used. The required secondary data have been collected from United States Department of Agriculture and the Ministry of agriculture of the Malawi Government. Such collected data have been analysed with Exponential growth rate in area, production and productivity and t-test for testing statistical significance of change in area, output and productivity. It is found that statistically insignificant growth in area, output and yield before and after the implementation of SAPs. They suggested that the cotton subsector in Malawi has been quite stable.

Mukesh Kumar et al. (2015) had reported a study to analysis the trend and growth of area, production and Productivity of Non-Food grain/commercial crops in India and to analyze the production and productivity status of Non-Food grains/commercial crops in India. For the study, the secondary data have been used. The required
secondary data have been obtained from the secondary sources such as RBI Data Base. Such collected data have been analysed with Compound growth rates, Means, Standard Deviations and Co-efficient of Deviations. It is found that the compound growth rate of productivity of non-food grains showing a fluctuating trend. They concluded that the average areas under the cultivation of major commercial crops like oilseed, coffee, cotton, sugarcane and tea has increased during the study period.

Josily Samuel et al. (2015) made a study to analyses the state wise production scenario of cotton over the years as well as the export composition and competitiveness. For the study, the secondary data have been used. The required secondary data have been collected from Centre for Monitoring Indian Economy Pvt. Ltd. Such collected data have been analysed with annual compound growth rate. It is found that the cotton cultivated area was the highest in Maharashtra 35.50 per cent followed by Gujarat 16.32 per cent, Karnataka 9.20 per cent, Andhra Pradesh 8.17 per cent, Punjab 8.51 per cent, Madhya Pradesh 7.21 per cent, Haryana 5.91 per cent, Rajasthan 5.45 per cent and Tamil Nadu per cent 3.16 per cent. They concluded that the Cotton is one of the major rain fed crop in the country, making India the second largest producer and a major exporter in the world.

Siva Sankar et al. (2015) tried to analysis the growth and instability in cotton area, production and productivity during the period 1970-71 to 2013-14. For the study, secondary data have been used. The required secondary data have been collected from Cotton Advisory Board, Central Institute for Cotton Research, and various bulletins of the International Cotton Advisory Committee. Collected data have been analysed with Annual Compound Growth Rate and Coefficient of Variation. Fitting Exponential Function. It is found that the cotton area registered a negative insignificant annual compound growth rate at -0.0433 per cent per annum in world while India fetched a positive insignificant growth at 0.3631 per cent per annum.

Sheikh Mohd Mouzam et al. (2015) in their study to examining the growth rates in area, production and productivity of major crops in the state of Andhra Pradesh. For this study, secondary data have been used. The required secondary data have been collected from Season and Crop Reports and Handbook of Statistics. Collected data have been analysed with growth rates were estimated using exponential growth function. It is found that the overall growth rates of area, production and productivity of cotton has positive growth rates.

On the basis of the above reviews, it is clear that the present study is differing from other studies in the aspect of the scope, objectives, methodology and the area of the cotton.

Scope of the study

This study is confined to state of Tamil Nadu in India. Cotton is being grown in almost all the states of the India. The state of the Tamil Nadu is one of the leading states in cotton cultivation accounted for 3.16% of the total Indian cotton production in recent years. The present study is based on secondary data.

Objective of the study

The objective of the present study is making to examine the growth rates of area, production and productivity of cotton.

Methodology

The present study is based on the secondary. The required secondary data have been collected from Cotton Advisory Board from 2004-05 to 2013-14.

Statistical tools used

From the collected data have been analysed by using various Statistical tools like Range, Arithmetic Mean, Standard Deviation, Compound Growth Rate and Co-efficient of the Variation were computed by using statistical package for social science (SPSS 21 version).

Compound Growth Rate of Cotton at National Level

In the present, all possible efforts have been made to collect the data relating to Area, Production and productivity. Such collected data have been analyzed with help of Compound Growth Rate.

There are different methods for computing Compound Growth Rate viz., Trend line, Least squares, Linear equation and Exponential Function. In the present study Exponential Function is used.

As per this method, Compound Growth Rate has been calculated by using the following formula:

\[ Y_t = ab^t \]

Where
\( a = \) constant
\( b = \) regression co-efficient
\( t = \) time variable in years (1,2,.........10)
\( b = (1+r) \) with \( r \) as compound growth rate.

It is in the log form as

The Compound Growth Rate has been calculated as

\[ \text{Compound Growth Rate} = \left( \frac{\text{antilog} b-1}{100} \right). \]
The result of the Compound Growth Rate analysis an area, production and productivity at national level is presented in the Table.1.

