UBINIG POLICY BRIEF

IMPACTS OF TOBACCO CULTIVATION ON AGRICULTURAL PRODUCTION IN BANGLADESH

TOBACCO CULTIVATION IN BANGLADESH

Bangladesh is predominantly an agricultural country with over 70% of its population dependent on farming as a livelihood and about 23% of the national GDP is derived from this sector. Therefore taking away of any land from food production is a national food security concern.

Tobacco has been introduced since mid sixties of the last century into the fields where food crops were grown, and more widely after liberation in 1971 by the British American Tobacco Company in Teesta silt in Rangpur area (Sarkar and Haque, 2001) [1]. Tobacco production has mainly been pushed by big multinational companies such as British American Tobacco Company through contract growers (Sarkar and Haque, 2001).

According to the official Agricultural Statistics (2010)[2] three varieties of tobacco -- Jati, Motihari and Virginia -- are grown in different districts of Bangladesh. Jati and Motihari are mostly grown in Rangpur and Bandarban, while Virginia is mostly grown in Kushtia, Rangpur, Jessore and Dhaka. Other varieties (such as Burley) are grown in limited quantities. In terms of land area covered by all three kinds of tobacco, Rangpur still remains highest with 40345 acres during 2008-09 followed by Kushtia 22241 and Bandarban 4678 acres of land. Besides tobacco is extending to Jessore, Jhenaidah, Nilphamari, Lalmonirhat, Manikganj and Tangail.

Among the three varieties, Virginia is the most 'popular' variety for the companies. British American Tobacco (BAT) Company introduced the Flue cured Virginia (FCV) in 1967 on an experimental basis and by 1976 it started producing it commercially. Until 1971 Bangladesh had to import 95% of the total FCV consumed here.

[1] Sarkar and Haque, Tobacco Agricultural Research in Bangladesh in the 20th Century, Bangladesh Agricultural Research Council, 2001, Dhaka

[2] Yearbook of Agricultural Statistics of Bangladesh, 2009, Bangladesh Bureau of Statistics, Ministry of Planning, GOB, August 2010

Bangladesh produces international standard Flue Cured Virginia (FCV) and the demand is growing in the global market. This is mainly due to restrictions in other countries on tobacco cultivation for its harmful effects. The production of Virginia variety of tobacco during 2008-9 was 22,277 metric tons, while the other varieties, such as Jati were 8,437 metric tons and Motihari was 9,270 metric tons[3]. The latter two varieties are used for producing biri - the local and cheaper version of cigarette. In the 2005-06 financial year, Bangladesh exported tobacco worth Taka 95,85,35000 (over 958 million) [4]. This is not a big amount as an export earning and is much less than what it had to import. Till 2007-08 the import of unmanufactured tobacco (Raw) was 1125 million Taka[5]. In comparison, the country can earn much more by exporting vegetables. During 2008-9 vegetable export was 8,945 million Taka according to Foreign Trade Section of BBS [6]. The major companies involved in tobacco leaf production as well as cigarette and biri production in these areas are British American Tobacco (BAT) Company, Akij Tobacco, Abul Khair, Dhaka Tobacco, Nasir Tobacco etc.

TOBACCO BELONGS TO 'ALIEN INVASIVE SPECIES'

Tobacco as a plant (*Nicotiana tabacum* or less widely used *Nicotianna rustica*) belongs to the Nightshade family indigenous to North and South America. Nightshade is any member of the genus Solanum. 'Shade' does not refer to the blockage of light, but actually descends from the German word 'schade' which means destruction or damage (attributed to toxic/fatal effects characteristics of many Solanacea species). The *N. tabacum* varieties are used for cigarette, cigar, cheroot, biri, hookah, chewing and snuff tobacco and the varieties of *rustica* are used only for hookah, chewing and snuff. The plant prefers sandy, well aerated, well-drained soils and cooler climate. It is grown mainly in the winter season.

From the environmental point of view, tobacco cultivation of 'alien invasive species' in the biodiverse agrarian systems, is harmful. This means non-indigenous species, or "non-native", plants or animals that adversely affect the habitats and bio-regions they invade economically, environmentally, and/or ecologically. They disrupt an agro-ecological system by dominating over other cultivated and uncultivated crops essential for life and livelihood of a community.

