To Produce or not to Produce: Tackling the Tobacco Dilemma

Firdousi Naher
AMR Chowdhury

April 2002

BRAC
Research and Evaluation Division

Contents

Tables

Illustrations

Acknowledgements

When we began work on this study, we were surprised by the paucity of literature on the subject. The cooperation and support received from a number of people were a great help towards completion of the study. We are grateful to Debra Efroymson of PATH Canada and Syed Mahbubul Alam of Bangladesh Anti-tobacco Alliance (BATA) for their valuable inputs. A word of thanks to Dr. Akhtaruz-Zaman, Dhaka Ahsania Mission Cancer Hospital and to Barrister Tania Amir for sharing their thoughts on the topic. To the staff of British American Tobacco Bangladesh, Kushtia Leaf Factory, we owe our gratefulness for their cooperation. We would like to thank those tobacco farmers of Rangpur and Kushtia who spared us their precious time to share their experiences with tobacco farming. Last but not the least, we wish to record our special thanks to the data management staff of the Research and Evaluation Division of BRAC for their assistance with the data feeding and data editing during the course of this study. Needless to mention, all errors and omissions that may remain are the responsibility of the authors.

Abstract

This study seeks to look into the economics of tobacco cultivation in Bangladesh. At the macro level, the importance of tobacco farming has been declining. However, a survey conducted on 300 tobacco farmers in 19 villages of Rangpur and Kushtia revealed the increasing importance of tobacco at the micro level with more than a quarter of the sample farmers joining the rank of a tobacco farmer in the past five years. The driving force behind this phenomenon has been the apparent profitability of growing this crop. Tobacco cultivation requires intensive labour and most farmers economise on the labour cost by using their own household labour. When the imputed value of this is taken into account, tobacco loses much of its profitability. Therefore, when weighed on a cost-benefit scale, tobacco often yields a lower economic profitability than a number of other crops. Our study identified some of these crops as maize, potato, sugarcane, sunflower, cauliflower and tuberose. Most farmers seemed aware of the health and environmental hazards to tobacco but continued growing the crop because of overriding factors such as guaranteed market and ready cash (which is not the case with most other crops). Even though tobacco is a good source of revenue for the government, this industry cannot be promoted given its 'merit bad' character. Informing the farmers about the true economies of tobacco, providing marketing facilities, introducing sustainable procurement drives at reasonable prices and enhancing the storage capacity of alternate high value crops could act as catalysts for farmers to quit tobacco farming.

Executive Summary

This study seeks to look into the economics of tobacco cultivation in Bangladesh.. Tobacco has been in cultivation in Bangladesh for ages. Though the crop used to be grown in different parts of the country, it has now become concentrated in the regions of Rangpur and Kushtia. Lately, it has been reported that forests are being cleared in the Chittagong Hill Tracts to accommodate tobacco. An important source of this proliferation has been the patronisation by the various tobacco companies. In their quest for the cheapest possible price, these companies have been promoting tobacco farming as the trump card for prosperity and success of the farmers and their families. From the macro-economic point of view, it is seen as a good revenue source for the government.

At the macro level, tobacco cultivation appears to have reached a plateau and is now gradually dwindling. But a sustained decline is clearly lacking. Moreover, our survey shows that the crop is gaining increasing importance at the micro level. A quarter of the sample farmers have taken to tobacco farming in the past five years. Apparently the driving force behind this phenomenon has been the profitability of growing this crop. Tobacco has the reputation of being a very profitable crop with few 'equally lucrative' substitutes.

Results from a survey of 300 tobacco farmers revealed otherwise. Tobacco cultivation requires intensive labour and most farmers economise on the labour cost by using their own household labour. From the study it emerged that almost 50 % of the total economic cost of labour is attributable to household labour. When the imputed value of this is taken into account, tobacco loses much of its profitability. High gross returns per acre need not necessarily imply high returns to labour. Therefore, when weighed on a cost-benefit scale, tobacco often yields a lower ratio than other food and cash crops. Indeed in our study a number of such crops were identified – maize, potato, sugarcane, sunflower, cauliflower and tuberose.

Substantial cost differentials exist between flue cured tobacco and sun cured tobacco – with the former being more than twice as expensive to grow as the latter. When tobacco leaves are dried in barns to which heat is applied from the exterior, it results in flue cured tobacco while simple sun drying of tobacco leaves yields sun cured tobacco. Our study revealed that sun cured tobacco, which is grown widely in Rangpur, has a number of financially viable alternatives including boro rice, wheat, maize, potato, cauliflower, sunflower and tuberose. With flue cured tobacco, which is predominantly grown in Kushtia, the range of alternatives is lower – sugarcane and tuberose.

In terms of material inputs as well, tobacco involves higher costs than most other crops. Bulk of this cost arises on account of fertilizers and curing fuel. These two items also account for more than 50 % of the total cost of production. Given the input intensive nature of tobacco, substantial capital is required during its production. Often farmers have to access loans or credit from external sources. Needless to mention, that most of these farmers belong to the marginal and small farm size categories. Since majority of these loans is tied to tobacco, it works to enhance the poor farmers' circle of dependency. Moreover, with high transaction costs, farmers are forced to seek loans from the exorbitant village money lender rather than approach formal financial institutions which disburse loans on easier terms.

Apart from the profitability aspect, guaranteed market and ready cash also play an important role in the farmers' decision to grow tobacco. The rational and intelligent farmer is unwilling to risk producing highly perishable food crops for which he may not get adequate buyers. On the other hand, with tobacco he knows that there will be takers for it, though he may have to sell his produce at slightly lower prices.

Patronisation by different tobacco companies has been an important propelling factor for the spread of tobacco. These companies have their own registered contract growers who are mostly medium and large farmers. These farmers are, then, provided with inputs such as free seeds, fertilizers, pesticides as also technical assistance. Depending on the consumers' preferences and market demand, the farmers are informed of the exact grade and quantity of the leaf desired by the companies which would be procured from them at a pre-determined price. Thus, for obvious reasons, the economic condition of the contract growers is much better off than others. In fact, demonstration effect has an important role to play here. The non-contract grower is 'coerced' to take to tobacco farming just by watching his neighbour (who happens to be a contract grower) graduate out of poverty.

There is also an indirect patronisation by the companies. Apart from their contract growers, these companies also have traders who supply them with tobacco leaves. These traders buy out the required tobacco from the farmers, keeping some margin for themselves. In fact, in our survey, it emerged that most farmers disposed of their produce to these traders.

Tobacco is a health and environmental hazard. Continuous inhalation of the tobacco aroma emanating from the fields, often, causes dizziness, nausea and vomiting. Dermal absorption of nicotine while harvesting the chemical drenched green leaves leads to an illness called 'green tobacco sickness'. Curing of tobacco leaves and excessive use of chemical fertilizers contribute to environmental degradation. Interestingly, majority of the farmers seemed aware of this. The survey also indicated that they were willing to quit tobacco production but were not well-informed about plausible alternatives as also the ways to make the transition.

It has been argued that tobacco is a precious contributor to the government treasury since this industry is one of the highest taxpayers. However, tobacco being a 'merit bad', this cannot be encouraged, irrespective of the quantum of its contribution to the government treasury. It is imperative for the government to understand that tobacco is a merit bad and that the direct and indirect costs of tobacco related diseases offset the revenue accruing from this crop and accordingly stringent measures must be taken up that would curtail the production and use of this commodity. Farmers must be informed of the true economies of tobacco. In addition to that, they must be shown appropriate and feasible alternatives to tobacco through proper agricultural extension services. Providing marketing facilities, introducing sustainable procurement drives at reasonable prices and enhancing the storage facilities would also act as catalysts for farmers to quit tobacco growing.

The supply side measures delineated above have to be integrated with demand side measures aimed at reducing tobacco consumption. Once these instruments are effectively employed, only then, can we expect the farmers to be motivated to quit the production of this so called 'profitable' crop and start growing crops which are 'green' in the real sense of the term.

"Being a tobacco farmer is a curse....."
A tobacco grower
Paglapir, Rangpur

Intoduction

Mohammed Salim, 40, is a marginal tobacco farmer in the Bheramara *upazila* of Kushtia district. For the past ten years he has been leasing around 0.33 acres of land for growing tobacco. His wife, two teenage daughters and a little son are all engaged in the growing of this crop. During the tobacco season, they have to put in intensive labour and close care for long periods at a stretch. They do not have the time to grow traditional food crops such as oilseeds, vegetables and sugarcane. All the hard work and toil yields them barely enough to make ends meet. He has no money to treat his wife, who is suffering from green tobacco sickness.[1] He had begun growing this crop in the hope that it would fetch him high returns. On the contrary, he finds his economic condition much the same as before.

