

## Significance of Cotton Cultivation to Keep Sustainable RMG Sector in Bangladesh

*Md. NurUddin<sup>\*</sup>, Nayan Chandra roy, Md. Delwar hassain, and Md. Abdur Rahim*

Department of Textile Engineering, Dhaka University of Engineering & technology, DUET-1707, Bangladesh.

### ABSTRACT

The root (backward linkage) of RMG sector is fiber and cotton is the major fiber crop. The textile industry of Bangladesh predominantly depends on imported cotton. Annual demand is approximately 7 million bales (480 lbs. or 218 kg per bale) where, Bangladesh produces only 0.16 million bales in a year, which is less than 3% of the total requirement in spite of being agriculture dependent country. RMG sector is being contributed more than 80% of the total export earnings. This study illustrates that how we can reduce dependency on imported cotton and save the partial imported cost. To keep sustainable RMG sector, Bangladesh should cultivate cotton as well as reduce over dependency on imported cotton. In a year, more than \$3 billion is being spent to import cotton. If we can produce 1 million of bales in 2,42,000 hectares of land then we can save about 12% of total imported cotton, along with, \$279 million can be saved.

Keywords: Backward Linkage, Cotton Cultivation, Sustainable RMG Sector, Saving imported cost.

### 1. Introduction

Bangladesh has a glorious history in textile production. Backward linkage means the subsectors for RMG industry includes cotton production, spinning (cotton and synthetic yarn), weaving and knitting, dyeing and printing, and accessories [13]. Cotton is one of the important cash crops in Bangladesh. It is the main raw materials of textile industry. Annual requirement of raw cotton for textile industry of Bangladesh is estimated around 7 million bales (480 lbs. per bale) [6]. Local production is only about 0.16 million bales. Less than 3% of the national requirement is fulfilled through the local production. Remaining about 97% is fulfilled by imported raw cotton from different cotton exporting country including India, Australia, USA; Africa etc. according to the United States Department of Agriculture Bangladesh's cotton import will creep up day by day. The highest domestic cotton production was 160,000 bales in recent year, though Bangladesh is an agriculture dependent country. This amount of domestic production is negligible proportion of the total requirement of the country's textile industry. Although cotton is important cash crop, systems sceneries is rather marginal. The Garments industry has been flourishing in Bangladesh; [3] Readymade garments (RMG) accounts for about more than 76% of the total export earnings [2]. But cotton production did not increase as expected due to several constrains.

### 2. Research Aims

The aims of this research regarding the significance of cotton fiber production to keep sustainable RMG sector in Bangladesh are as follows:

- To reduce dependency on imported cotton by increasing domestic production for keeping sustainable RMG sector.

- To cultivate unused land for increasing domestic production of cotton fiber and to create workplace by establishing ginning factories.

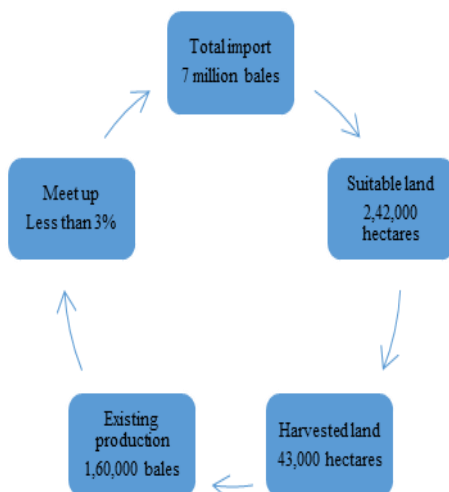
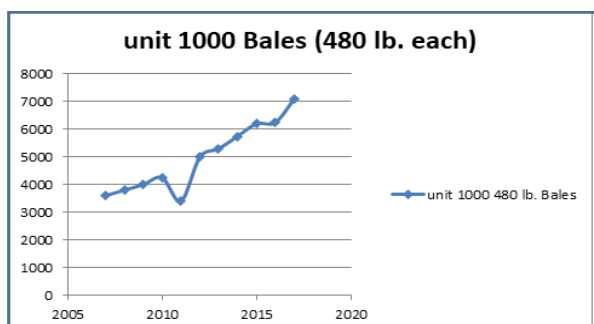
### 3. Literature Review