TOBACCO IS NOT AN AGRICULTURAL CROP

Tobacco is grown in agricultural land, but it is not an agricultural crop. In the context of Bangladesh, agriculture means where farmers are involved in the decision for choosing the crops and its consumption and marketing. It is a non-food plant. It is only a raw material for products such as cigarette, biri and other smokeless tobacco that is proved to be harmful for health, environment and society. It is one of the very few products entering the world trade, entirely as leaf. It is green from the planting time to the harvesting time, with no change in its green colour. The company uses the slogan "*Sobujer Somaroho*" - (the abundance of green) in order to deceive people as if it is environmental

[3] Yearbook of Agricultural Statistics of Bangladesh, 2009, Bangladesh Bureau of Statistics, Ministry of Planning, GOB, August 2010

[4] The thriving tobacco industry by Shafiq Rahman, PROBE NEWS MAGAZINE, vol 9, Issue 39, March 18-24 http://www.probenewsmagazine.com/index.php?index=2&contentId=4337

[5] Statistical Pocket Book, Bangladesh 2009, BBS. Table 9.07

[6] Statistical Yearbook of Bangladesh 2009

friendly. But such a green plant like tobacco has absolutely no ecological value and has questionable economic gains for the farmers. It is a product that has only one market, i.e. the tobacco companies and their agents and they are interested in the leaves which they grade for quality and therefore decide the price. It has no biomass that feeds back to the soil. The company purchases only the leaves that are grown. The rest of the plant remains on the ground and does more harm to the soil.

It cannot be termed even as a "cash agricultural crop" because it does not fit into the criteria of cash crop that benefits the farmers and the community. By calling it an agricultural crop it gets the legitimacy of occupying the land where food and other useful agricultural crops could have been grown. If it gets the status of agricultural crop, it can claim over the subsidized inputs such as fertilizer, pesticides, irrigation water which is the right of the farmers producing food crops and not those who are producing a harmful product.

WHO ARE THE TOBACCO FARMERS?

It is difficult to get a real estimate of the number of tobacco farmers. Rough estimates show about 100,000 farmers who cultivate tobacco out of which 25,000 growers are associated with British American Tobacco Company[7]. Others are associated with about 5 more tobacco companies. There is no specific data collected in Bangladesh on the number of farming households by crops; so precise number is unknown. The total number of tobacco farmers is also difficult to find out because tobacco is grown through contract growers holding company cards, who then subcontract other farmers, particularly share croppers.

It is a misnomer to call tobacco growers as "farmers" because they are not 'free' to decide the crop pattern and are completely dependent on the company for the variety of tobacco to be cultivated, the inputs, as well as the marketing of their produce. This makes them more like workers in a factory setting where all decisions are made by managers.

According to Agriculture Sample Survey of Bangladesh, 2005 the total number of farm households is nearly 16 million (1crore 50 lakh and 89 thousand) out of which, percentage of marginal farm holdings is 38.63%, small farmers owning less than 2.5 acres is 49.86%, medium farm holdings 10.34% owning less than 7.5 acres and large farm holdings owning more than 7.5 acres[8] Tobacco growers are only 0.006% of the total farming households, but cause damage to other farmers in the area as the land remains occupied for the entire year.

The tobacco companies make the tenant holdings to grow tobacco.

In the three research areas of UBINIG, the number of farm holdings according to the Agricultural Sample Survey, 2005 is the following:

[7] The thriving tobacco industry by Shafiq Rahman, PROBE NEWS MAGAZINE, vol 9, Issue 39, March 18-24 http://www.probenewsmagazine.com/index.php?index=2&contentId=4337

[8] Statistical Pocket Book, Bangladesh 2009, BBS. Table 5.01

Table 1: Farm holdings in the research areas of UBINIG

Area	Total farm holdings	Small holdings	%	Medium holdings	%	Large holdings	%	Tenant Holdings*	%
Kushtia	236798	215768	91	19601	8	1429	0.60	15264	6
Bandarban	46055	29486	64	13687	29	2883	6	4835	10
Cox's bazar	159391	146877	92	11797	7	717	0.44	3951	2

(The percentage figures of the total farm holdings. The column on Tenant holdings is additionally inserted to give figures on tenant holdings)

COMPANY CARD HOLDERS

Tobacco cultivation is done primarily through a system of Card Holders. The Company Card holding is issued by the Leaf Depot of the company for one year with specific variety of tobacco leaf to be produced. In the local areas they are called '***card dhari***' (Card Holders) or '***chukti boddho***' (Contract Growers) growers. For example, Company X can issue the card for 2009-2010 for burley variety, or for Virginia K-326 variety. The card used for receiving inputs such as fertilizers (Urea, TSP, SOP, DAP) Coromil, Polythene etc. and against which a price is fixed. For example, in the card of a local company Tk.15,320 is fixed providing urea, TSP and SOP, while in the Card by BAT for fertilizer, polythene and Coromil the price is fixed at Tk.22,850. There is no unit price for each input. It is only the total price, which will be deducted at the time of selling the tobacco leaves. The Card holder is to commit, written in Bangla as '**Ongikar**'(agreement), which says the said amount is given as credit and must be paid back and the person also have to produce the quota amount of tobacco leaves in due time, otherwise the company may take legal action.

