Research Paper Economics

Impact of WTO on Cotton in India

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ABSTRACT

The present study aims at analyzing impact of WTO on cotton in India. The paper analyzes the growth rates of area, production and productivity of cotton during the period 1951-52 to 2013-14.The study period was divided into pre-WTO period (1964-65 to 1993-94) and post-WTO period (1994-95 to 2013-14). The growth in area, production and productivity during post-WTO were 1.69, 5.88 and 4.09 percent, respectively. During pre- WTO of -0.18, 3.41 and 2.83 percent. So the study revealed that during the post-WTO period there was positive growth in the area, production and productivity of cotton in India. This may be due to policies and programmes besides Genetically Modified crops and better crop practices. It concluded that Indian cotton has been to increase in productivity with profitable and reduce risk in production which will sustain the high growth rate experienced during post WTO period

KEYWORDS Growth rate, Area, Production, Productivity, Cotton.

Introduction

Cotton is an important fiber crop of global significance, which is cultivated in tropical and subtropical regions of more than seventy countries the world over. Cotton is an important commercial crop of India and plays a key role in the national economy. About 60 million people get employment either directly or indirectly in the agricultural and industrial sectors of cotton production, processing, textiles and related activities and by way exports, the foreign exchange earnings of cotton amounts Rs.3837.33 crores (*CAB, 2008*).With economic liberalization and globalization sweeping the world there is a scope for our country to play a leading role in the cotton production and export. Annual production of cotton has been showing a steady increase in the recent years supported by rise in acreage, better GM seeds and improved practices. India's cotton production was 37.5 million bales and productivity was 552 kg/ha in 2013-14.

At the time of Independence in 1947, India was producing 2.3 million bales of short and medium staple cotton from 4.4 million hectares. Hence long and extra-long staple cotton was imported. To mitigate the adverse effect of partition of India and Pakistan on cotton production and quality, a "Grow More Cotton" programme was launched in 1950 by the Government of India with a view to increase the acreage under cotton and to raise the productivity (*Agarwal.O.P, 2008*).During the last few decades, there has been a nine-fold increase in cotton production and more than eight-fold increase in productivity. The demand for cotton is increasing due to increase in population and its use in various sectors. The information and analysis about cotton in India before and after WTO will be useful for planning and further action. Hence an attempt was made in this paper to estimate the Compound Growth Rate (CGR) of Area, Production, Productivity, Export and Import of cotton during pre and post WTO period.

Materials and Methods

The present study is based on the secondary data collected from Cotton Advisory Board, Ministry of Agriculture, Government of India. The time series data on Area, Production, Productivity, Exports and Imports were collected for a period from 1951- 52 to 2013-14. The study period was divided into pre-WTO period (1970- 71 to 1993-94) and post-WTO period (1994-95 to 2013-14).The analysis was carried out for India and also for major cotton growing states.

Compound growth rates (CGR) is computed by applying formula: $Yt = ab^t$

In the log form, it is written as:

$\text{Log } Y_t = \text{Log } a + t \log b$

Where,

Y_t = Area/production/productivity /import/export of cotton in the year 't'

t = time element which takes the value 1, 2, 3, ……. n

a = intercept

b = regression coefficient.

The value of b is computed by using OLS method. Further the value of CGR was worked out as follows:

CGR (r) = (antilog b - 1) x 100

Student't' test was used to test the significance of the CGR

Results and discussion

Over the years, country has achieved significant quantitative increase in cotton production (Table.1). Till 1970s, country used to import massive quantities of cotton in the range of 0.8 to 0.9 million bales per annum. However, after the Government launched special schemes like Intensive Cotton Production Programmes through successive five-year plans, that cotton production received the necessary impetus. As a result of initiation of systematic cotton improvement programmes and the launch of AICCIP on 1st April 1967 for cotton improvement involving genetic, production and protection technologies has resulted in increasing country's productivity by 7-8 folds from 88 kg to 553 kg lint per ha.

