

## **Tobacco Farming in Bangladesh and Its Impact on Environment**

Md. Yeamin Ali<sup>1</sup>, Md. Fakrul Islam<sup>2</sup>, Md. Redwanur Rahman<sup>1</sup>, Mahfuza Khanom Sheema<sup>1</sup>, Mst. Rupali Akhtar<sup>3</sup>

<sup>1</sup>(Institute of Environmental Science, University of Rajshahi, Rajshahi, Bangladesh)

<sup>2</sup>(Dept. of Social Work, University of Rajshahi, Rajshahi, Bangladesh)

<sup>3</sup>(Dept. of Political Science, University of Rajshahi, Rajshahi, Bangladesh)

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**Abstract:** *The purpose of this paper is to evaluate the scenario of tobacco farming and its impact on environment and make better policy to reduce environmental degradation. High benefit, ready cash, tobacco market and high demand, activities of Tobacco Company, advance seed & fertilizer and availability of loan are the main causes of spreading tobacco farming in Bangladesh. In the study area by using insecticide, chemical and decomposition of tobacco leaf made the soil barren. 62% of tobacco farmer suffering from coughing and asthmatic diseases. Air is polluted in the farming area through tobacco processing and burning tobacco leaf. Tobacco cultivation replaced 50% of paddy field. This trend of tobacco farming made the environment vulnerable and increase food insecurity. Farmers are compromising negative effect tobacco because of economic factors.*

**Keyword:** *Tobacco, Farming, Environment, Impact, Bangladesh*

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### **I. Introduction**

Tobacco, 2<sup>nd</sup> major cause of death globally, causes 5.4 million premature deaths each year and within 21<sup>st</sup> century one billion people will die from tobacco use [1]. Currently, there are around 1.3 billion smokers in the world, which excludes millions of users of other form of tobacco [2].

About 70% of current tobacco-attributable deaths occur in low and middle-income countries [3]. In Bangladesh, 29.8% peoples over the age of 10 use tobacco [4].

Tobacco farming took place since mid-sixties of the last century in this country. It spreads widely after liberation of 1971 at Teesta silt in Rangpur area [5]. Mainly British American Tobacco Bangladesh Company Limited (BATB) has been operating as a major sponsor of contract farming in tobacco cultivation since its beginning. This crop has a regional dominance in the north western, mid-western, mid-south and south eastern part of the country [6].

In 2004, US\$ 856 million spent on healthcare purpose regarding tobacco-related illnesses in Bangladesh. Another, US\$ 9 million spent to treat the diseases caused by exposure to secondhand tobacco smoke [7].

A huge quantity of fuel wood is needed for curing of tobacco leaves, which releases poisonous smoke in the environment. Consequently trees are logged indiscriminately and the environment is polluted by the poisonous smoke. Environmental degradation is also caused by the tobacco plant which leaches nutrients from the soil, as well as pollution from pesticides and fertilizers applied to tobacco fields [8].

The study suggest to find out the factors behind tobacco cultivation and to assess its environmental impact based on primary and secondary data. This study also aimed to understand the cause and effect of tobacco farming and to help make a better policy regarding environmental conservation.

### **II. Methodology**

The study is explorative and to some extent descriptive in nature that enforces to adopt mixed with qualitative and quantitative data as well as secondary and primary data. The primary data were collected from a structured questionnaires, interviews, FGD (focus group discussion) and observations. The secondary data were collected from different sources. The questionnaire survey was conducted based on multistage and purposive sampling which includes 100 respondents. Data analyzed through various statistical software's.

### **III. Study Area**

Nilphamari is a district of Northern region of Bangladesh, where tobacco farming is popular and on increase. Among the sub-district of Nilphamari, in Kishoreganj this practice is comparatively higher. So by studying this region we will get a good scenario of tobacco farming of Bangladesh.

Kishoreganj Upazila occupying total 204.90 km<sup>2</sup> of area where around 76% people cultivable land is 36700 hectare and forest is 675 hectare [9]. Around half of the arable land in the study area is now under tobacco cultivation.