In the context of landholding Tobacco Company card holders are not necessarily land owners of the area, but they have access to the crop land. The land that is brought under tobacco cultivation is invariably crop land and belongs to the landowners of the area. These lands are generally taken on lease for tobacco cultivation. So the Card holders have no stake in the harmful effects of tobacco on soil and environment as they do not own the land and therefore can move to other areas. The Tobacco companies take all kinds of attractive measures to recruit card holders either from the farming communities or non-farming communities and it is in their interest to recruit card holders so that they control and ensure tobacco cultivation. However, there can be non-card holder tobacco growers who are allured by the so-called cash income from the tobacco cultivation.

Table 2: Estimated number of Company Card Holders in the research areas (Upazillas)

Upazilla	District	Company Card holders	% of Total growers	other growers	% of Total growers	Total number of tobacco growers
Daulatpur	Kushtia	11689	90	1266	10	12955
Mirpur	Kushtia	8437	91	796	9	9233
Lama	Bandarban	5754	98	79	2	5833
Ali Kadam	Bandarban	1149	97	37	3	1186
Chakaria Upazilla	Cox'sbazar	3008	98	65	2	3073

LEASING OF LAND FOR TOBACCO

As the Tobacco card holders are not farmers, they take land on lease from the big landowners by paying cash amount for the 6 month period November to April. In Kushtia, the lease amount per bigha (33 decimal) is Tk. 5,000 to Tk.7,000. Here the tobacco yield is lower, only 400 to 450 kg per bigha because of the gradual loss of soil fertility for continued use of land for tobacco. In Bandarban, land is still fertile and gains fertility regularly from the alluvium of Matamuhuri river. In Chakaria, the lease value per Kani of land (40 decimal) is Tk. 15,000 – Tk. 20,000 in the fertile area and Tk.10,000 to Tk.15,000 in the Boro areas. Here the yield of tobacco leaves is 500 to 600 kg per Kani (40 dec). In Ali Kadam and Lama of Bandarban the lease value per Kani is same as Chakaria because tobacco areas are more or less dependent on the same fertile soil on the bank of Matamuhuri river. Most of the absentee landlords find it easier to lease the land for tobacco and do not bother about food crops. On the other hand, the tobacco companies facilitate the card holders with cash money to get the land on lease. Some land owners give land on lease for the entire year at Tk. 20,000 to 25,000 and the contract growers may give it as short-term sub-lease during the Aus season.

GROWERS ARE TRAPPED INTO TOBACCO

It is important to understand why the growers have been growing tobacco for a long time. May be initially they got some cash income but have been incurring loss in terms of soil fertility, plant genetic resources, livestock and poultry and human health. According to UBINIG research there are several reasons including cash earning, perceived high profit, guarantee of inputs and market and also the

involvement of farmers through Company Card plays a coercive role for continuing tobacco cultivation. In contrast, farmers compare the situation with government support for food production through the department of agriculture. In most cases, they do not get the seeds, fertilizer, pesticides and other necessary inputs in time. Most importantly the food producing farmers face severe loss of income in case of bumper crops, as there is no price control system and there is no organized marketing channel for the food products. Tobacco companies can easily take advantage of the situation.

The attractions that draw farmers to tobacco production are lump sum cash income at a time, input supply and advance credit from the companies and ensured market through procurement of tobacco leaves by the companies. The most important effort of the companies is to bring the farmers into the Company Card system which entices the farmer for short or long time with tobacco production. Once a farmer is enrolled in the Company Card system it is very difficult to get out of tobacco production.

On the other hand, there are reasons which discourage food production. From the compilation of the newspaper reports it appears that the lack of support from government for food production in terms of seeds, input supply and most importantly marketing of the crops make farmers vulnerable to company offers for tobacco cultivation. The role of the Department of Agriculture Extension (DAE), insufficient supply of inputs for food crops production and instability of price of food crops due to which farmers do not benefit even from a bumper harvest were reported as major causes for tobacco cultivation.

MOVEMENT FROM ONE AREA TO ANOTHER

For decades tobacco cultivation 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 destruction of sources of fuel wood in areas under production. This trend can be seen from government records[9] showing that tobacco leaves are produced in last ten years between 36,755 metric tons in 2000-01 to 40,272 metric tons in 2008-9 with virtually no increase in land area (73,870 acres in 2000-1 to 73,811 acres in 2008-9). The unofficial statistics of tobacco cultivation far exceeds the government figures as the companies were moving from one district to the other, which are hardly updated in the national statistics; company moves mostly when they face decline in soil fertility and shortage of fuel wood for curing tobacco leaves. After Rangpur, the Teesta silt, tobacco production started at Kushtia in the fertile land of Gangetic Flood Plain and now to the Chittagong Hill Tracts mostly for the river Matamuhuri's fertile land and the trees in the hill forests.