It is evident from the table that Cotton area had increased from 6.56 m ha in 1951-52 to 12.19 m. ha in 2011-12 but in 2013-14 slightly reduced to 11.55 m. ha Whereas cotton pro-

duction had increased from 3.28 million bales to 37.5 million bales (2013-14) ie., nearly 10 folds increase during the period of analysis. Cotton productivity increased to nearly 7-8 folds during the same period. Cotton productivity was only 85 kg/ha in the year 1951-52 and increased to 552 kg/ha in the year 2013-14. Increase in productivity and production was more prominent after 2000-01.

Growth of Area, Production and Productivity of Cotton in India

Compound growth rate of area, production and productivity of cotton in India was carried out for the period before and after the establishment of WTO and the results are presented in Table 2. It is evident from the table that there is significant growth in area, production and productivity during the post-WTO than the pre- WTO. The growth in area, production and productivity during post-WTO were 1.69, 5.88 and 4.09 percent respectively, whereas during pre- WTO period the area has decreased (-0.18) and production and productivity registered positive growth rates of 3.41 and 2.83 percent, respectively.

State-wise Growth of Area, Production and Productivity of Cotton

CGR of area under cotton:

Compound growth rates were worked out for major cotton growing states and the results are presented in Table 3. It could be seen from the table that area under Cotton showed negative growth rate in Gujarat, Madhya Pradesh, Karnataka and Tamil Nadu, during pre WTO period. while the same was negative in five states viz., Punjab, Haryana, Rajasthan, Karnataka and Tamil Nadu during post WTO period. Growth rate of cotton area was negative, but t- values indicated that this negative growth was statistically not significant. It could be seen from the table 2 that growth rate of cotton area was significant in Gujarat, Maharashtra, Madhya Pradesh, and Andhra Pradesh during post – WTO than the pre - WTO, the growth rates were 4.61, 1.16, 1.53, 3.39 percent, respectively. For other states like Punjab, Haryana and Rajasthan growth rate of cotton area was not significant after- WTO. During both the periods growth rate of cotton area was negative but significant in Tamil Nadu and Karnataka.

CGR – cotton Production:

The decline in area was reflected in the production in Gujarat state. Though the productivity witnessed significant positive growth rate during post – WTO it was 9.83 percent in Gujarat, 8.21 percent in Maharashtra and 3.98 percent in Punjab. The growth rate of production in pre WTO period was higher than post WTO in Haryana, Andhra Pradesh, and Karnataka whereas in Tamil Nadu, Madhya Pradesh and Rajasthan the growth rate was negative during post WTO (table 3).

Growth of Cotton Productivity:

The overall growth rate of cotton productivity was positive and significant for major cotton growing nine states expect Madhya Pradesh which has shown negative growth rate in post WTO. For the states of Punjab, Haryana, Gujarat, Maharashtra, and Tamil Nadu the growth rate of cotton productivity was higher in post WTO than pre WTO whereas in Rajasthan, Andhra Pradesh, and Karnataka growth rate of cotton productivity in post WTO was lesser than pre WTO period. The growth rate of productivity was found to be highest in Maharashtra 7.17 percent followed by Tamil Nadu with 6.85 percent. This may be due to adoption of new technologies and other cultivation practices. Tamil Nadu ranks first in productivity of cotton during the last two years more than one tonne per ha. India's average productivity was around 500 kilograms per ha.

Exports and Imports of Cotton in India:

India's imports was 25.26 lakh bales in 2001-02 but declined to 7 lakh bales in 2012-13 due to the heavy expansion of domestic cotton industry. India's import and export are shown in fig 1.

For India, the imports and exports have been increased for all the years before and after the WTO. The exports remained more than imports for whole of the years before and after the WTO, except 1993 and 1994. They are the years before the WTO. The indices of exports (as percentage of CGR) were 2.11 before the WTO and it is 30.34 after the WTO which reveals that WTO agreements are favorable to cotton trade. While the index of imports (as percentage of CGR) before the WTO was -6.13 and after the WTO is 6.76 (see table 4), which shows that imports have been significantly increased rapidly after the WTO. It is concluded that after the WTO the trade has been increased.