This is the story of a marginal tobacco farmer in Bangladesh. Tobacco has been in cultivation in Bangladesh for ages. Though the crop used to be grown in different parts of the country, it has now become concentrated in the regions of Rangpur and Kushtia. Lately, it has been reported that forests are being cleared in the Chittagong Hill Tracts to accommodate tobacco. An important source of this proliferation has been the patronisation by the various tobacco companies. In their quest for the cheapest possible price, these companies have been promoting tobacco farming as the trump card for prosperity and success of the farmers and their families. From the macro-economic point of view, it is seen as a good revenue source for the government.

The realities are, however, quite different. Tobacco farming has not been able to help the farmers graduate out of poverty. With the exception of a few large farmers, who have managed to reap the benefits of growing this crop, the majority of the marginal and small farmers have been thrown into a web from which they find it difficult to extricate themselves. After all the drudgery on the fields, they barely manage to eke out a living. The benefits of this so-called 'highly profitable' crop have eluded most farmers who find themselves toiling away for those illusory returns.

With an escalation in the production of tobacco in recent years, a complex relationship has evolved among the various players in this industry namely the farmers, processors, manufacturers, traders,

[1] An occupational illness among workers harvesting tobacco which is caused by the dermal absorption of nicotine from continuous contact with wet tobacco leaves.

advertising agencies, consumers and the government. These agencies have been promoting tobacco considering its short-term economic benefits, while overlooking the longer term adverse impact on health and environment. The health sector and environmentalists, on the other hand, have been crying hoarse about the health hazards and environmental impacts of tobacco consumption as well as tobacco production. With different quarters pursuing different objectives, a conflict has emerged in the issues surrounding tobacco control. Though there is a silent acquiescence by all the players that tobacco kills, each has been pursuing their own goals and a comprehensive drive to deal with tobacco as a social malaise is clearly lacking.

The dilemma of tobacco farming

That tobacco is a killer plant is, perhaps, not as well known as the fact that tobacco consumption is dangerous. This highly labour and input intensive crop is a health hazard as well as an environmental disaster. Its toll on human health can be judged from the fact that even a mosquito cannot survive the smell of nicotine that emanates from a tobacco field.[2] Green tobacco sickness (GTS), caused by the dermal absorption of nicotine due to continuous handling of wet tobacco leaves during the harvesting season, is a common condition among tobacco farmers and their families. Large and frequent doses of fertilisers and pesticides application, felling of trees for fuel to dry tobacco leaves, smoke and heat released during the curing (drying) of the leaves, all contribute to serious environmental degradation.[3]

The driving factor behind cultivating tobacco is that it is more profitable than other crops. In fact, a study sponsored by the International Tobacco Growers Association (ITGA) on alternatives to tobacco farming in seven developing countries concluded that there were very few profitable and realistic alternatives to tobacco production.[4] Indeed, tobacco is grown in many developing countries by the poor marginal and small farmers as the only cash crop. Thus emerges a dilemma – a profitable crop on one hand and a hazardous one on the other.

But the fact remains that tobacco is a merit bad, i.e., any revenue or income related to an unacceptable commodity should also be considered as unacceptable to society, irrespective of the volume of its contribution to the economy. It is imperative that this industry be controlled. A number of cost-benefit studies on tobacco conclude that the costs incurred by society on tobacco use more or less match the

[2] Information yielded through group discussions with tobacco farmers in Kushtia.
[3] See website at http://tobaccofreekids.org/campaign/global/
[4] c.f. Jha, Prabhat and Frank Chaloupka (Eds.). 2000. *Tobacco Control in Developing Countries*, New York: Oxford University Press, pp. 327.

benefits received from them.[5] But if one takes into account the indirect costs of tobacco use such as the environmental effects of tobacco production and consumption and the alternative use of money spent on this product, the scales will tend to tilt heavily on the cost side.

It has been argued, based on the famous Say's Law[6], that restraining the supply of tobacco by shifting the resources out of this crop into the cultivation of other crops would significantly contribute to the reduction in the demand for cigarettes and other forms of tobacco. Though the demand-side controls would be more effective, it is reasoned that if the controls on supply can be sustained with no other means of acquiring the product, then the demand for the product would get controlled as a matter of habit.[7] However, one can expect the farmers to take to crops other than tobacco only if they are shown alternatives that are as lucrative as tobacco. In fact, one of the main objectives of this study is to examine the feasibility of this option for Bangladeshi farmers.

Objectives

The specific objectives of the study are as follows:

i To examine the macro level trends in the cultivation of tobacco in Bangladesh.

ii To examine the factors that induce farmers to take to tobacco growing

iii To conduct a gross margin per acre analysis of tobacco vis-à-vis other competing *rabi* crops and thereby determine a economically viable alternative for the farmers.

iv To probe into the constraints that hinder a farmer from shifting out of tobacco farming into alternate crops.

Methodology

On the basis of the intensity and spread of tobacco farming in Bangladesh, the study was conducted in the districts of Rangpur and Kushtia. Tobacco cultivation is highly concentrated in these two districts of the country. Two *upazilas* from each district were chosen. These *upazilas* were selected based on meetings with BRAC area office managers, employees of different tobacco companies and group discussions with local farmers. The selection was based on the intensity of tobacco farming. From each *upazila,* three villages were selected at random. Thus a total of 12 villages were drawn.

---

[5] Chowdhury, K. 2000. *Multisectoral and Intersectoral Approach to National Tobacco Control,* Paper presented at the WHO International Conference on Global Tobacco control Law, New Delhi.

[6] According to Say's Law, supply creates its own demand.

[7] Panchamukhi, P. R. 2000. *Agricultural Diversification as a Tool for Tobacco Control,* Paper presented at the WHO International Conference on Global Tobacco control Law, New Delhi.

Whenever any particular village failed to fulfil the quota of 25 farmers per village, the neighbouring village was drawn into the cluster, thereby raising the total number of villages surveyed to 19. Within each sample, the households were chosen through systematic random sampling. An optimal mix of marginal (less than 0.5 acres), small (0.5 to 2.5 acres), medium (2.5 to 5 acres) and large farmers (more than 5 acres) was ensured so as to adequately capture the relative importance of tobacco in each of these farm size categories.

To facilitate a comparison of tobacco and non-tobacco growers, data was sought to be collected from both categories. However, in the randomly selected villages, almost all farmers were tobacco growers with some stray cases of non-tobacco farmers. Thus adequate data from the latter category could be collected for such a comparison.

Both primary as well as secondary data were used. The primary data were collected in two ways - focus group discussions and a random household survey. Six focus group discussions – three in each district - were conducted with local tobacco and non-tobacco farmers. For the survey, a structured questionnaire was administered to a sample of 300 tobacco farmers – equally divided between the two districts. Data were also collected on other competing *rabi* crops grown by these farmers. Table 1 shows the distribution of sampling area and sample farmers according to farm size.

Table 1: Distribution of sampling areas and sample farmers

District	Number of villages	Number of sample farmers					Average farm size of sample farmers (acres)			
		Marginal	Small	Medium	Large	Total	Marginal	Small	Medium	Large
Rangpur	10	40	40	37	33	150	0.18	1.37	3.37	6.58
Kushtia	9	35	42	34	39	150	0.34	1.35	3.50	9.88
Total	19	75	82	71	72	300	0.26	1.36	3.44	8.23
		(25.0)	(27.3)	(23.7)	(24.0)	(100.0)				

Note: Figures in parenthesis indicate percentages of total

Secondary data on aggregate level acreage and production of tobacco were collected from various sources of the Bangladesh Bureau of Statistics (BBS) and the Department of Agricultural Extension (DAE). Other data sources included various subject specific publications and tobacco related websites. Apart from the spreadsheet, data analysis was carried out using the statistical software packages of SPSS and Eviews.

At this point, a limitation of the study may be mentioned. Instead of taking equal numbers of farmers from each farm size category, it would, perhaps, have been more appropriate to take equal proportions from each category. However, such an exercise could not be carried out since data on the entire population of tobacco farmers in the two districts was not available. Therefore, our results may be subject to some sample bias.

Table 2 summarises some of the socio-economic features of the sample farmers.

Table 2: Socioeconomic characteristics of sample farmers

District	Percentage of land rented-in				Educational level of farmers		
	Marginal	Small	Medium	Large	Illiterate	Primary	Secondary
Rangpur	79	27	4	2	59	41	50
Kushtia	82	32	17	7.5	73	33	44
Total	80	29	10.6	4.8	132	74	94
					(44.0)	(24.7)	(31.3)

Tobacco growing: some basic facts

The tobacco plant is often termed as a weed because of its capability to sprout on any soil. Indeed this crop has been seen to be growing on soils where other crops have failed to fructify. In Bangladesh, tobacco is basically a *rabi* season crop with sowing being done during mid-October to mid-December. From the day the seeds are sown, it takes about 6-7 months to mature. It may be mentioned here that a number of *rabi* season food and cash crops are also sown during this period implying that tobacco competes with these other food crops.