By 2005 – 2006, Kushtia experienced again declining soil fertility and thereby low productivity and low quality of tobacco. The companies, already been aware of such possibilities, started moving to other districts. This time the movement was to the southern part of Bangladesh, particularly to the Chittagong Hill Tracts (CHT). Based on the availability of fuel wood tobacco production was started in Chittagong Hill Tracts (CHT), more specifically to Bandarban district since 1984. Initially tobacco was grown on 740 acres but it was increased on 4,750 acres in 2005 – 2006, an increase of 540%. This was the same time, when Kushtia district started showing decline in soil fertility and no trees for firewood, except the ones such as Ipil Ipil, British American Tobacco Company provided in the name of saving the environment! However, tobacco cultivation is still extended within Kushtia district and in the adjoining districts. The rate of increase is 41%. That means, the tobacco companies are concentrating more on the CHT where they can get the fertile land of the Matamuhuri River and can use the trees of the Hill Tracts.

[9] BBS, Statistical Yearbook of Bangladesh 2009

In recent years 2007 to 2010 tobacco cultivation has again increased. It has increased indiscriminately and abruptly at the cost of intrusion in land suitable for production of food crops. In 2006 – 07 Tobacco production was 75860 acre and 2007-08 there was 71680 acre. In 2008-09 there was tobacco on 100863 acres. In 2009 -10 tobacco cultivation was on 1,82,780 acre. That means there was an increment of 141% in 2009 -10 as compared to 2006 – 07. It is surprising that there was no government policy to decide what crops are needed to be grown during these time and no steps taken to stop extension of tobacco. Companies, on the other hand, were very worried about the reduction of 4180 acre of land under tobacco in 2007 – 08 compared to 2006 – 07. It was observed in Kushtia that tobacco was grown on 46,517 acre in 2006 – 07. Next year, (2007 – 08) there was tobacco on 32,791 acres. That means there was a reduction of 29% compared to the previous year. During this period, there was an increase of the cultivation of Maize in Kushtia. In 2008 – 09 tobacco cultivation increased in 35617 acres. Compared with 2007 – 08 there was an increase of 8.6%. In Bandarban tobacco was grown on 4794 acres in 2006 – 07. In 2007 - 08 tobacco was grown on 6014 acre showing an increase of 25%. But 2008 – 09 tobacco was grown on 5745 acres there was a reduction of acreage of tobacco in this year due to the efforts of the Army to protect hill Forest and restrict the cultivation of tobacco in boro rice field[10].

IMPACT ON FOOD CROPS

In Bangladesh, the cropped areas are divided as single, double, triple and current fallow area. As of 2008-2009, the total cropped land is 35,614,000 acres. The triple cropped area is 3,158,000 acres, double cropped area is 9677 acres, single cropped area is 6786 acres and current fallow land is 1171 acres and net cropped area is 19621 acres[11].

In the research areas of Kushtia, Bandarban and Chakaria (Cox'sbazar) tobacco is mostly grown in the double and triple cropped areas. That is, the land which was used for growing winter crops and for Aus crops.

[10] Extensive cultivation of tobacco is creating food crisis in Bangladesh by Farida Akhter, UBINIG, 2010

[11] Yearbook of Agricultural Statistics of Bangladesh, 2009, Bangladesh Bureau of Statistics, Ministry of Planning, GOB, August 2010, Table 10.1 p.313

Table 3: Cropped land in three research areas and tobacco replacement of food

Research Areas	**Double cropped land in acres (2008-09)**	**Triple cropped land in acres (2008-09)**	**Double cropped[12] land (in acres) 2010-2011**	**Triple cropped area (in acres) 2010 - 2011**	**Tobacco[13] grown (2010-2011)**	**Replaced food crops**
Kushtia	341,000 (27% of total cropped land)	182,000 acres (14% of total cropped land)	35057 acres (12% of total cropped land)	242223 acres (84% of total cropped land)	48432 acres	20 food crops including boro rice, potato, ,mustard, wheat, pulses and vegetables
Bandarban	15,000 acres (17% of total cropped land)	3000 acres (3% of total cropped land)	39465 acres (33% of total cropped land)	7834 acres (67% of total cropped area)	13115 acres	20 food crops including boro rice, mustard, chili, felon, French bean, winter vegetables and fruits
Chakaria Cox'sbazar	NA	NA	35963 acres (65% of total cropped area)	15884 acres (29% of total area)	3933 acres	22 food crops including boro rice crops mustard, chili, felon, French bean, winter vegetables and fruits

[12] UBINIG Information collection, 2010

[13] UBINIG Information collection, 2010

Double cropped areas mean primarily Rabi season (November to March for crops such as Boro Rice, wheat, Maize, Potato, pulses, vegetable, oil seeds etc.) and Kharif-I season April to July for Aus, growing Jute, Maize, pulses, vegetables). So in terms of seasons and land areas covered, tobacco plays a negative role in replacing food and important agricultural crops such as Jute.

