Production of cotton fiber and increasing possibilities of its revenue  
(The case of Samarkand region, Uzbekistan)

Abdusame Tadjiev Abduxamidovich¹, Olim Murtazayev²++, Husan Akbarov Uzbekxonovich³++, Ozod Tursunov Matlubovich⁴++++

¹ University of Genoa, Italy  
² Samarkand Agricultural University, Samarkand, Uzbekistan  
³ University of Genoa, Italy  
⁴ Mendel University in Brno, Czech Republic

Abstract. Cotton Agro-industrial Complex is an important, profitable and leading field for our Republic. This complex satisfies people demands for quality fabric, cloths, cotton seed oil, and soap and raw materials for cotton processing enterprises. Increasing social-economic efficiency of cotton row materials and processed products, especially main products is important in Uzbekistan, because, much more labor, land-water and material resources are used in producing and selling process of cotton products. In transition market economy, it is important to formulate of cotton complex organization system in regional scale, because, the volume of production and service sector in cotton complex are enough in regional scale. This study provides production factors analysis of cotton fiber which produced in Samarkand region of Uzbekistan. In order to analyze we selected cotton cleaning plants in Samarkand region as study area.

Keywords: cotton fibre, cotton seed, cost, revenue, capital, labour

JEL Codes: Q12.

1. Introduction

One of the priority directions of economic policy which implementing in Uzbekistan, is increasing efficiency of cotton processing. Cotton is an important and a strategic product that feeds many industries.

By processing of row cotton, different fiber, cotton seed, cotton wool and other productions are produced. They are sold due to processing to textile and light industry. After the ginning process of raw cotton, the fiber is used mostly in textile industry, and its crust is used as an animal food (oil cake and pulp). It is also used as cotton seed to be used in oil industry (Ebru Guven Solakoglu et.al, 2013). Cotton Agro-industrial Complex is an important, profitable and leading field for our Republic. Uzbekistan is one of the major cotton producers and exporters of ginned cotton in the world market. It takes sixth place in worldwide
cotton production (after China-25%, USA-25%, India-16%, Pakistan-9% and Brazil-5%) and second place in its export after USA (39%). Cotton fiber value in 2008 share made 12% from total export of the country (A. Alikulov, 2010). In 2013 Republic produced more than 3 million 360 thousand tons of raw cotton. (Report President of Uzbekistan Islam Karimov, 2013)

Increasing socio-economic efficiency of cotton raw materials and processed products, especially main products is important in Uzbekistan, because, much more labor, land-water and material resources are used in production and selling process of cotton products.

The structure of Cotton complex should be formed according to its essence, goal and objectives. All enterprises’ activities in cotton complex, must give attention to provide organizing production process as a continuously. (Murtazaev, 2009)

In this process, all subjects which are components of cotton complex, must provide to increase profit of cotton complex as a result of minimization all costs by using new technologies. In transition market economy, it is important to formulate of cotton complex organization system in regional scale, because, the volume of production and service sector in cotton complex are enough in regional scale.

So, in this article we try to describe the state of revenue and effect of production factors in cotton fiber in Samarkand region. This region is one of the largest regions in Uzbekistan. It produces 6% of cotton fiber in the Republic.

The primary objectives of this study are to estimate revenue, and to analyse inputs of cotton fibre production in Samarkand region.

1.1. Literature review

The problems of using efficiency of factors in increasing profitability level of the main cotton productions and marking prices of cotton raw materials, cotton fibre, cotton oil, fabric and other cotton products were described in some studies.

For example, development features of agroindustry complex in the Republic of Uzbekistan were described in N. Tukhliev’s work (1990), another Uzbek scientist K.A. Choriev studied in his research about using resource potential in agrarian sector (K.A. Choriev, 1992). Efficiency of cotton biologic sorts was learned by N.S. Xushmatov (2004). Besides, E.J. Yusupov studied development interactions between participants of agroindustry complex (E.J. Yusupov, 1998). Development of world cotton fibre trade was learned by R.B. Abdullaev (R.B. Abdullaev, 2000) and methodological issues of efficiency of cotton complex were described many papers of O. Murtazaev (2009).

Besides, some foreign researchers also described in their work about cotton complex efficiency. Ebru Guven Solakoglu et al., measured technical efficiency of cotton production, incorporating support premium payments as one of the background variables to capture the effect of premiums on efficiency scores for cotton production using stochastic frontier model in their study (Ebru Guven Solakoglu et al, 2013).


Yong Zheng and Yina Zhang studied Chinese Cotton Future Market by using cost of carry model. Their study proposed a fitness test of the cost of carry model and investigates pricing performance of the cost of carry model for the emerging markets-China cotton futures market (Yong Zheng and Yina Zhang, 2013).

Transition to market economy, deeply studying is demanded according to the mechanism of market economy in cotton complex sector for increasing economic efficiency.
2. Data and methodology

The main syllable of cotton agro-industrial complex is primary cotton processing enterprises. Fiber, cotton seed, cotton wool, lint and other produces are produced in these enterprises. Like these types of enterprises are belongs to “Sampakhtasanoat” regional stock joint company (RSJC). Nowadays there are 7 cotton ginning factories (Kattakurgan, Zirabulak, Juma, Chelak, Ziyadin, Yangikurgan, Mitan), 40 cotton preparatory points and some service limited liability companies in “Sampakhtasanoat” RSJC.