There are about 60 different species of tobacco though the most popular ones are Nicotiana Tabacum and Nicotiana Rustica. In Bangladesh, various types of tobacco such as Dark Virginia Gold, Motihari, Jyoti etc. are grown. Virginia is used primarily in the production of cigarettes while the non-Virginia types are used in producing *biris* and other products.[8] There are regional differences in the method of cultivation depending on the climate, soil fertility, plant species and the type of leaf desired. Broadly the first stage of cultivation requires preparation of the seed bed which involves deep ploughing of the soil, watering and weeding. Once the seed bed is ready, the seeds are sown and they remain there for about 45 days till the saplings are ready to be transplanted on to the main field with wider spacing.

[8] See Hossain, Mosharaff. 1991. *Agriculture in Bangladesh*, University Press Limited, pp. 328.

While the crop is on the field, considerable labour has to be spent on hoeing, weeding, irrigating and application of fertilizers and pesticides. Tobacco plant requires substantial doses of chemical fertilizers such as TSP and urea. Potash is not used too often since it reduces the nicotine content. Focus group discussions conducted at Kushtia revealed that certain companies provide their contract growers with imported fertilizers such as sacchercide which curtails the flowering of the tobacco plant. This practice increases the nicotine content in the leaves and the leaves come out 'thick'- just as the way they are preferred by the companies. Sometimes, in the absence of sacchercide, a mixture of shampoo and coconut oil is used to achieve similar results!

At a certain stage, the plants are "topped" or disbudded to get a better yield. When the leaves become yellow and wrinkled (a sign of maturity), they are plucked. Once harvested, the curing or the drying process begins. Curing can take a number of forms ranging from flue curing (drying in barns under different temperatures), sun curing, air curing, fire curing to pit curing. The first two techniques are widely used in Bangladesh with most of Rangpur tobacco being sun cured while the bulk of Kushtia tobacco is flue cured. Flue curing, which uses as its fuel, wood or crop by-products such as hay or straw, contributes to substantial deforestation and/or air pollution. It takes about 72 hours for the leaves to reach the desired colour. It is an extremely labour intensive process requiring constant monitoring of the temperature. As a farmer remarked "a slight negligence causes the leaves to become a degree too dry and the price comes crashing down to Taka 25 a kg from Taka 60 a kg"! Even sun curing which involves mostly women and children making bamboo sticks followed by threading of the raw leaves into these sticks is a very labour intensive process. Virginia varieties are mostly flue cured while Motihari, Jyoti, etc. are sun cured. After the curing process, the leaves are packed into bundles and sold to the traders, middlemen, *bidi* and cigarette factories, *zarda* factories and other processed tobacco manufacturers.

Tobacco agriculture: the macro picture

On the global scale, Bangladesh ranks 21st in tobacco growing, the largest producer being China followed by the USA and India. With a total production of more than 38,000 metric tons of leaf, Bangladesh accounts for about 0.4% of the total volume of tobacco in the world. The country is a net importer. Tobacco contributes less than 0.01% to the total GDP of Bangladesh. In terms of employment, this crop accounts for about 0.6% of the agricultural labour force and less than 0.5% of the total labour force. Thus tobacco does not seem to occupy an important position in the macro economy of Bangladesh. In fact, as Figures 1a to 1c will show, over the past two decades from the early 1980s to the late 1990s, Bangladesh witnessed negative growth rates in tobacco acreage and

tobacco production. However in the 1990s, the decline in acreage has not seen a commensurate decline in production, most ostensibly because of an increase in the growth rate of yield.

At the regional level, particularly the two tobacco dominant districts of Rangpur and Kushtia, the scenario appears somewhat mixed. The 1980s saw a considerable increase in the tobacco acreage in Rangpur while in Kushtia there was a drastic decline. The situation reversed in the 1990s with tobacco acreage declining in Rangpur and increasing at a phenomenal rate of 5% in Kushtia. From a declining growth in yield in the 1980s, Kushtia registered a tremendous increase in the yield rate in the 1990s. In Rangpur, however, yield rates remained negative in both the decades. The prime reason behind these occurences has been the active operation of a number of tobacco companies in Kushtia, including the largest in the country, namely British American Tobacco Bangladesh (BATB). BATB has gradually reduced its operations in Rangpur.

From the above discussion, it emerges that, at the regional level, tobacco farming in Rangpur has reached a saturation point and is now declining. However, in Kushtia, the crop is gaining increasing importance. At the aggregate level, a sustained decline has been lacking with some years witnessing increases while others showing declines (see Appendix).

Fig 1a: Growth rates in area under tobacco cultivation in Bangladesh, 1980-89 and 1990-98

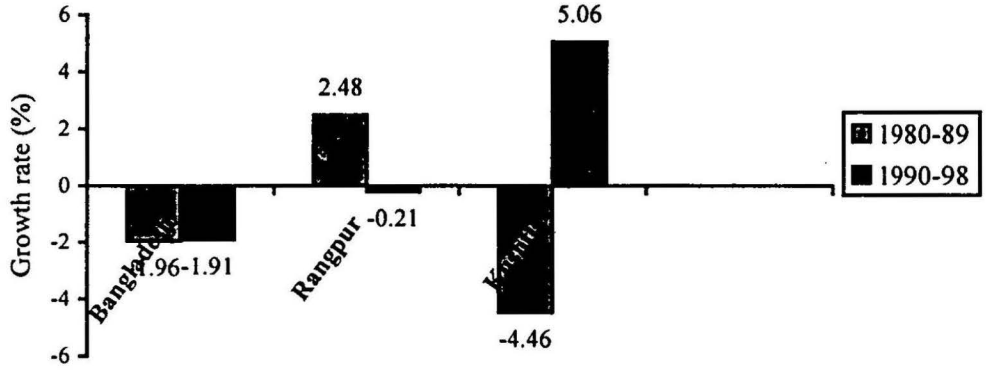


Fig 1b: Growth rates in tobacco production in Bangladesh, 1980-89 and 1990-98

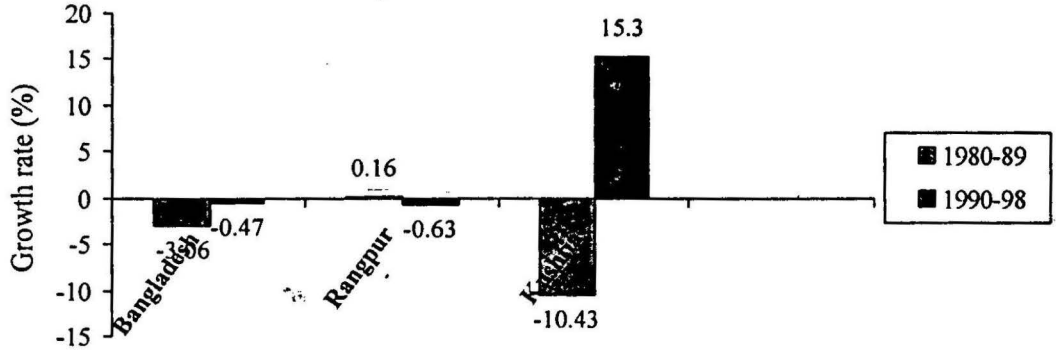
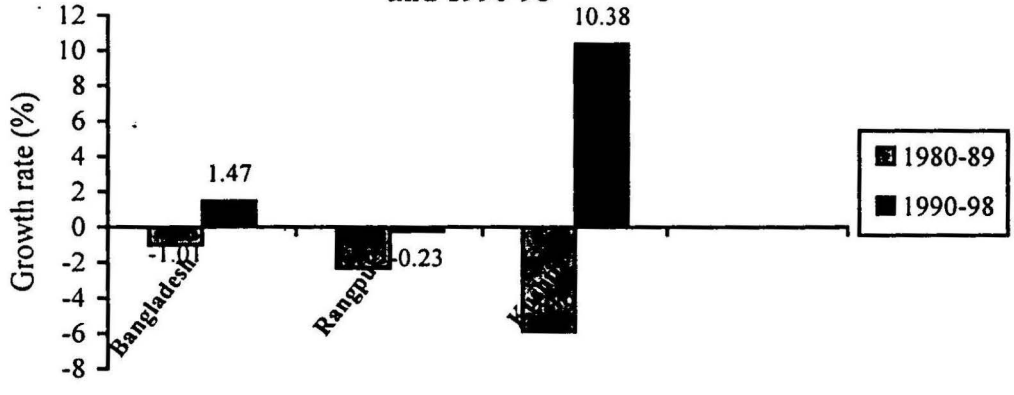


Fig 1c: Growth rates in tobacco yield in Bangladesh, 1980-89 and 1990-98



Source: Compound growth rates have been calculated from BBS data using the log-linear model.

For comparing the trends in tobacco acreage with those of competing crops, the Area Replacement Index (ARI) was calculated (Table 3). The ARI was calculated as the ratio of the area under tobacco to the area under other competing crops. For all the crops considered, except pulses, the ARI has undergone a decline implying that tobacco acreage has been dwindling. With the exception of pulses, tobacco farming does not seem to have replaced any of the other competing crops. There appears to have been a significant increase in the maize acreage. With the demand for this crop increasing day by day, for use as feed for the poultry sector, more and more land is being devoted to maize.