As of 2008-09, the major food crops, that are listed in terms of acreage is the following:

Table 4: Major food crops in Bangladesh between 2006 to 2009

Crop	2006-7 Acres, 000	2007-8 Acres, 000	2008-9 Acres, 000	Increased/ decreased
Rice (Aus)	2238	2270	2633	+
Rice (Aman)	13382	12474	13584	+
Rice Boro	10522	11386	11654	+
Wheat	988	958	975	+-
Potato	852	993	977	+
Jute	1034	1089	1039	+-
Pulses	769	558	559	-
Oil seeds	841	875	877	+
Spices and condiments	860	738	680	-
Winter Vegetables	435	453	453	same

It is very clear that the pulse and spices and condiments cultivation has reduced, while wheat and jute cultivation also has been affected.

According to BBS, 2009, Tobacco is grown in 77,000 acres of land which is about 3.2% of the triple cropped land. However, the unofficial statistics is much more acres of land under tobacco and would at least account for 5% of triple cropped land. The main difference between the other crops and tobacco in cropped area is that the later affects the land for the entire year. Tobacco is not yet grown in all the districts of Bangladesh. There are some major districts such as Rangpur, Kushtia, Jessore, Dhaka, and three most important districts of Chittagong Hill Tracts such as Bandarban, Rangamati and Khagrachari. In these districts, the increase of tobacco cultivation has been very high. In the CHT it was 304% and in Bandarban alone it was 540%.

At national level, the land coverage under tobacco is apparently less significant compared to other crops in terms of statistics. But since tobacco moves from one area to the other, after causing depletion of land fertility, replacing food crops, directly those which are grown during winter season, and indirectly the crops which overlaps and clashes with sowing or harvesting season of other crops, its impact is much higher than is shown in the statistics of land coverage.

Among the various agricultural crops Rice is grown as the major food crop occupying 76% of total cropped land (BBS, 2005) [14]in three major seasons - Aus, Aman and Boro. Wheat is also part of the staple food grown in winter crop season in the dry zone areas of the country.

In Bangladesh, farmers produce food and other crops both as cash and for subsistence needs. So, all crops are cultivated for cash as well as for subsistence needs. Rice, vegetables, pulses, oil seeds are also cultivated for meeting cash needs of the farming households. However, few crops such as Fibre crops (Jute & cotton), Sugar cane, spices and condiments (such as chili, onion, garlic, coriander etc.) and narcotics (such as betel leaves, tea) do not have immediate food value, but helps farmers earn cash for meeting food and other needs. These crops are cultivated according to farmers own choice of crop production and according to their geographical conditions and land types. Tobacco does not fit into any of the characteristics of these cash crops grown in the country, yet, in recent years, it is observed that tobacco has been listed as one of the six major cash crops such as jute, cotton, sugarcane, tea, betel leaf and tobacco.

Area and production of tobacco has been increased tremendously during the years 2007 to 2010. During 2007-08, the cultivated area of tobacco was 29 thousand hectare whereas it has increased about 44 thousand hectare in 2008-09 which is about 52% higher than previous year. According to the statement of DAE, area of tobacco cultivation has increased about 74 thousand hectare in current year (2009-10) which is about 68% higher than previous year. This alarming condition is very risky for the national food security programme. Though the tobacco growers claimed that tobacco production generated steady cash income at a time. But the opportunity cost of tobacco production for any society is very high. Different profitable rabi crops such as potato, maize, wheat, pulses, oilseeds, beans, spices and vegetable etc. have to foregone on the land where tobacco is grown.

In the following table we are comparing with the tobacco sowing and harvesting time [Sowing: Mid Oct. to Mid Dec. & Harvesting: Mid Feb. to Mid April] with major cereal, fibre, pulses, spices and food as cash crops. We want to see whether tobacco causes any kind of interruption in the cultivation of these crops. The last column of the table is included by the author to show how the sowing and harvesting time of other crops clashes with tobacco.