Cotton is growing mainly in south eastern zone, middle zone and northern part of Bangladesh [6]. It covers 32 districts of Bangladesh mainly Kushtia, Chuadanga, Jhenaidah, Meherpur, Magura, Jessore, Rangpur and Thakurgaon etc. Two types of cotton are grown in Bangladesh namely- i) Upland cotton (*Gossypium hirsutum*) & ii) Hill cotton (*Gossypium arboreum*) [5]. American cotton is cultivated in the South western region. Hill cotton is an indigenous variety and cultivated in Jhum system. Hill cotton is used for handloom cloths as well as grown for export. The total land area suitable for cotton cultivation estimated 2,42,000 hectares. cotton production is taking place in 35 districts out of 64 districts in Bangladesh. Although Bangladesh is agriculture dependent country, it can meet up only less than 3% of its cotton demand [1]. In recent year cotton is planted at 43,000 hectares [5], but production is about 160,000 bales. Genetically modified (GM) cotton can be cultivated in Bangladesh. Most importantly Bt cotton can be harvested easily. Bt stands for *Bacillus thuringiensis*. It is genetically modified cotton that has self-defense mechanisms to battle insects and pests like Bollworms which attack cotton balls in particular. This defense artillery is created by fusing genes of naturally occurring bacteria *Bacillus thuringiensis* commonly referred to as Bt. This fusion of genes creates a protein which protects the crop from external attacks by insects and pests. Colored cotton also can be cultivated. Colored cotton can be used by treating only pretreatment process [2].



**Fig.1** Cotton growing area in Bangladesh (CDB) [7]

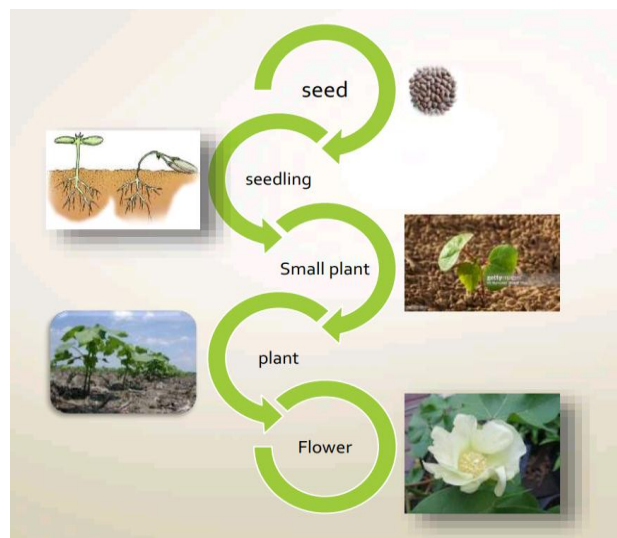
**Table 1** Growth of imported cotton (CDB) [7]



**Fig. 2** Present scenery of cotton cultivation

**Table 2** Cotton production in Bangladesh (CDB) [7]

Year	Area harvested (hectare)	Production(bales)	Production(tones)
2005/06	49,770	77,000	14,000
2006/07	42,100	70,530	12,824
2007/08	28,707	42,380	7,705
2008/09	32,600	50,600	9,200
2009/10	31,500	66,000	12,000
2010/11	33,500	80,000	15,545
2011/12	36,000	103,000	18,727
2012/13	39,000	129,000	23,455
2013/14	42,000	144,000	26,182
2014/15	42,700	152,534	27,675
2015/16	42,800	153,280	27,869



**Fig.3** Life cycle of cotton [12]



**Fig.4** Cultivation process of cotton [10]

#### 4. Important by-products from cotton seed (Cotton oil, Oil cake)

Cotton oil is one of the important edible used in many countries of the world which is lower in cholesterol than Soyabean. Cotton oil cake is another by-product of cotton seed and it is produced during well extraction. The oil cake is generally used for livestock feeding and fish feed. Cotton oil cake has high demand in the market for multiple uses with high percentage of protein.[12]



Fig.5 By-product of cotton [3]

#### 5. Discussion

In Bangladesh existing suitable land for cotton cultivation is approximately 2,42,000 hectares. Nowadays about 43,000 hectares of land is being cultivated, if we cultivate at remaining unused land(199000 H) then about 1 million of bales can be possible to produce in a year which may reduce about 12% bales of total import.

#### 6. Present problems

1. High price of pesticides and fertilizers
2. Pest attack
3. Difficulties of getting loans and high bank interest
4. Lack of training facilities
5. Lack of proper knowledge
6. Lack of modern technologies and management practices of cotton cultivation
7. Hazardous chemicals are used

#### 7. Solution of problems

1. Can be used eco-friendly pesticides
2. Modern agriculture technology can be used
3. Developing information network related to cotton research and development
4. Providing higher education and training to create qualified manpower
5. Need positive approach of government

#### 8. Recommendations

Genetically modified (GM) cotton can be cultivated in Bangladesh. Most importantly Bt cotton can be harvested easily. Bt stands for Bacillus thuringiensis. It is genetically modified cotton that has self-defense mechanisms to battle insects and pests like Bollworms which attack cotton balls in particular. This defense artillery is created by fusing genes of naturally occurring bacteria Bacillus thuringiensis commonly referred to as Bt. This fusion of genes creates a protein which protects the crop from external attacks by

insects and pests.[2] Colored cotton also can be cultivated. Colored cotton can be used by treating only pretreatment process.