Table 3: Area Replacement Index of Selected crops with respect to Tobacco, 1980 – 98

Crop	1980-81	1990-91	1998-99
Boro rice	0.044	0.015	0.009
Wheat	0.087	0.064	0.036
Maize	26.671	11.744	11.177
Pulses	0.158	0.082	0.100
Oilseeds	0.167	0.067	0.062
Sugarcane	0.345	0.199	0.182

Source: Calculated from BBS data

Though it is heartening to know that the area under tobacco vis-à-vis other crops has gradually been reducing, the growth rate of tobacco yield seems to be higher than most others (Table 4). Thus the economic effort on tobacco seems to have increased much more than the economic effort on crops like pulses, oilseeds and sugarcane. In fact, as we saw in Table 3, the area under tobacco has gone up in relation to pulses.

Table 4: Growth Rates in Yield of Tobacco and Competing Crops

Crop	1980-89	1990-98	1980-98
Boro rice	0.38	1.80	0.38
Wheat	-2.10	3.13	0.17
Maize	2.82	3.27	3.13
Pulses	0.47	0.78	0.82
Sugarcane	-1.34	0.49	-0.27
Oilseeds	-1.25	0.04	1.10
Tobacco	-1.01	1.47	0.95

Source: Calculated from BBS data.

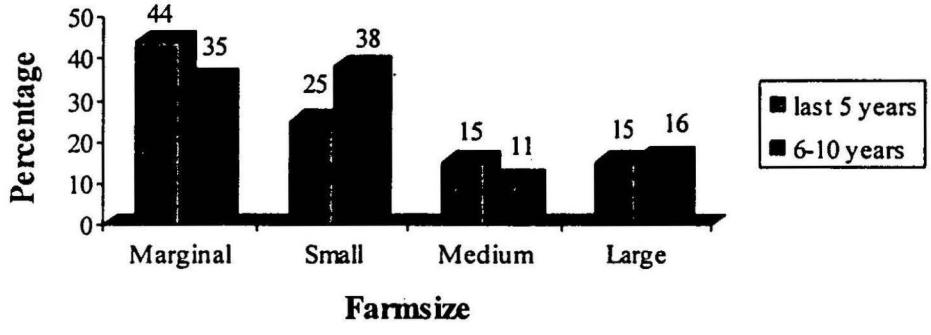
Data also revealed the growing importance of tobacco at the micro level (Table 5). While 39% of the farmers have been growing this crop as an ancestral occupation (> 20 years), about 24% have been engaged in this tradition for the last 11 - 20 years. Another 36% of the farmers have taken to this crop in the last 10 years, of which 24% have joined in the last 5 years. Thus, a clear trend of an increasing number of farmers getting into the production of this crop is discernible. This is particularly true for Kushtia. Moreover, for these farmers, about 15% to 30% of their total annual income originates from tobacco.

Table 5: Trends in the number of entrants to the tobacco farming industry

Time span of tobacco cultivation	Rangpur	Kushtia	Total
More than 20 years	83 (55)	35 (23)	118 (39)
11 – 20 years	35 (23)	38 (25)	73 (24)
6 – 10 years	18 (12)	19 (13)	37 (12)
Last 5 years	14 (9)	58 (39)	72 (24)
Total	150 (100)	150 (100)	300(100)

Notes: 1. Figure in parenthesis show percentages of total
2. Percentages have been rounded off to the nearest decimal

Fig 2: Farmers (by farmsize) taking to tobacco cultivation in the last 10 years



If we look into the category of farmers who are mostly taking up tobacco cultivation, it is basically the marginal and, to a lesser extent, the small farmers (Fig 2). In the past 5 years almost 45% of the new entrants into the farming industry comprised of marginal farmers.

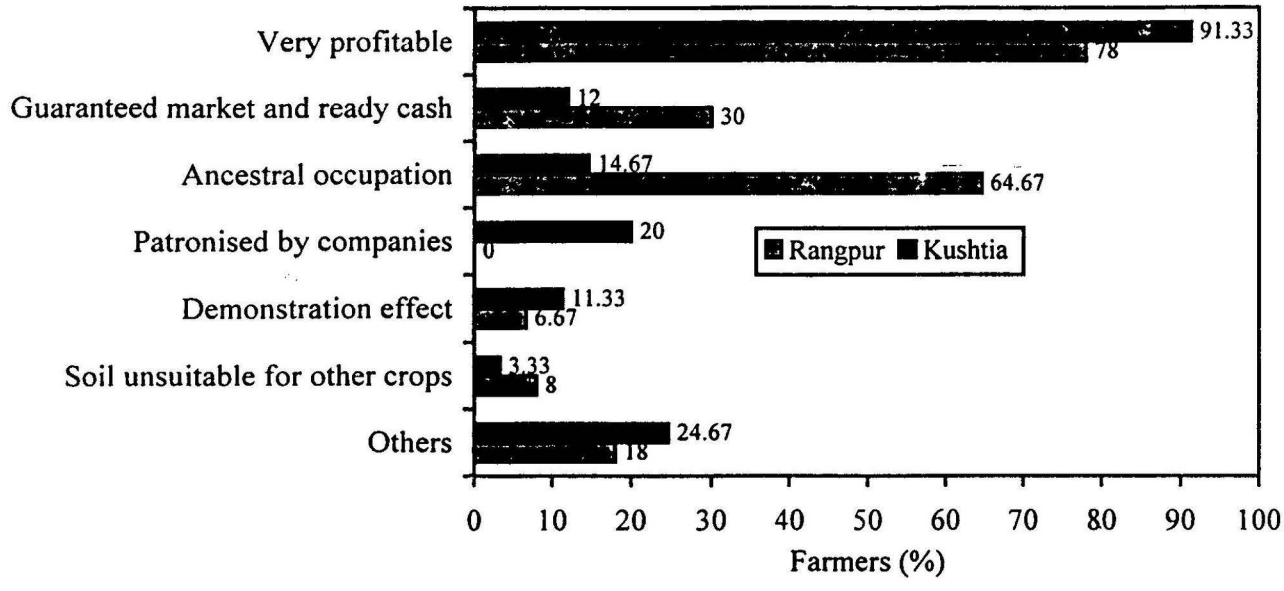
What are the factors which are attracting our farmers to take to tobacco growing? Are there alternatives to this crop? If so, how can these be effectively adopted? These are some of the questions that are sought to be explored here.

Why grow tobacco?

Tobacco has the reputation of being a very profitable crop with few 'equally lucrative' substitutes. Among the various reasons cited by the farmers for cultivating tobacco, the profitability aspect was overwhelmingly dominant (Figure 3). A whopping 85% considered this a very profitable crop. Ancestral occupation was another reason that was oft quoted, particularly in Rangpur. In this region, tobacco farming has been going on for generations and farmers are well conversant with the techniques of growing of this crop. In fact, tobacco has become so much a part and parcel of their lives that they are reluctant to give it up, sometimes even citing that their soil is unsuitable for cultivating any other crop. Another attraction to tobacco is the fact that it provides a guaranteed market and ready cash. Unlike other competing food crops, this crop is non-perishable and can be easily stored. Moreover, tobacco is harvested within a short period while other competing food crops are harvested over a relatively longer period. Therefore the tobacco farmer can lay his hands on hard ready cash the moment his produce is disposed of unlike most other crops which yield returns as and when the output is ready for sale. This acts as a major centripetal force for the farmers, particularly the cash-needy marginal and small farmer to take to the growing of this crop.

Demonstration effect also plays an important role to the extent that a farmer is 'coaxed' to take to tobacco farming simply by watching his neighbour 'graduate out of poverty' after cultivating this crop. Strangely enough the returns still continue to elude him. Patronization by the tobacco companies seems to have been an important engine for the proliferation of this crop with about 20% of the farmers being contract growers of such companies. Some sporadic but interesting reasons such as women and children can contribute labour, food crops get stolen from fields, easy loans are available for this crop etc. were also cited.

Fig 3: Reasons for cultivating tobacco



Note: Multiple responses considered.

The profitability mirage of tobacco

A gross margin analysis to determine the net returns from tobacco vis-à-vis other competing crops was carried out. The gross margin equals the difference between the sales proceeds and the per acre variable cost of production. Variable costs include the cost of seeds, fertilizers, irrigation, pesticides and other inputs including labour (both hired labour as well as imputed value of own household labour) [9]. It may be noted here that since fixed costs have not been incorporated, the gross margin analysis may not be an exact indicator of net economic benefits. However, it does allow for comparisons to be made between alternative uses of land and labour.

A look at the gross margin figures in Table 6 reveals that the net economic benefits from tobacco exceed those of most other crops. Tobacco, in general, yields a gross margin of Tk. 7709 per acre. But when the crop is split into sun cured and flue cured varieties, i.e., the varieties predominantly prevalent in Rangpur and Kushtia respectively, there emerges a stark difference. The wide margin between the two varieties emerges because flue curing of tobacco is an extremely labour intensive process. The leaves have to be kept under continuous supervision for 72 hours. Sometimes, wood (which is costly)

[9] To calculate the imputed value of own household labour, the questionnaire was structured to record the amount of labour used, both owned and hired. The quantum of owned labour was then multiplied by the going market rate to get the imputed value.

is also used as a fuel though most farmers use hay and straw. It may also be pointed out that in Kushtia (where tobacco is mostly flue cured) the wage is somewhat higher than in Rangpur.