[14] Yearbook of Agricultural Statistics of Bangladesh, 2005, Bangladesh Bureau of Statistics, Ministry of Planning, GOB, Dhaka, Bangladesh

Table 5: Sowing and Harvesting Period of Important Crops, 2002-03 to 2007-08[15]

Name of Crop	Sowing Period	Harvesting Period	Clash with tobacco
CEREALS			
Aus Paddy	Mid March to Mid April	Mid July to Early August	With sowing period
Broadcast Aman paddy	Mid March-Mid April	Mid Nov-Mid Dec	Sowing and harvesting
Transplanted Aman paddy	End June-Early Sept	December to Early January	Harvesting
Local Boro paddy	Mid Nov-Mid Jan	April May	Sowing and harvesting
High yielding Boro paddy	Dec. to Mid February	Mid April-June	Sowing and harvesting
Wheat	Nov-Dec	March-Mid April	Sowing and harvesting

That means no cereal crop can be cultivated in the land designated for tobacco by the company through the farmers.

Name of Crop	Sowing Period	Harvesting Period	Clash with tobacco
FIBRES			
White jute	Early March-Mid April	July- August	Sowing period
Tossa jute	Mid April - Early May	August-Sept	Sowing period
Mesta	April-May	Oct-Nov	Harvesting period

Jute is one of the major crops indigenous to Bangladesh and particularly to the tobacco growing areas such as Kushtia, which is a cash crop as well as farmer's subsistence needs with jute sticks for housing

[15] Statistical Pocket Book Bangladesh 2009 Bangladesh Bureau of Statistics, Planning Division, Ministry of Planning, GOB, Dhaka, Bangladesh, February 2010

materials, ropes etc. But three different jute types are affected either at sowing period or at harvesting period. That means jute cannot be grown in the designated land for tobacco.

Name of Crop	Sowing Period	Harvesting Period	Clash with tobacco[16]
PULSES			
Masur	Mid Oct. to Mid Nov.	Early Feb. to Early March	Sowing and harvesting
Kheshari	Mid Oct. to Mid Dec.	Mid Feb. Mid April	Sowing and harvesting
SPICES			
Bhadoi Chilies	Mid April to Mid July	Sept. - Dec	Sowing and harvesting
Rabi Chilies	Mid Nov. to Mid Jan.	March - May	Sowing and harvesting
Onion	Beginning Oct. to Early Dec	Late April. to Mid June	Sowing and harvesting
Turmeric	Mid April to Mid June	Mid Dec. to Mid March	Sowing and harvesting
Ginger	Mid March-Mid May	Mid Dec. to Mid March	Sowing and harvesting
Coriander	Oct. to -December	Mid Feb. to Mid March	Sowing and harvesting
FOOD CUM CASH CROP			
Potato	Mid Sept. to Mid Nov	Mid Jan. to March	harvesting
Sugarcane	Mid Oct. to Mid Dec	Mid Oct. to Mid April	Sowing and harvesting

Source: *Source: Agriculture Statistics Wing, BBS*

[16] "Shifting out of Tobacco to Food Production" UBINIG research sponsored by International Development Research Centre, (IDRC), 2011

It shows clearly that the more land areas are cultivated by tobacco in the pulse and spice, potato and sugarcane growing areas, the less will be the level of production. These are important food crops. According to a study by Bangladesh Agricultural Institute of Mymensingh, it was found that there is a yearly production deficit of 250,000 metric tons. The yearly production is 420,000 metric tons. The yearly import of pulses is 260,000 metric tons at an expense of foreign exchange 1200 billion taka.[17]

[17] *Deshe daler ghat ti bochore 2 lakh 50 hajar ton*, Daily Ittefaq, 19 March, 2011

TOBACCO IS AGGRESSIVE

I. TAKES AWAY LAND FOR THE YEAR-ROUND CROP

It appears from the crop calendar that the tobacco production matches with rabi season with some overlapping with the previous crop season kharif-2 and the follow up crop of the Kharif – 1 season. Consequently, pulse, mustard, other oilseeds, winter vegetables have no place in the field for cultivation. Tobacco does not allow any other crops to be grown as companion crop in mixed culture. The broad leaves of tobacco cover the entire space and suppress everything. Even there is no scope for any uncultivated food plants to grow. Tobacco directly competes with boro rice for season and space. Moreover tobacco overlaps the sowing time of Aus rice in the Karif – 1 season. Tobacco also overlaps the sowing time of Jute.

Consequently tobacco does not only compete with other crops in one season but also it blocks the land for two other seasons and the crops. It is interesting to note that the tobacco is now moving to those areas where there was Aus rice in the Kharif-1 season. If the present trend of extension of tobacco continues, then definitely there will be a sharp reduction of Aus rice production.