CONCLUSION:

The analysis of impact of WTO on cotton in India revealed that during post WTO period there was a significant increase in Area, Production, Productivity and registered high growth rate. This may be due to policies and Programs and such as rehabilitation of irrigation systems, adoption of improved technologies, strengthening of extension, reducing risks in cotton production.

Growth rate analysis showed that Area under cotton cultivation during post WTO period was 1.69 percent as against the pre WTO period which has negative growth rate (-0.18 percent) in India. State wise analysis revealed that Gujarat, Maharashtra, Andhra Pradesh together account for around three fourth of area under cotton. The compound growth rate of both Area and production was highest in Gujarat followed by Maharashtra during post WTO period. The growth rate of productivity of cotton was found to be highest in Maharashtra followed by Tamil Nadu. This may be due to technologies and better management practices.

The Export and Import of cotton in India showed significance increase during post WTO period. Import of cotton has reduced gradually declined from 25 lakh bales in 2001-02 to 7 lakh bales in 2012-13. India is the second largest exporter of cotton after 2006-07, boosted by technologies and export liberalization policy. It is concluded from the study that the WTO agreements are favourable to cotton in India.

Tables and Figures

Table 1: Area, Production and Yield of Cotton in India

Year	Area (m ha)	Production (m bales)	Yield (kg/ha)
1951-52	6.56	3.28	85
1955-56	8.09	4.18	88
1960-61	7.61	5.61	25
1965-66	7.96	4.85	104
1970-71	7.61	4.76	106
1975-76	7.35	5.95	138
1980-81	7.82	7.01	152
1985-86	7.53	8.73	197
1990-91	7.44	9.84	225
1995-96	9.04	12.86	242
2000-01	8.58	14.00	278
2005-06	8.68	24.40	478
2010-11	11.14	32.50	475
2011-12	12.19	34.50	496
2012-13	11.97	36.50	518
2013-14	11.55	37.50	552

Table 2: Compound growth rate of Area, Production and Productivity of Cotton in India

Sl.no	Particulars	Pre WTO (%)	Post WTO (%)
1.	Area	- 0.18	1.69
2.	Production	3.41	5.88
3.	Productivity	2.83	4.09

Table 3: State wise CGR of Area, Production and Productivity of Cotton in India

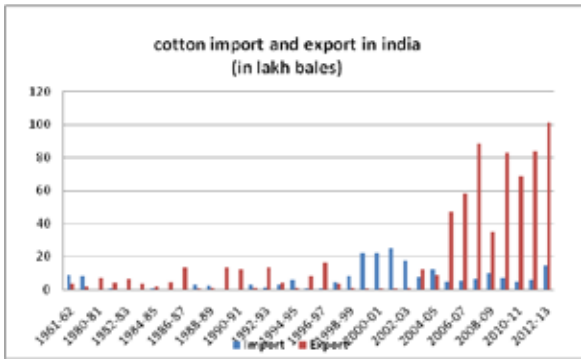
Particulars	Area		Production		Productivity	
	pre WTO	post WTO	pre WTO	post WTO	pre WTO	post WTO
Gujarat	-3.56	4.61	-0.21	9.83	1.69	5.13
Maharashtra	0.04	1.16	2.02	8.21	1.77	7.17
Andhra Pradesh	3.22	3.39	11.15	4.96	7.42	1.89
Madhya Pradesh	-1.33	1.53	2.90	-0.08	5.46	-1.45
Punjab	1.88	-1.25	3.57	3.98	1.40	5.79
Haryana	3.78	-1.12	4.96	3.24	1.15	4.99
Rajasthan	2.04	-2.89	6.63	-0.87	3.81	2.39
Karnataka	-2.45	-2.08	3.15	0.88	4.23	3.36
Tamil Nadu	-2.06	-5.96	1.20	-0.86	2.66	6.84

Table 4: CGR of Import and Export of Cotton in India

Particulars	pre WTO	post WTO
IMPORT	-6.13 (-1.42)	6.76 (1.26)
EXPORT	2.11 (0.38)	30.34***(4.13)

***1% significant level, Figures in the parenthesis indicates t-value

Fig 1: Export and Import of Cotton in India



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