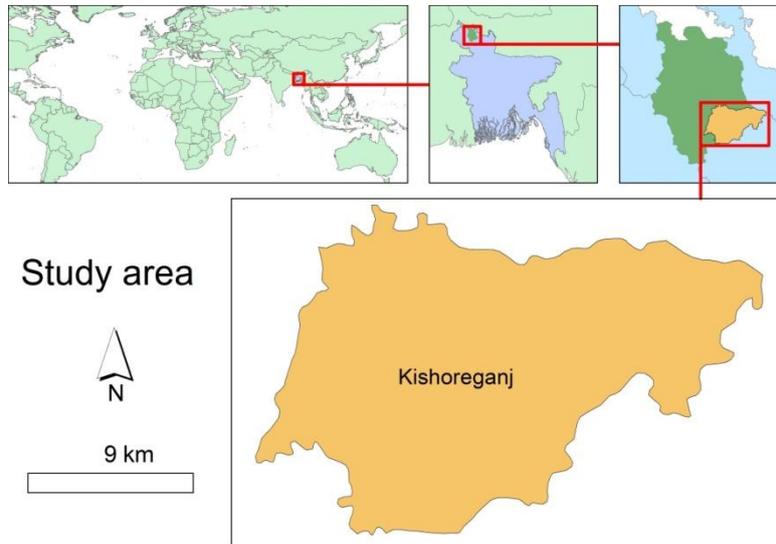


Fig1 Study area of Kishoreganj Upazila, Nilphamari district in Bangladesh

#### IV. Results and Discussions

##### 3.1. Tobacco Farming in Bangladesh

Tobacco has been cultivating in this country from British period but commercial tobacco farming has been introduced since last 6-7 decades. Although Bangladesh Agricultural Research Institute (BARI) has conducted research and development activities of tobacco and abandoned in 1995, tobacco production has mainly been pushed by big multinational companies such as British American Tobacco Company through contract growers [5].

According to DAE statistics, 18,864 hectares land in Rangpur region, 25,648 hectares in Jessore region, 1,100 hectares in Chittagong region and 4,500 hectares in the CHT region is under tobacco farming during the 2013-2014 Rabi (the crops are harvest in Spring) seasons.

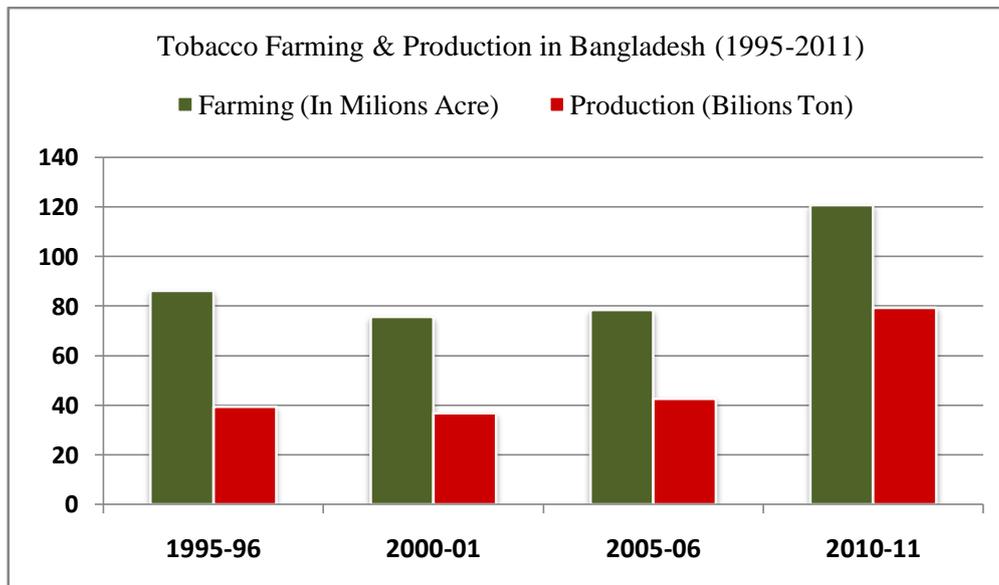


Fig 1 Tobacco farming and production in Bangladesh (1995-2011).