II. TAKES AWAY INPUTS - FERTILIZER, PESTICIDE, IRRIGATION

Tobacco cultivation requires huge amount of fertilizers, pesticides, seed, irrigation water and labour. These are the same inputs which are also required for Boro rice cultivation and other crops. The seed of particular variety of tobacco is provided by the company, of course at a price. So tobacco growers do not keep any seed by themselves. They always depend on the company for the supply of seeds.

At different stages of tobacco cultivation, fertilizers and pesticides as well as irrigation water is needed. According to company credit form, the required inputs are fertilizer such as Urea, TSP/DAP, SOP sakaricide, pesticides/fungicide such as Bovistin, ridomil etc.

Tobacco growers use many different types of fertilizers including Urea. For each tobacco grower UBINIG estimated figures of fertilizer use is the following:

Fertilizer: Urea 575 kg / ha and TSP 466 kg/ha

Pesticides have at least 16 applications, using as many as ***47 different brands*** by different growers which are sold in the open market.

The tobacco growers receive fertilizers through the company card from the companies themselves. The company collects the fertilizer from the dealers of Bangladesh Chemical Industries Corporation (BCIC), the largest public sector corporations under the Ministry of Industry. The Department of Agricultural Extension (DAE) has the responsibility of providing fertilizers to the farmers of Rabi crops, particularly for Boro cultivation by taking fertilizers from registered dealers under BCIC. Fertilizer plays a

very important role in tobacco cultivation. The cost estimate of fertilizer, pesticide and irrigation according to UBINIG study[18] is the following:

Table 6: Cash cost for fertilizer, pesticide and irrigation for tobacco cultivation

Areas	Fertilizer cost/per hectare	Pesticide cost/ hectare	Irrigation cost/ hectare	Total Cash cost/ hectare
Kushtia	42228 (31%)	4854 (3%)	4564 (3%)	134860
Cox's bazar	44344 (24%)	12142 (6%)	9645 (5%)	183754
Bandarban	36927 (20%)	10146 (5%)	9417 (5%)	187984

At the tobacco grower level it is found that fertilizer accounts for between 20 to 30 percent of the cash costs. So to be able to receive fertilizer at lower price or at subsidized price is very much necessary for the tobacco growers. On the other hand, the fertilizer taken away from food crops may lead to substantial decrease in food production, particularly rice production. So government can contribute to regulating tobacco production by limiting the supply of fertilizers.

UBINIG study unveiled that about 80% higher human labour required in tobacco production and the tobacco farmers paid more than 21% higher wages per man-days compared to rabi crops (combination) cultivation. The tobacco farmers used excessive and imbalance doses of chemical fertilizers and they performed on an average six times to apply insecticides/pesticides in their crop fields at the study areas. The total cost per hectare of tobacco was estimated to Tk. 2,21,965 and the highest at Cox'sbazar (Tk. 2,47,871) and the lowest at Kushtia (Tk.1,79,023) among the three study areas. On an average, per hectare cash cost was observed the highest at Bandarban (Tk. 1,87,984) which is about 79% of the total cost of tobacco production. Though, the lowest total cash cost was observed Tk. 1,34,860 per hectare at Kushtia but it is estimated at 75% of the total cost of tobacco production. Average per hectare yield of tobacco leaves was 2220 kg and the maximum price offered in Bandarban was Tk. 125/kg. Average per hectare net profit on full cost basis was estimated as Tk. 12, 389 and return per Taka investment was 1.05 only whereas with food crops it is 1.42. Thus the tobacco farmers earn less profit from more cash investment (UBINIG, 2011).

[18] Comparative Economics of producing alternative combinations of Rabi Crops by substituting Tobacco in Bangladesh by Md. Mosharraf Uddin Mollah, Consultant, UBINIG

Table 7: Land Area (in Acres) of Tobacco Production

in Bandarban in 2011-2012

Upazila	2010- 2011	2011-2012
Lama	6510	5890
Alikadom	3518	3310
Naykhiangchori	2559	2228
Ramu	11	72
Thanchi	30	235
Rawangchori	485	866
Total	**13113**	**12601**

Table 8: Land Area (Acres) of Tobacco Production

in Kushtia in 2011-2012

Upazila	2010- 2011	2011-2012
Bheramara	21,336	19,774
Mirpur	14,599	11,413
Dawlatpur	15,605	14,277
Kushtia sadar	9422	11,605
Total	**61,262**	**57.069**

ENVIRONMENTAL DEGRADATION

A. SOIL PROPERTY:

The physical structure and chemical properties of soil has been changed with continuous cultivation of monoculture of tobacco. The organic matter content of soil has drastically been reduced. So is the water holding capacity of the soil. Some other unusual character of the soil include-

The soil has become hard, 2) Soil dried up quickly, 3) In some places the water does not drain out easily, 4) The natural smell of soil has been impaired and 5) The soil color has changed.