Table 6: Gross income, total variable costs and gross margin of tobacco and competing crops, 2000-2001

(Taka/acre)

Crop / crop variety	Gross income	Variable non-labour costs	Labour costs		Total variable cost	Gross margin
			Hired	Own household		
Tobacco (300)	24385	9554	3805	3317	16676	7709
i. Sun cured tobacco (155)	14723	5733	2111	2296	10140	4583
ii. Flue cured tobacco (145)	34046	13375	5500	4337	23212	10834
Rice (81)	13615	6200	1195	645	8040	5575
Wheat (47)	9656	4151	1903	975	7029	2627
Maize*	14570	4944	1940	1962	8846	5724
Sugarcane (16)	39500	17613	6784	2653	17613	22001
Mustard (11)	9441	3049	1169	1024	5242	4199
Masur (Red Lentil) (10)	7077	1421	1062	405	2888	4189
Potato (42)	22641	12478	1782	1523	15783	6858
Cauliflower (10)	26676	9078	4892	2314	16284	10392
Sunflower (11)	14729	3402	1482	1529	641	8316
Rajnigandha (Tuberose)**	96000		24000		24000	72000

Note: Figures in parenthesis show the number of farmers considered.

* Figures for maize have been taken from Husain *et al* (2001).

** Since the number of farmers growing tuberose was very small, an approximation of the variable costs incurred under different categories proved difficult. Therefore, only the aggregate variable cost has been shown here.

The economic profit from sun cured tobacco is a mere Tk. 4583 per acre while for flue cured tobacco it is more than double at Tk. 10,834 per acre. For aggregate tobacco, the most profitable alternatives seem to be tuberose *(rajnigandha)*, sugarcane, cauliflower and sunflower. If we consider only flue cured tobacco, the range of alternatives narrow down to sugarcane and *rajnigandha.* While flue cured tobacco yields returns less than half the economic cost, sugarcane yields returns equal to 1.25 times the economic cost and *rajnigandha* fetches a whopping three times the economic cost! With sun cured tobacco, the array of alternatives becomes much wider with maize, potato, cauliflower and sunflower joining the list.

As has been mentioned before, the main reasons behind cultivating tobacco is the widely held view that tobacco is a very profitable crop. However, the discussion above works somewhat to damage that perceived reputation. Not only are the material input costs of producing this crop high but it is also a highly labour intensive crop. A single crop on an acre of land takes about 137 labour days. This contributes to reduce the net economic benefits, thereby rendering a number of other alternative crops as more lucrative than tobacco. Most farmers do not feel the pinch of the high labour costs involved in tobacco farming as they use their own 'free' household labour in the process. In cost-benefit studies, the imputed value of this 'free' labour is, often, not considered. High gross returns per acre need not necessarily imply high returns to labour.

The 'free' labour is mostly supplied by women and children of the household. The focus group discussions, revealed that during the harvesting season women do not even have the time to cook and the children, sometimes, have to miss school. About 47% of the total economic cost of labour is attributable to household labour. In Rangpur, more than 52% of the total labour cost comes for 'free'. This is in consonance with the region's low literacy level and high incidence of poverty which forces as many household hands as possible to toil in the fields.

Table 7 shows the share of labour costs and non-labour costs in the cost of tobacco production. The high contribution of owned labour in the tobacco farming process is obvious from the figures below. Much of this labour is utilized during the harvesting and curing process with a heavy concentration of women and children in these activities, particularly the latter. During harvest the continuous skin contact with the nicotine drenched tobacco leaves results in a slow dermal absorption of the chemical leading to green tobacco sickness (GTS). In fact most of the survey respondents complained of headache, dizziness, vomiting and weakness during the harvesting season – symptoms of GTS. One farmer even remarked that he loses all his guests during the harvesting season because of the strong smell of nicotine that emanates from stored leaves!

Table 7: Share of owned labour, hired labour and non-labour expenses in the cost of tobacco production (%)

District	Owned labour	Hired labour	Non-labour material inputs
Rangpur	21	23	57
Kushtia	24	19	58
Total	23	20	57

Among the non-labour costs, the share of chemical fertilizers is the highest at 35% followed by fuel for curing at 19%. In Kushtia where most of the tobacco is flue cured, the share of curing fuel in the non-labour costs inflates to 27%. In many cases this fuel is precious wood. In fact, recent research on tobacco indicates that an environmentally critical situation is emerging in more than 30 countries and Bangladesh is among the leading ones with the highest percentage of tobacco related deforestation.[10] The fact that British American Tobacco, a major tobacco company in Bangladesh has launched afforestation drives in different regions of the country is a subtle acceptance of this fact. In recent years, there has been a shift in favour of using crop by-products such as hay or straw as curing fuel. Instances of natural gas and kerosene have also been found, all of which are potential contributors to global warming.

If we now consider both the non-labour input cost as well as the labour cost, it is again fertilizers and curing which account for lion's share of the costs. Figure 4 gives the item-wise share in the total cost of tobacco production. For Rangpur, the share of curing cost is lesser since most of Rangpur tobacco is sun cured and wage is also low.

[10] Campaign for Tobacco Free Kids. 2001. *Golden Leaf, Barren Harvest*, Washington: Inkworks Press, pp 26.

Fig 4a: Item-wise share in total cost of tobacco production

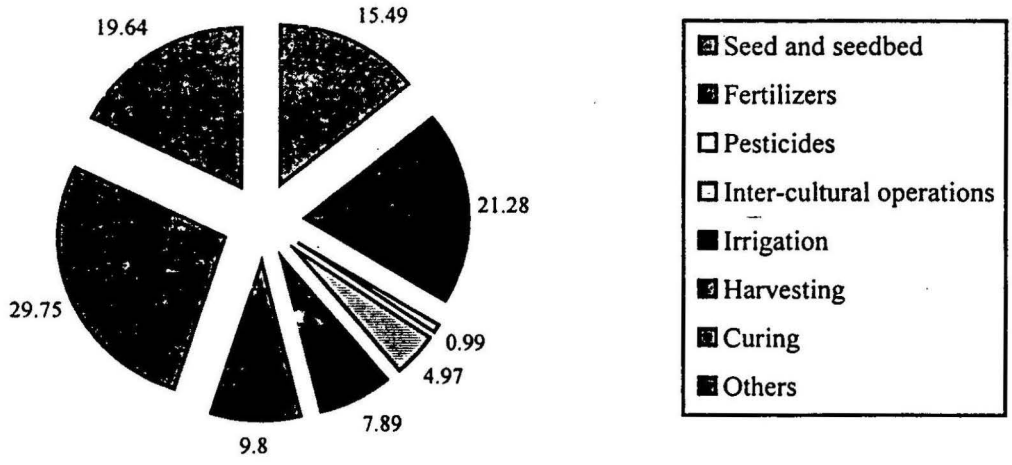


Fig 4b: Item-wise share in total cost of tobacco production - Rangpur

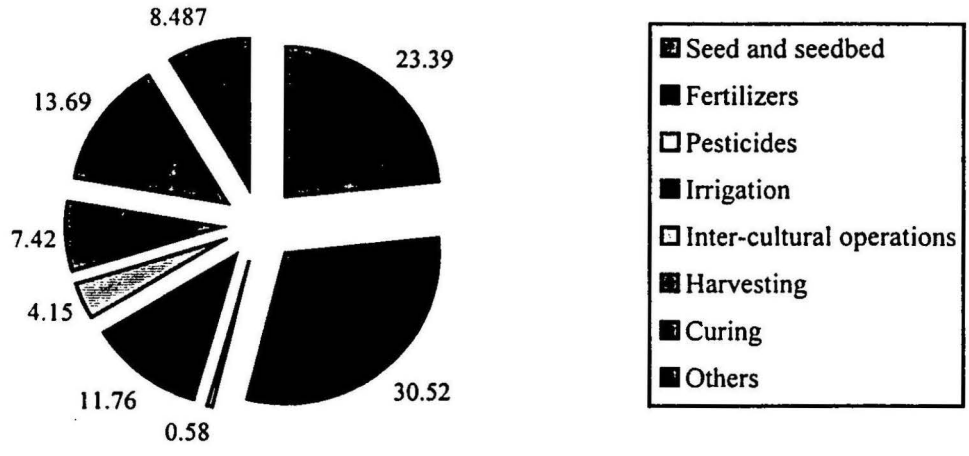
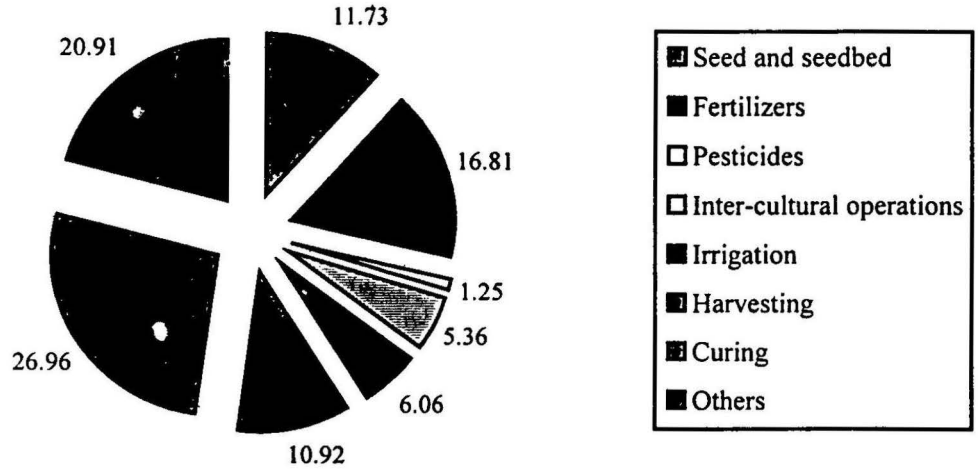