In 2010-11, tobacco farming occurred in 120 Millions of acres nationwide (fig 1); which was only 76 Millions of acres in ten years ago.

Fig-2A shows that tobacco farming practice has regional dominance. In north eastern areas of Rangpur, Nilphamari, Lalmonirhat, Kushtia, Jessore, mid-western areas of Dhaka and Faridpur, mid northern areas of Patuakhali, North Eastern areas of Chittagong and Chittagong Hill-Track region of Bangladesh [10].

Fig-2B also indicates tobacco farming hotspots in Bangladesh which shows that Rangpur, Nilphamari, Lalmonirhat, Kushtia and Bandarban are the areas where tobacco farming practices intensively than that of the rest areas. Among the total 108,000 hectares of land 10,000 hectares in Rangpur; 30,000 hectares in Nilphamari and Lalmonirhat; 28,000 in Bandarban and 40,000 hectare in Kushtia are under tobacco farming [10].

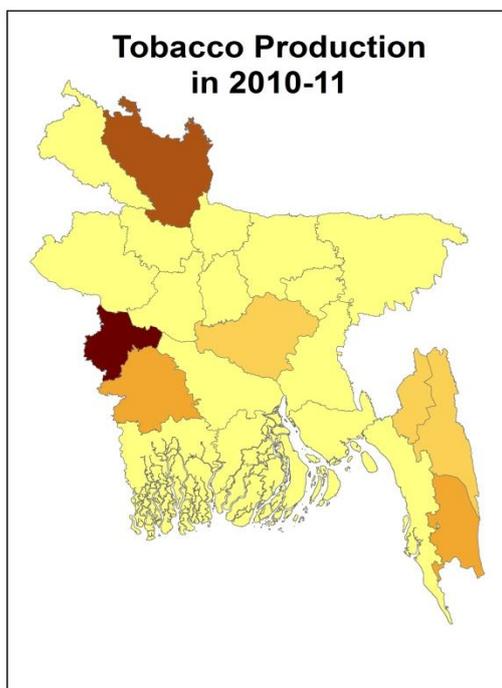


Fig2A Tobacco production in 2010-11

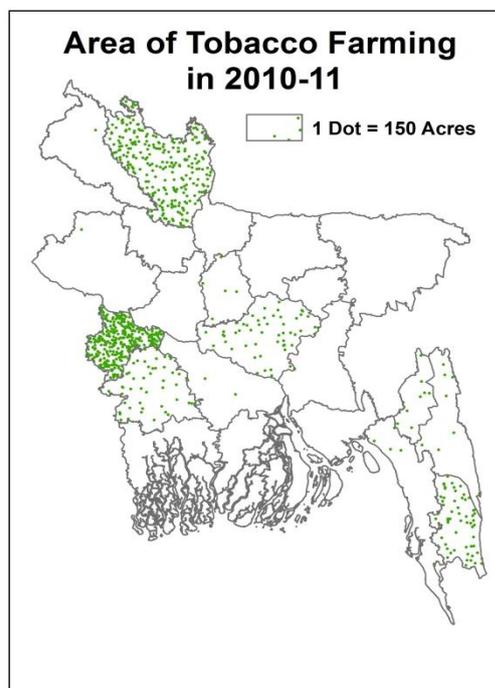


Fig2B Area of tobacco farming in 2010-2011

### 3.2. Present Scenario of Tobacco Farming

Tobacco is a single cropped plant and it cultivates normally from Mid-October to Mid-March. A significant amount of farmers are engaging with this practice every year, mainly due to its economic benefit. Tobacco is also playing important role in term of changing economic condition of the people though it is replacing some food producing crops and causing adverse effect on health and environment.