B. EROSION OF GENETIC RESOURCES

The chemical fertilizer and pesticides used indiscriminately and large doses and logging of trees for curing of leaves cause erosion of genetic resources.

I. CHEMICAL FERTILIZERS

Fertilizers are applied in tobacco field from land preparation to different stages of growth of plants. The major fertilizers include urea, phosphate, zinc, MoP, manganese, potassium, DAP, sulphate , and TSP. The chemical fertilizers in high concentration become toxic for the bottom line of food chain of the biological diversity including algae, fungi, bacteria, Phyto-plankton and zoo-plankton and trigger genetic erosion.

II. PESTICIDE

Farmers apply pesticides in tobacco at different stages of production. The farmers apply five types of pesticide before sowing seed in the seed bed, 22 types after transplanting seedlings in the main field and 27 types during growing stage and one type after de-heading. These include destructive pesticides like Ripcord, Furadon, Sumithion, Thiovit, etc. The pesticides have killing impacts on biological diversity. Indiscriminate use of pesticides for tobacco production has been poisoning environment including soil, water and air. Fish diversity has been reduced in the open water bodies. Consequently the bird population and variability have been declining.

III. LOGGING OF TREES

One kilogram of tobacco production requires 12kg of fire wood for curing of tobacco leaves. Fire wood from different sources, irrespective of species is logged for curing of tobacco. Consequently food and shelter of many birds and animals have been reduced.

Moreover, the monoculture plantation of fast growing plants for production of firewood like akashmoni (*Acacia moniliformis*), eucalyptus (*Eucalyptus spp.*), rain tree (*Albezia lucida*), mahagoni (*Switenia mahagoni*) and debdaru (*Polyalthia lorgifolia*) lead to loss of PGR for competition of space.

HEALTH HAZARD

During the growing season, tobacco needs more care and is highly labor intensive. During pesticide and hormone application, most of the farmers suffer from nausea, weakness, dizziness, vomiting, fluctuation of blood pressure and palpitation. During at pre and post processing of curing, the farmers particularly women and children severely are attacked by asthma, coughing, headache, etc and women are also attacked by other female diseases. Almost every farmers report that they get sick by over working in the season and inhaling problem is common.

SOCIAL PROBLEM

During the tobacco season farmers get no time to spend with friends, relatives, even with family members. They have to move and behave like machine and thus isolation is created. Children education

is about to stop due to their engagement in tobacco processing. Eating and bathing are irregular. Different festivals even marriages of sons and daughters are kept off due to unavailability of time.

The method of tobacco production is such that it involves huge amount of labor. Women, men, children, boys, girls, irrespective of ages have to be involved with the process of tobacco production. The children and women are preferred as wage labor for involvement of lower wage to them despite the fact that child labour is prohibited. Women face insecurity in family life and suffer from tensions for payment of debts to the company.

HOW TO CONTROL TOBACCO CULTIVATION?

The government of Bangladesh signed the WHO Framework Convention on Tobacco Control (FCTC) on 16 June 2003 and ratified the same on 10 May, 2004, accordingly Bangladesh has enacted the 'SMOKING AND TOBACCO PRODUCTS USAGE (CONTROL) ACT, 2005' by the Ministry of Health of the Government of Bangladesh. This law is enacted the with a view to controlling smoking, production of Tobacco, use, purchase, sale and advertisement. However, the bill also provides options about giving loan for food crops production in Article 12.

Article 12: Granting of Loan for production of Alternative crops to tobacco products

(1) To discourage tobacco farmers from producing tobacco products and to encourage them to produce alternative cash crops the Government shall provide loan on simple terms and the facility shall continue for the next five (5) years from the coming into force of this Act.

(2) For motivating in gradually discouraging the production and use of tobacco products and for the purpose of discouraging the establishment tobacco products industry, the Government will formulate necessary policy.

This is not enough to regulate tobacco cultivation with particular emphasis on imposing restrictions for cultivating tobacco in food producing areas.

It is encouraging that certain measures are taken by the Ministry of Agriculture by withdrawing subsidy for fertilizers and Bangladesh Bank stopping loans for tobacco cultivation. But a comprehensive policy on tobacco control in general and control tobacco cultivation in particular must be taken up by the government. As a part of global movement against usage of products, Bangladesh government as well as the groups working on tobacco control must incorporate the issues of harmful impact of tobacco cultivation on environment, food production and human health. It is not only the Ministry of Health that can take decision on controlling tobacco cultivation, but the Ministry of Finance, Ministry of Environment and Ministry of Agriculture must act together to regulate tobacco cultivation.

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