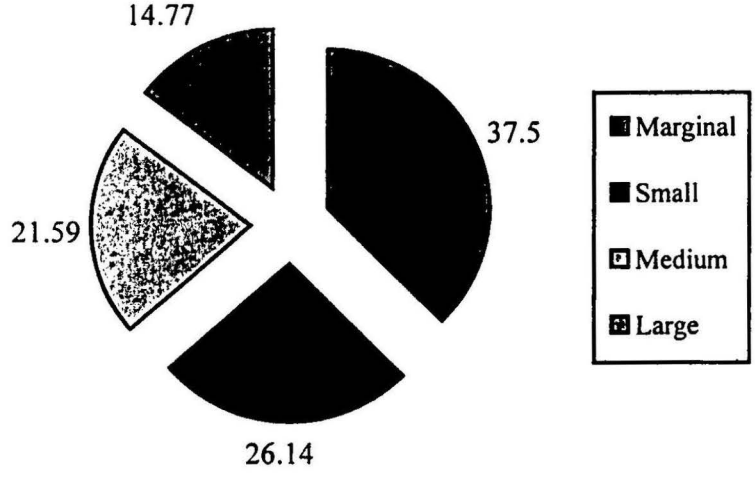
Fig 4c: Item-wise share in total cost of tobacco production - Kushtia



Financing tobacco cultivation: enhancing the dependency loop

The input intensive nature of tobacco crop implies a substantial capital, both at the commencement and during the growing season. Often farmers have to access loans or credit from external sources. The survey revealed that 26% of the farmers had availed of external credit to grow tobacco in the preceding 5-7 years. Interestingly most of these belonged to the marginal and small farmer category. Figure 5 shows the proportion of farmers on the basis of farm size who availed of loans for growing tobacco. Almost 64% of those who availed of loans belonged to the marginal and small farmer category while another 22% and 15% were medium and large farmers respectively.

Fig 5: Farmers' availing loans for tobacco cultivation according to farm size



Loans for growing tobacco are provided by formal institutions such as banks, NGOs, tobacco companies and also by informal agencies such as the village moneylender. Loans from companies, usually, do not take the form of hard cash. Rather they render assistance (mostly to their own contract growers) in the form of seeds, fertilizers, pesticides and technical assistance. Seeds are often provided free of cost while the costs of the fertilizers and pesticides are recovered during the procurement of the harvest.

Most of the non-contract growers avail loans from the local moneylenders, *albeit* at exorbitant rates of interest. Even though formal banks provide loans at much lower rates of interest, the transaction cost involved in availing these loans is very high. Often the farmer has to travel long distances to reach a branch since most of them are sparsely located. Moreover, the bureaucratic procedures that one has to go through involve repeated trips to the concerned branch which is a drain on the poor farmers' time

and resources. Sometimes there is paper work to be done which is daunting for the illiterate or little educated farmer. All these reasons compel a farmer to take loans from the easily accessible moneylender. Indeed, as Table 8 shows, among those who took loans for growing tobacco, 39 % went to a moneylender who charged interest rates as high as 110 %! Only 18 % took loans from banks while another 16 % and 18 % took loans from NGOs and village *samitys*.

Table 8: Sources of loans for tobacco farmers

Loan source	Rangpur	Kushtia	Total
Moneylender	5	26	31 (39)
Banks	-	18	18 (23)
NGOs (BRAC, *Uddipan*, Grameen Bank, *Karmajukta*)	1	15	16 (20)
Village *samity*	15	3	18 (23)
Friends / relatives etc.	5	-	5 (6)
Total loan seekers*	**26**	**54**	**80**

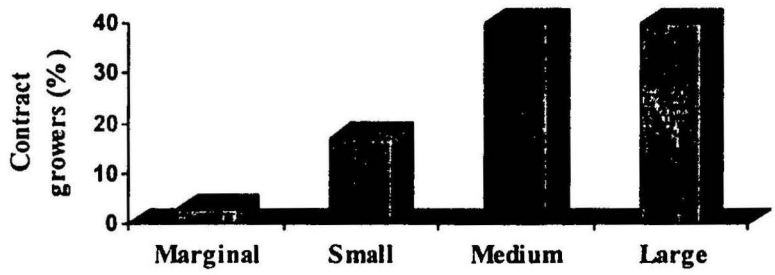
* Total loan seekers may not equal the summation of all loan sources due to multiple responses.
Note: Figures in parenthesis indicate percentage of total loan seekers.

Eighty per cent of the loan takers reported that they had to seek loans prior to every tobacco season. Their earnings from a single tobacco crop hardly lasts them till the next cropping season. As a result the only alternative left for the credit-needy farmer is to borrow for the next season. Once the output is disposed of, these loans are repaid which leaves a meagre amount for themselves and so the cycle goes on. Thus, a gradual process of pauperization of the farmers goes on which merely enforces a circle of dependency. It may be noted that farmers do take loans for other crops but the incidence of such loans is much higher for tobacco: About 16% of the tobacco farmers reported that their economic condition as a result of growing tobacco was no better off than the time they were not growing the crop. Sometimes, in the event of crop failures, the farmers have even to sell off some of their assets, in addition to selling their labour, in order to repay the loan. Interestingly several farmers expressed their desire to give up growing this crop but their indebtedness would not permit a way out of it since most of the loans are tied to tobacco growing. Often the tobacco farmers have to mould their cropping decisions in accordance to the directives of the money lenders and other credit agents.

Contract Growing of Tobacco

In Bangladesh, several tobacco companies have been contracting directly with growers for almost four decades now. We surveyed 30 contract growers who were registered farmers of British American Tobacco Bangladesh (BATB), Dhaka Tobacco Company and Nasir Tobacco Company. Most of the registered farmers are chosen at the companies' discretion and are mostly medium or large farmers. As Figure 6 shows 80% of the contract growers were medium and large farmers. A mere 3% and 17% were marginal and small farmers respectively.

Fig 6: Contract growers of tobacco by farm size



The companies provide the farmers with inputs such as seeds, fertilizers, pesticides as also technical assistance. Seeds (which forms a small proportion of the total cost of production) are normally provided free of cost while the cost of fertilizers and pesticides are recovered during the purchase of the produce. Depending on the consumers' preferences and market demand, the farmers are informed of the exact grade and quantity of the leaf desired by the companies which would be procured from them at a pre-determined price. The company extension workers then provide technical support to these growers to ensure that the quality requirements are adhered to.[11]

From the buyers' point of view, entering into contracts practically eliminates their transaction costs and risks involved in seeking out the desired quantity and exact grade. For the producer, such contracting arrangements reduce his price and production risks. Alternatively he would have to dispose of his output through middlemen and intermediaries at highly uncertain prices. The buyers would choose from the available quality and quantity and the price would be determined by the forces of demand and supply. Given the nature of the commodity, the farmers would have to sell their produce at whatever price that is quoted by the intermediaries. In fact, this is a common occurrence

[11] Technical assistance comes in the form of optimal fertiliser and pesticide dosage, frequency of irrigation, appropriate inter-cultural operations, etc.

with the non-contract growers, who are, often, faced with a situation of 'excess supply' and have to sell off their product at very low rates.

Contract growing, however, brings with it a different kind of a risk – contract specific risk. In the event of the output not meeting the grades and standards set by the contractor, the grower runs the risk of losing his 'secured' status of a contract grower, not to mention the rock-bottom prices at which he would have to sell off his commodity. For a crop like tobacco, which involves considerable initial investment in the form of construction of curing barns and store houses, such a situation can spell disaster for the farmers.[12]

Another form of risk associated with contract growing is that the price in the spot market may be higher than the pre-fixed contract price in which case the contract growers have to undergo losses. During our survey we came across contract growers of some companies who accused their contractors of offering prices lower than the open market price. Some of the farmers even complained of a breach of contract by certain companies.