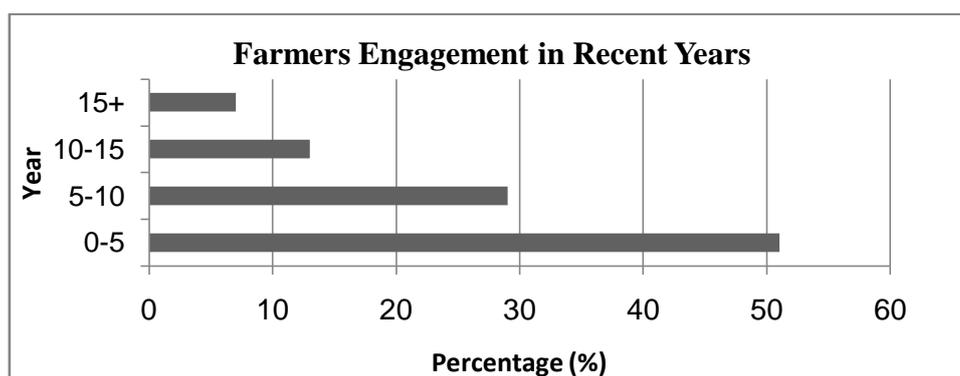


Fig 3 Present scenario of tobacco farming in study area.

Fig-3 shows that the number of tobacco growers between the range of 0-5 years and 5-10 years is higher than other ranges. This statistics indicates that the number of new tobacco growers is increasing with the flow of time. That means tobacco has some benefits than food producing crops that attract the farmers to cultivate it. But tobacco needs huge fertilizers and insecticides which reduce soil fertility and if a tobacco grower cultivates this crop in a same land over and over again the soil fertility will decrease and therefore production of tobacco also decreases which indicates another.

### 3.3. Factors behind Tobacco Farming

Tobacco farming is harmful for soil fertility, livestock, poultry, aquatic resources and thus human health. Despite the negative effects, farmers are involving with tobacco farming for following reasons.

Table 1 Factors behind involvement of tobacco farming in the study area

Factors	Percentage (%)
High benefit	26
Ready cash	17
Tobacco market	14
High demand	13
Activity of tobacco company	12
Advance seed & fertilizer	10
Availability of loan	8

Table 1 indicates that high benefit from tobacco than food producing crops is the most important factor of tobacco farming. High demand from Tobacco Company, market facilities and opportunity of sudden loan are also important factors in this connection. Besides these cash earning, perceived high profit, guarantee of inputs on market and involvement of tobacco farmers through company facility play important role for containing tobacco farming. At the same time lack of support for food crop farming by the department of agricultural extension discourages farmers to remain in food production practice. Tobacco Company is getting advantage of this situation for expansion of tobacco farming. 26% respondents said that, high benefit is the main causes of tobacco farming. And correspondingly, 17% respondent said that, ready cash and 13% respondent said high demand are the factors behind tobacco farming.

### 3.4. Impact on Environment

The factors behind tobacco farming clearly indicates that tobacco is economically beneficial than any of the food crops. But along with its economic benefit it causes some serious disruption on environment. Tobacco damages some important component of physical environment like soil, air, water etc. It also creates many health problems related to respiratory and cardiovascular system of the tobacco grower. Impact of tobacco farming can be divided into two basic categories as impact on physical environment and impact on cultural environment.

#### 3.4.1. Impact on Physical Environment

Tobacco requires a huge amount of fertilizer and chemical inputs including Urea, TSP/DAP, Sop sakaricide, pesticide/fungicide (such as Bovistin, Ridmil) etc. for good production. According to the respondents, they use Urea and TSP 580 kg/ hectare and 470 kg/ hectare respectively. Massive uses of all these requirements over and over again in a single land have some daring impact on environment.

##### 3.4.1.1 Impact on Soil

Tobacco is a hungry plant which depletes soil nutrients at a much faster rate than most other crops. For example tobacco consumes 2.5 times the nitrogen, 7 times the phosphorus and 8 times the potassium as maize. This requires a great deal of fertilizers to make up the difference which most small contract tobacco farmers cannot afford. Thus the land is depleted at a much faster rate than traditional crops.