#### 9. Advantages of Bt Cotton

- This eliminates the use of large amount of pesticides and insecticides which are harmful for the environment
- Increases yield of cotton due to effective control of bollworms
- Potential reduction in the cost of cultivation (depending on seed cost and insecticide costs).
- Reduction in environmental pollution by the use of insecticides.
- Bt cotton is ecofriendly and does not have adverse effect on parasites, predators, beneficial insecticides and organisms present in soil.

Table 3 Possible future scenery at a glance

Parameters	Possible Outcomes	Existing Sceneries
Suitable land	2,42,000 hectares	43,000 hectares
Number of bales	1 million	0.16 million
Demand meet up%	App. 12%	Less than 3%
Domestic production cost	\$150 million	\$24 million
Market price	\$429 million	\$69 million
Saved	\$279 million	\$45 million

#### 10. Conclusion

The study tried to show the compatibility of domestic cultivation in Bangladesh to improve cotton production, which is the main backward linkage of RMG. It is clear to all that, day after day the volume of imported cotton is being increased. This over dependency on imported cotton may not be sustainable for RMG sector in Bangladesh. Any time, this importing may be interrupt due to lack of diplomatic activities or any other problems. On that situation we need domestic production to keep the sustainability of RMG sector in Bangladesh. This illustrates present and future prospects of cotton cultivation as well as by-product produced from cotton seed. If the remaining unused land could be cultivated then we can save approximately 12% of imported cotton which may save about \$279 million per year of imported cost. Beside this, workplace can be created by establishing ginning factory. Although Cotton cultivation is much pesticide consuming, nevertheless, genetically modified Cotton may cultivate which may consume less pesticides.

## 11. References

- [1] Journal of textile and apparel technology management, NC state university, vol-6, issue-2, fall 2009, Available: file:///C:/Users/MD%20NUR%20UDDIN/Desktop/thesis/backward%20linkage%20of%20garments.pdf
- [2] Wikipedia contributors. (2018, April 20). Bt cotton. In *Wikipedia, The Free Encyclopedia*. Retrieved 14:02, May 2, 2018, Available: from [https://en.wikipedia.org/w/index.php?title=Bt\\_cotton&oldid=837303052](https://en.wikipedia.org/w/index.php?title=Bt_cotton&oldid=837303052)
- [3] Sher-e-bangla agricultural university Homepage, Available: file:///C:/Users/MD%20NUR%20UDDIN/Downloads/SAU201401\_01-12-05228\_11.pdf [Accessed, 30 May, 2018]
- [4] Research gate Homepage, Available: [https://www.researchgate.net/publication/275524220\\_Cotton\\_Production\\_in\\_Bangladesh\\_Current\\_Scenario\\_and\\_Prospect](https://www.researchgate.net/publication/275524220_Cotton_Production_in_Bangladesh_Current_Scenario_and_Prospect),
- [5] Backward Linkages In The Textile And Clothing Sector of Bangladesh Homepage, Available: file:///C:/Users/MD%20NUR%20UDDIN/Desktop/thesis/Backward%20Linkages%20in%20the%20Textile%20and%20Clothing%20Sector%20of%20Bangladesh.pdf [Accessed, 15 June, 2018]
- [6] Textile today Homepage, Available: <https://www.textiletoday.com.bd/rationalization-bangladesh-cotton-import/> [Accessed, 10 July, 2018]
- [7] Cotton development board Homepage, Available: <http://www.cdb.gov.bd/> [Accessed, 12 July, 2018]
- [8] The daily star Homepage, Available: <http://www.thedailystar.net/business/bangladesh-grow-10pc-cotton-needs-2025-1350994> [Accessed, 30 June, 2018]
- [9] Bd news24.com Homepage, Available: <https://bdnews24.com/business/2016/04/27/bangladesh-eyes-increasing-local-cotton-production> [Accessed, 15 June, 2018]
- [10] The daily observer Homepage, Available: <http://www.observerbd.com/details.php?id=83647> [Accessed, 7 April, 2018]
- [11] Cotton Bangladesh Homepage, Available: <http://cottonbd.blogspot.com/> [Accessed, 5 March, 2018]
- [12] US Department of Agriculture Homepage, Available: US department of agriculture, <https://naldc.nal.usda.gov/download/ORC00000166/D>
- [13] <https://www.google.com/search?q=backword+linkage+of+RMG>