Who are the buyers?

Like most agricultural markets, the market for tobacco is also imperfect. Except for the contract growers who sell directly to the companies, most growers sell their produce to the middlemen or the *beparis*. Normally the *beparis* themselves come at the doorstep of the farmers which saves the latter the added hassle of transportation. Even if the farmers take their produce to the market, the takers are the *beparis* who keep a margin of 6% to 10% of the outlay. This is a reasonable amount and the farmers, as such, do not face any problems in finding a market for their leaves. Whatever be the quantum of supply, there seems to be a market for it. However, sometimes problems arise with the prices received.

Beparis, as buyers, are generally educated and well informed about the prevailing market conditions. They are also an organisationally strong lot with affiliations to trade unions. The farmers, on the other hand, are inadequately informed, weak and unorganised. When prices are fixed in the open market, they do not get the correct price as they often sell their produce under distress or forced conditions. Their indebtedness coerces them to sell off their leaves as fast as possible. The *beparis*, being fully

[12] Curing barns are normally made of bricks and cement. The economically weaker ones sometimes construct mud barns. The size of these barns vary from farmer to farmer with the richer ones constructing several of them.

aware of this psyche of the farmers, exploit them to the fullest. Some of the exploitative ways that emerged from the survey included taking a commission of up to 4 kilograms of leaves for every *maund* (approximately 40 kilograms) or a certain minimum fee for every unit sold, collusion among *beparis* to offer a uniform low price to farmers, taking away the produce on credit and making delayed payments, etc. Sometimes if the leaves are small or are not of a desired colour, the price can even come down by more than half.

For purposes of comparison, the farmers were asked of the kinds of problems they encountered while selling off other *rabi* season food crops. The overwhelming response was the uncertainty in being able to find a market for their crops. Seasonal vegetable and fruits need to be disposed of quickly, given their perishable nature. As a result, the market gets flooded with the seasonal crops and prices are at rock-bottom levels. The lack of buffer stocking arrangements makes things worse for the farmers. Moreover, certain institutional rigidities such as trade unionism and collusion among traders prevent the farmers from getting a space in the market.

From the above discussion, it emerges that guaranteed market plays an important role in the farmers' decision to grow tobacco. The intelligent farmer is unwilling to risk producing highly perishable food crops for which he may not get adequate buyers. On the other hand, with tobacco he knows that there will be takers for it, though he may have to sell his produce at slightly lower prices. Introducing sustainable procurement drives at reasonable prices and enhancing storage facilities of alternate high value crops could act as catalyst for farmers to quit tobacco growing.

Acreage allocation to tobacco: a multivariate statistical analysis

To get a better grasp of the factors that affect farmers' decisions to devote land to tobacco, a tobacco area function was estimated. A farmer decides on his current season acreage based on the prices that prevailed in the previous season. A high level of price (indicating a greater willingness to pay on the part of the consumers) would indicate a higher profit which, in turn, would induce the farmers to augment his acreage. Accordingly *price* prevailing in the previous season was taken as one of the exogenous variables. Acreage decisions are also contingent on the previous year's *yield*. Thus this factor was taken as another explanatory variable. Since tobacco is an expensive crop to cultivate requiring high doses of inputs, farmers' decisions to increase or decrease the area under it would depend on his economic status. The quantum of *land owned* by a farmer i.e. his farm size and the *per capita income* were taken as proxies for his economic condition. Availability of *own household labour*

was taken as a fifth explanatory variable. The rational farmer always tries to economize on the cost incurred on labour for this high labour intensive crop. As a result he tries and gets as many 'free' hands as possible from his own household. Finally, as an indicator of his socioeconomic status, the *educational level* (years of schooling) of the farmer was also taken into account. Accordingly the tobacco area function of the farmer was taken as follows:

Area under tobacco = f (price in the previous season, previous year's yield, land owned, per capita income, availability of own household labour, educational level)

The log-log model was employed to estimate the above function for all the 300 sample farmers using the OLS technique. Table 9 depicts the regression results.

Table 9: Regression coefficients of the estimated tobacco area function, 2000-2001 season

Dependent variable = Area under tobacco Adj. $R^2 = 0.63$

Exogenous variable	β coefficient	t-value
PRICE $_{t-1}$	0.58	3.72
YIELD $_{t-1}$	-0.42	-2.39
FARM SIZE	0.34	8.41
PER CAPITA INCOME	0.44	4.09
HH LABOUR AVAILABILITY	0.24	1.07
EDUCATIONAL LEVEL	0.04	0.46
Constant	-2.44	-1.67

The positive and significant impact of price on tobacco acreage decisions is amply clear from the above table. Area under tobacco and tobacco yield share an inverse relationship. Such a trend was also observed at the national level wherein a decline in the tobacco acreage was accompanied by an augmentation in tobacco yield (see Fig 1a and Fig 1c). Farm size and per capita incomes of the farmers yielded a positive relationship – much in consonance with the fact that tobacco being a costly crop to grow, any increase in acreage can be done only if economic status permits. Moreover, tobacco being a highly labour intensive crop to grow, availability of own household labour showed a positive impact on acreage decisions. Though the result was not significant, it does reflect that availability of own labour is an important consideration in tobacco cultivation. The level of education of the farmers

seemed to be positively related to area devoted to tobacco, though the relationship was not a significant one.

Do Farmers Want to Give Up Tobacco Cultivation?

To assess the farmers' opinion about tobacco cultivation, the survey respondents were asked if they were willing to continue with this crop or whether they wanted to give up on it. As expected, majority of them expressed their desire to continue, though about 6% of the farmers wanted to quit. Incidentally, the very small percentage of such farmers may be compared with the high level of illiteracy among the sample farmers (see Table 2). Table 10 ranks the various reasons quoted by the farmers for wanting to quit tobacco farming. It appears that a significant proportion of these farmers are aware of the health implications of cultivating tobacco. As has been mentioned before, green tobacco sickness, nausea, vomiting and headaches are some of the consequences of tobacco farming. These farmers also seem to be aware of the high labour cost of cultivating this crop. Indeed among the farmers wanting to give up tobacco cultivation, 63% belonged to the medium and large farm size category.

Table 10: Reasons for wanting to quit tobacco cultivation

Reasons	Percentage of responses
High level of health and occupational hazards	40
Excessive labour required	23
Unable to get a fair price	13
Have to avail of loans	10
High input cost	7
Others	7

From the policy point of view, it is important to get a deeper perception of the reasons to stop cultivating tobacco through more detailed studies on these issues.

A fallacy surrounding tobacco

The survey conducted revealed an interesting but a grossly mistaken perception of tobacco – tobacco cultivation improves soil fertility![13] This was particularly true for Rangpur where a whopping 88% of

[13] The farmers were asked whether they were aware of the fact that tobacco cultivation depletes the soil of its nutrients.

the farmers thought that tobacco actually improves soil fertility. The Kushtia farmers seemed to be better informed with about 33% harbouring such a notion.

Contrary to such a belief, tobacco actually drains the soil of its nutrients and makes it unfit for cultivating other crops unless corrective measures are taken. The plant uses more nitrogen, phosphorous and potassium than other major cash or food crops and as a result requires high and frequent doses of fertilisers.[14] It was not clear as to why such a misconception prevailed amongst the farmers. Perhaps the experts on this field should look closely into this for a possible explanation.

Farmers' general awareness regarding tobacco

Though all the survey farmers were aware of the dangers of smoking, fewer were conscious about the dangers of tobacco farming. As many as 26% and 36% were not even aware of the consequences of tobacco farming on health and the environment respectively (Table 11). Right from the time the seed is sown till the output is ready for disposal, it is a tale of continuous toll on the farmers and others working on the crop. In fact, it has been documented that the seriously damaging health and environmental impacts caused by tobacco farming parallel those caused each time a cigarette is taken out of a packet and lit.[15] Continuous exposure to the smell of nicotine emanating from the fields, often, leads to dizziness, nausea and vomiting. Dermal absorption of nicotine while harvesting the chemical drenched green leaves leads to an illness called 'green tobacco sickness'. [16]

Table 11: Farmers' Awareness Regarding Health and Environmental Hazards of Tobacco

District	Percentage of farmers aware of	
	Health hazards	Environmental hazards
Rangpur	66	62
Kushtia	82	65
Total	74	64

Tobacco, being a crop which rapidly depletes the soil of its minerals, requires large and frequent doses of fertilisers. The survey revealed that on an average 300 kg or more of chemical fertilisers such as urea, TSP, zinc etc were used for cultivating an acre of tobacco. Since the tobacco plant sucks the soil of its nutrients, the soil has to be replenished over time using expensive chemical fertilisers. Often the

[14] Campaign for Tobacco Free Kids. *op. cit.* pp.25.
[15] Campaign for Tobacco Free Kids. *op. cit.* pp.21.
[16] Ibid. pp.25.

irrigation water from the fields drains into nearby water bodies, thereby polluting the water that is used for various domestic purposes. During the curing process of flue-cured tobacco, excessive heat and smoke is generated that contributes substantially to air pollution. Moreover, when the curing fuel used is wood, tobacco also leads to deforestation.