Table 2 Impact on soil of tobacco cultivation.

Degree of Impact on Soil	Impact		
	Use of fertilizer and insecticide	Take extra nutrient	Decomposition of tobacco leaf
Too Much	77	65	58
Much	19	31	26
A little	3	2	7
Very Little	0	2	5
No comment	1	0	4

The Table 2 shows that, soil affected mostly for rapid use of fertilizers and insecticide. Beside this, tobacco takes extra nutrients from soil, which also negatively effect on soil fertility. Farming of tobacco in a same land frequently reduces its fertility and when the farmer's land is no good, tobacco company's picks up and moves on to another farmers land leaving the original farmer with no resources for work or survival. Therefore the farmers don't get enough productivity neither from tobacco nor from other food crops. Similarly

another study shown that tobacco production has moved from one location to another, not due to the increased interest of farmers but rather due to the loss of soil fertility and demolition of sources of fuel wood in areas under production [11]. 77% said that chemical fertilizer and insecticide used have too much impact on losing soil quality. And 58% respondent said that decomposition of tobacco leaf has too much hampering soil quality. 26% respondents said have much impact on decomposition of tobacco leaf.

### 3.4.1.2 Impact on Air

Air also polluted in various stages of tobacco farming, mainly during tobacco processing. Tobacco growers are stated many negative impact of tobacco farming during questionnaire survey and interview but almost all the growers expressed that tobacco processing stage is the most detrimental phase for air pollution and also for human health. Old aged peoples and children's are more vulnerable in this regard. As a result, environment became unsuitable for local inhabitant.

Table 3 Stages of air pollution by tobacco.

Degree of Impact on Air	Stages		
	Tobacco Processing	Burning Tobacco Leaf (curing)	Smoking
Too Much	80	70	22
Much	15	21	24
Medium	3	7	52
A little	1	2	1
Very Little	1	0	1

The Table 3 shows that, tobacco processing has significant effect on air pollution besides tobacco curing, burning of tobacco leaf and smoking. In fact most of the farmers of the study area related tobacco farming not conscious about air pollution during tobacco processing and curing. 80% tobacco processing has too much impact on air pollution and 70% burning of tobacco leaf have too much impact on air pollution.

### 3.4.2 Impact on Cultural Environment

#### 3.4.2.1 Impact on Health

Tobacco contains many serious chemical elements like nicotine, carbon monoxide, cadmium, stearic acid, hexamine, acetic acid, arsenic, methane, butane, toluene etc. [12], which are harmful for human health. These elements cause many diseases such as cancers (lung, mouth, esophagus, stomach etc.), lung diseases (bronchitis, asthma and emphysema etc.), heart diseases and heart attack etc. [12]. In the study area, tobacco farming is a threat on health of tobacco growers, their family members, domestic birds and animals and also peoples of every paces of life directly or indirectly. It is replacing food producing land and reducing food production in one hand and injuring people's health by various diseases on the other hand. The tobacco growers are facing various diseases which are mainly skin and respiratory system related.

Table 4 Health problems of tobacco farmers.

Diseases	Percentage (%)
Coughing	33
Asthma	29
Spot in skin and gum diseases	15
Eye imitation, infertility, impotent	13
Vomiting and headache	10

The Table 4 above shows, some health problems mostly related with respiratory system of tobacco growers. 29% respondents face asthmatic problem, 33% respondent face coughing problem. Besides these, 15% tobacco growers are facing skin and gum diseases.

#### 3.4.2.2 Impact on Social Environment

Tobacco farming is hampering social environment of Kishoreganj as well. Children's are getting much information from early ages and being addicted with tobacco in various forms. Smoking in all ages of people mainly male is increasing in a massive rate.