For this paper, the data collected from 7 cotton ginning factories which mentioned above in Samarkand region. First of all, let us review producing condition of cotton productions in the region. Table 1 described average cotton productions in cotton ginning factories during 2007-2011 years.

Table 1. Average production of cotton productions (tons)

<table>
<thead>
<tr>
<th></th>
<th>Cotton ginning factories</th>
<th>Total in the region</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Kattakurgan</td>
<td>Zirabulak</td>
</tr>
<tr>
<td>Cotton fibre</td>
<td>11965.4</td>
<td>11142.4</td>
</tr>
<tr>
<td>Technic cotton seed (for oil)</td>
<td>15286</td>
<td>13561.4</td>
</tr>
<tr>
<td>Cotton linters</td>
<td>902</td>
<td>678</td>
</tr>
<tr>
<td>Gin motes</td>
<td>250.2</td>
<td>203.6</td>
</tr>
<tr>
<td>Cotton wool</td>
<td>2.012</td>
<td>2.656</td>
</tr>
</tbody>
</table>

Source: Collection dates of “Sampakhtasanoat” regional stock joint company (RSJC)

Among productions in table 1 we are going to give more attention to analyze cotton fiber. This production is used mostly in textile industry. Figure 1 show the share of each cotton ginning factories on producing cotton fiber. The big share with 18 percent is Djuma cotton ginning factory, because, main volume of the cotton raw materials are produced in this area.

Besides, it is important to analyze obtained revenue from cotton fiber. In this paper we planned to attain this goal.

To achieve our aim, we used production function. Let’s briefly review about production function. Production function shows the ratio between the quantity used and the number of factors of production of the final product for this technique.

Consider first the classical case, when the amount of a product (P) is made with the help of n factors of production (F₁, F₂,......,Fₙ):

\[ P = f(F₁, F₂, \ldots, Fₙ) \]
Consider first the classical case, when the amount of a product (P) is made with the help of n factors of production (F_1, F_2, ..., F_n):

\[ P = f(F_1, F_2, ..., F_n) \]

Marginal productivity will:

\[ P_i = \frac{\partial f}{\partial F_i} \]

This is called a Cobb-Douglas function:

\[ P = F_1^{b_1} F_2^{b_2} ... F_n^{b_n} \]

The quantities a, b_1, b_2, b_3, ..., b are constant. This function can be expressed in everyday life and in logarithmic form:

\[ \log P = \log a + b_1 \log F_1 + b_2 \log F_2 + ... + b_n \log F_n \]

We now see that the elasticity is constant bi number of products in relation to the number of relevant factors.

\[ \frac{EP}{EF_i} = b_i = \left( \frac{\partial f}{\partial F_i} \right) \frac{F_i}{P} \]

This can be understood as follows: if the amount of all other factors of production is constant and only the number Fi is increased by 1%, the amount of product will increase by about bi percent (Gerhard Tintner, 1965).

By using this method which above mentioned, we put following marks to analyse cotton fibre production in the region: P - total fibre production (mil. UZS), F_1 – labour expenses (per day), F_2 - main production costs (mil. UZS).

3. Results

By using multiple regression model, we estimated regression equation and defined regression coefficients and obtained following results:

The regression equation (evaluating equation of regression):

\[ P = 0.122 + 0.04 F_1 + 0.943 F_2 \]
As a result of using regression coefficient to the formula that mentioned above, production function obtained as follow:

\[
\frac{\partial f}{\partial F1} = \frac{0.04 \times 21102}{39030.3} = 0.022
\]

\[
\frac{\partial f}{\partial F2} = \frac{0.943 \times 21102}{18323.4} = 1.10
\]

According to these equations that if the cotton ginning factories in Samarkand region are increased the labour expenses, that’s to say if labor resources increase one unit (a per day), total revenue will increase about 22 thousand UZS. And if production costs increased by 1 million UZS total revenue from cotton fiber will increase by 1.1 million UZS in the region.

4. Conclusion

Efficiently activity of cotton processing enterprises of cotton complex is dependent on the distance between cotton ginning factories and cotton raw material producers, and placement of cotton items, and service limit of cotton ginning factories.

By increasing productivity of cotton raw materials as an intensive in agriculture, increasing quantity of cotton fiber in the region is important. Besides, according to our analyses, to provide with new technics and technologies of enterprises may also reason to increase the revenue.

The cotton complex has one of the high ratings among national export industries. Developing new production technologies in combination with efficient control will provide increase of productivity. National reformers understand that maximizing benefits requires intensive work in strategic analysis and marketing of advantages and vulnerabilities within each of the main segments of cotton supply chain starting from grower to textile manufacturer.

5. Acknowledgements

The authors wish to thank Dr.Kh. Urdushev for his helpful comments and T. Sidikov who helped to collect data for illuminating the manuscript.

6. References