**TABLE. 1**

**COMPOUND GROWTH RATE OF THE COTTON AT NATIONAL LEVEL**

<table>
<thead>
<tr>
<th>Year</th>
<th>Area</th>
<th>Annual Growth Rate</th>
<th>Production</th>
<th>Annual Growth Rate</th>
<th>Productivity</th>
<th>Annual Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004-05</td>
<td>87.86</td>
<td>-</td>
<td>243.00</td>
<td>-</td>
<td>470</td>
<td>-</td>
</tr>
<tr>
<td>2005-06</td>
<td>86.77</td>
<td>-1.24</td>
<td>241.00</td>
<td>-0.82</td>
<td>472</td>
<td>0.42</td>
</tr>
<tr>
<td>2006-07</td>
<td>91.44</td>
<td>5.39</td>
<td>280.00</td>
<td>16.19</td>
<td>521</td>
<td>10.38</td>
</tr>
<tr>
<td>2007-08</td>
<td>94.14</td>
<td>2.96</td>
<td>307.00</td>
<td>9.64</td>
<td>554</td>
<td>6.33</td>
</tr>
<tr>
<td>2008-09</td>
<td>94.06</td>
<td>-0.08</td>
<td>290.00</td>
<td>-5.53</td>
<td>524</td>
<td>-5.41</td>
</tr>
<tr>
<td>2009-10</td>
<td>103.10</td>
<td>9.61</td>
<td>305.00</td>
<td>5.17</td>
<td>503</td>
<td>-4.00</td>
</tr>
<tr>
<td>2010-11</td>
<td>111.42</td>
<td>8.07</td>
<td>339.00</td>
<td>11.14</td>
<td>517</td>
<td>2.78</td>
</tr>
<tr>
<td>2011-12</td>
<td>121.78</td>
<td>9.29</td>
<td>353.00</td>
<td>4.13</td>
<td>493</td>
<td>-4.64</td>
</tr>
<tr>
<td>2012-13</td>
<td>119.78</td>
<td>-1.64</td>
<td>365.00</td>
<td>3.39</td>
<td>518</td>
<td>5.07</td>
</tr>
<tr>
<td>2013-14</td>
<td>115.53</td>
<td>-3.54</td>
<td>375.00</td>
<td>2.73</td>
<td>552</td>
<td>6.57</td>
</tr>
</tbody>
</table>

Range 35.01  134  84
Mean 102.59  309.80  512.40
SD 13.52  47.75  28.77
CGR (%) 4.10*  5.00*  1.00
CV (%) 13.18  15.41  5.61

Source: Cotton Advisory Board. SD: Standard Deviation, CGR: Compound Growth Rate and CV: Co-efficient of Variation. Area in lakh hectares, Production in lakh bales of 170 kgs and Yield kgs per hectare.

Table.1 shows that the Compound Growth Rates in production and area are positive and it is statistically significant for production and the area, the annual growth rate range from -0.82 to 16.19 in production. Further, it is found that the Compound Growth Rate (5.00%) in production is more than the area and productivity. Hence, it is concluded that the area and the production are increased but not proportionately to the productivity of the cotton.

The results from the Co-efficient of Variation show that the production of the cotton has maximum variability of the 15.41%. Whereas, it is 13.18% for area and 5.61% of the productivity.

**COMPOUND GROWTH RATE OF THE COTTON AT STATE LEVEL**

Tamil Nadu is one of the major producers of the cotton in India along with Maharashtra (35.50 %) followed by Gujarat (16.32 %), Karnataka (9.20 %), Andhra Pradesh (8.17%), Punjab (8.51 %), Madhya Pradesh (7.21 %), Haryana (5.91 %), Rajasthan (5.45 %), Tamil Nadu (3.16 %), during 2012-2013 (Josily Samual et al.2015). Major Cotton growing Districts are Dharmapuri, Erode, Coimbatour, Dindigul, Madurai, Salem, Krishnagiri, Theni and Dindigul. Tamil Nadu accounted for 3.16% of the total Indian cotton production in recent years. Cotton is grown almost in all the states of the India. The result of the Compound Growth Rate analysis an Area, Production and Yield at state level is presented in the Table.2.
Table 2 shows that the Compound Growth Rates in production and the productivity are positive and it is statistically significant for production and the productivity, the annual growth rate range from -4.09 to 40.03 in productivity. Further, it is found that the Compound Growth Rate (2.10%) in production is more than the productivity and the area. Hence, it is concluded that the production and the productivity are increased but not proportionately to the area of the cotton.

The results from the Co-efficient of Variation show that the production of the cotton has maximum variability of the 16.79 %, whereas, it is 13.69% for productivity and 12.39% of the area.

Suggestion and Conclusion

In the present study, it is found that the productions of the cotton in Tamil Nadu 0.50 per cent are declining. Hence, it is suggested that the government of the Tamil Nadu should initiate the provision of the cotton seeds, fertilizers and pesticides at a subsidised rate through Co-operations societies. if government has consider this suggestion seriously, it is hope that more number of the cotton growers will come forward to cultivate the cotton in more area and this will increase the cotton economy of the nation.

The study has been shows that the cotton area, production and productivity at national level and State level have been grown over past 5000 years. However, the area, production and productivity have been grown at various rates. The main determinants of growth in cotton production were found to be increasing land allocation to cotton. Cotton is one of the most important commercial cash crops in India and plays a dominant role in the industrial and agricultural economy of the country.

References