Table 5 Impact on social environment

Social Impact	Percentage (%)
Addiction increasing in youth	46

Women's area taking smoke	34
Children are being addicted	20

The Table 5 shows that, 20% of respondent said, children are addicted to tobacco in different way. 34% of respondents said women are also taking in smokeless form. Around, 46% respondents said addiction among young generation is increasing.

In the families of tobacco growers, the stress situation hampers the family peace and happiness; children are deprived of going to school in tobacco harvesting and curing time (march-April) and during firewood collection time in August- September. Many students cannot appear at secondary school exams (SSC) if their families are growing tobacco.

### 3.5. Threat on Food Security

In this situation farming of non-food crops like tobacco by replacing food-crop land is a threat on our food security. There were more crop diversity at the study are before spreading tobacco farming. Because of huge benefit local farmers are showing interest in tobacco farming by replacing other food producing crops.

Table 6 Tobacco replacing crops

Replaced crops	Percentage (%)
Rice	50
Wheat	16
Vegetation	11
Potato	8
Pulse	6
Maize	5
Others	4

Table 6 states, tobacco farmers are replacing paddy, wheat, potato, pulse, maize, vegetables etc. Most of the cases paddy field has been replaced. 50% paddy fields replaced with tobacco farming. 16% wheat and 11% vegetation are also replaced by tobacco. These replaced food crops putting threat to food security.

### 3.6. Impact on Child Labor and Child Health

Some of the respondent said that, after starting tobacco cultivation in the study area child labor is increasing. A lot of student stop schooling and poor people are not sending their children to school. They sending their children in the tobacco field as a labor to earn cash money. The land owners use child labor because it is cheap. A lot of respondents said that, during the tobacco processing and tobacco field child labor face different health problem. Such as headache, vomiting, spot in skin and others.

### 3.7. Impact on Livestock and Poultry

Respondents said that, tobacco farming have a huge impact on livestock and poultry. Within a decade, the number of cattle, hens, duck, and pigeon are decreasing. Interestingly, those areas have tobacco processing near to house have a few livestock. One of the respondents said that, most of the time, duck and hen died or cattle attacked by diseases during tobacco processing.

### 3.8. Impact on Biodiversity

Respondents agreed that, tobacco farming have too much negative impact on biodiversity. In the study area, naturally produced vegetables are decreasing. Different kind of spinach are disappearing. Such as, Ipomoea aquatic spinach (*Kolmi shak*) and Alternanthera sessilis (*Shalonchi shak*) are not available currently. In the study area, indigenous bird and fishes, forest animal in on the way of extinction. That's mean, ultimate biodiversity loss.

## V. Recommendations

From the above discussion the study may conclude some recommendations in order to stop environmental degradation due to tobacco cultivation and help to make an environment friendly living place.

1. Environmental law should be strictly maintained in every community people and organization.
2. Social awareness should be developed and some awareness program should be arranged to stop environmental degradation.
3. Agricultural extension division should provide easy accessibility of seeds, fertilizer, and other inputs to the farmers so that they are stimulated to capitalize in food crops rather than tobacco.
4. Necessary steps to be taken to establish adequate storage facilities in the rural areas so as to decrease the risk of damaging crops and ensure proper price to the farmers.

## **VI. Conclusion**

Tobacco farming is increasing gradually with 10 years in the study area it became double. The main causes of tobacco farming are high benefit, ready cash, tobacco market and high demand, activities of tobacco company, advance seed & fertilizer and availability of loan. 26% respondents said that high benefit is the main causes of increasing tobacco farming in Bangladesh. Tobacco farming has a huge environmental degradation mainly soil and air pollution. By using chemical fertilizer, insecticide in soil and decomposition of tobacco leaf in soil those make the soil barren. During the tobacco processing and burning tobacco leaf the air becoming polluted. Tobacco cultivation made the cultivated area environmentally vulnerable and unhealthy for living. Also it hampers the social environment. We must take some major step to provide our next generation a good environment. So it is high time to think about environmental degradation due to tobacco farming. If Government can take initiative measure to ensure alternatives as profitable as tobacco farming from food producing crops farmers will leave tobacco cultivation.

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