Conclusions and some policy implications

The importance of tobacco at the macro level seems to be dwindling. This is most clearly brought out by the decline in the acreage. However, this decline seems to have been offset by an augmentation in yield, resulting in a less than commensurate decline in the rate of growth of production. What is particularly disquieting is that, despite a number of anti-tobacco campaigns, a sustained decrease in tobacco production is clearly lacking.

The decline in acreage seems to have come at the benefit of other food crops like *boro* rice, wheat, maize, oilseeds as also cash crops such as sugarcane. The only crop which tobacco appears to be replacing is pulses, as revealed by the Area Replacement Index. However, the increase in the tobacco yield exceeded that of a number of crops, implying that the economic effort on tobacco has been more than on others.

At the micro level, particularly in Kushtia, tobacco cultivation seems to be gaining increasing importance, as documented by our survey. About 40% of the sample farmers here have taken to tobacco farming in the past five years. In the other tobacco dominant region of Rangpur, the practice of growing this crop seems to be getting less popular. The main reason behind this phenomena has been the fact that some major tobacco companies have reduced their operations in Ranpur (where most of the tobacco is suitable for *bidis*) and have started focussing more on Kushtia (where the tobacco is of a higher grade and suitable for cigarettes). A substantial proportion of the annual income of tobacco farmers is also being generated through this crop.

Among those taking to tobacco cultivation in recent years, the incidence has been higher among marginal farmers. These farmers do not feel the pinch of the high cost since they put in all their household labour in the process. They get carried away by the high gross return. Moreover, these cash-needy farmers get the proceeds from tobacco leaves at a go while with most other crops it comes on a piecemeal basis.

The widely harboured notion of tobacco being a lucrative crop to cultivate has led to more and more farmers taking on this crop in recent years. But tobacco is profitable only for those who can provide their own household labour in the production of this crop. Our study findings show that, when the economic profitability of tobacco is considered, the crop may not be such a money-spinning one after all. The 'profitability' of tobacco emerges from the fact that most farmers economise on the cost of labour required for producing this highly labour intensive crop by using their own labour and that of their families. Since this labour comes for 'free', they do not feel the pinch of the high labour cost. The survey showed that more than 50% of the labour required is provided by household labour. If the imputed value of this 'free' labour is taken into account, tobacco loses much of its profitability margin. The high labour costs reduce the net returns to labour. Therefore, with higher economic cost of production, alternative crops can sometimes yield higher cost-benefit ratios, despite fetching a lower gross income. In fact, our survey showed that most farmers are aware of this with many of them saying that tobacco growing yields little for the farmer who has no household labour. Despite knowing this, it is a difficult decision for them to shift out of this crop as they are not well-informed about plausible alternatives.

Most farmers are also well aware of the adverse effect of tobacco cultivation on health. They seem quite keen to shift to other crops. But their lack of knowledge regarding suitable alternatives prevents them from doing so.

The rational farmer cultivates a particular crop because it yields him high returns and not because of any particular loyalty to it. If these farmers are made aware of the true economies of tobacco, educated about the ill-effects of growing tobacco, given adequate guidance on feasible alternates and provided appropriate marketing facilities, a shift out of the crop would be certain. In fact, in the early 1990s, the Bangladesh Cancer Society carried out a demonstration project on tobacco crop substitution in a rural area with a population of about 15,000 using locally generated funds. Tobacco was being widely grown in the area. Extension workers advised the local tobacco farmers on how to switch to other food crops such as okra, maize and bananas. An impact assessment after three years showed a dramatic decline in tobacco. Okra production was yielding four times more money than they had earned through tobacco. Local sale of okra had also helped in enhancing the nutritional status of the community.[17]

[17] World Health Organisation. 1995. 'Crop Substitution: a Success Story', *Tobacco Alert*, Special Issue, c.f. Chowdhury, K. op. cit. pp.21.

In 1990 another project aimed at educating farmers on the alternatives to tobacco was started. This was the 'Nilmoniganj RCC Project' started under the aegis of Rotary Club Dhaka.[18] It involved getting the land beside the railway tracts (which normally lie fallow) under the cultivation of different crops such as soybeans, maize, peanuts, drumsticks and date palm which can act as substitutes for tobacco. The project, which mainly used female labour, was basically to demonstrate and educate the tobacco farmers of the region about its alternatives. Today, there can hardly be any tobacco found in the area.

The input intensive nature of tobacco crop implies that farmers have, often, to access loans or credit from external sources. Most of these farmers belonged to the marginal and small farmer categories. High transaction costs involved in procuring loans from formal institutions compel the poor farmers to take loans from the exorbitant money lender. Of the loan takers, an overwhelming majority reported that they had to seek loans prior to every tobacco season which merely enforces a circle of dependency. The important question that arises here is that if at all tobacco is so profitable, then why do the farmers have to take loans every season? Their earnings from a single tobacco crop leave them little after paying off their debts. With most loans being tied to tobacco, these farmers have no option but to continue growing tobacco.

Another way through which tobacco cultivation is patronised is through tobacco companies. These companies have their registered contract growers (who are mostly medium and large farmers) to whom they provide free seeds, extension services and packages that include fertilisers and pesticides. Tobacco contract growers are mostly economically well-off with them getting a definite market and good price for their produce. There is a demonstration effect that works here since the non-contract grower is 'coerced' to take to tobacco farming just by watching his neighbour graduate out of poverty.

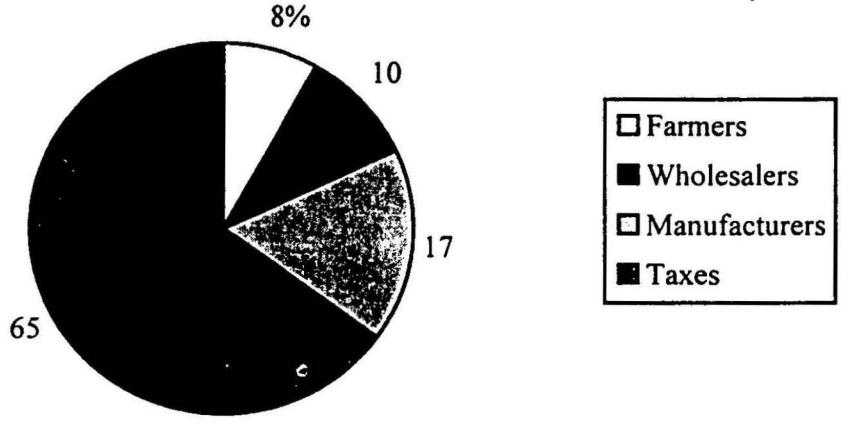
Another reason for the farmers wanting to stick to tobacco farming is the assurance of a market and ready cash. Even if there is excess supply in the market, the farmers know that their output will be sold, *albeit* at somewhat low prices. There is always a demand from the scores of traders, middlemen or *beparis* who procure the output and later sell off to the different companies. This guaranteed market instils into the farmer a sense of security which is lacking in the case of other competing food and cash crops. Moreover, with tobacco, the farmer has on his hands the entire proceeds from the sale of his output while with other crops the receipts come on a piecemeal basis i.e. as and when a part of the

[18] Information obtained through interview with doctors from the Ahsania Mission Cancer Hospital, Dhaka. These doctors are Rotarians who are directly involved in the project.

crop is ready for harvest. In the case of seasonal crops, there is an on-season glut created in the market and the prices are at rock bottom levels. The farmers, in a bid to sell off their products before they rot, accept whatever price is offered to them, even if it means incurring losses. These factors act as major deterrents for the farmers to give up tobacco.

The use of tobacco has been propagated by vested quarters on the grounds that it is a good source of revenue for the government. We worked out an estimate of what percentage of every taka spent of a pack of cigarette goes to the different actors in the tobacco industry. These estimates were worked out using the annual accounts reports of different tobacco companies and through discussions with their officials. Figure 7 shows the different shares accruing to farmers, wholesalers, manufacturers and as taxes.

Fig 7: Who gets what from the tobacco industry?



Source: Calculated from Annual Accounts Reports, British American Tobacco Bangladesh, 1998-99.

The meagre proportion of revenue that goes to the farmers who toil the maximum is clear from the above diagram. Bulk of the share goes to the government as tax revenue. In fact, tobacco industry is one of the highest tax payers to the Government of Bangladesh. The British American Tobacco Bangladesh, a major multinational tobacco company in the country alone pays a tax of Taka 1400 crores per year![19] However, given the fact that this is a hazardous commodity, this merit bad cannot be encouraged irrespective of its economic contribution to society.

It also emerged from our study that some farmers, although a small percentage, were willing to give up cultivating tobacco. These farmers appeared to be aware of the illusive profitability of tobacco

[19] British American Tobacco Bangladesh. 1998-99. *Annual Accounts Report*, Dhaka.

cultivation as also its health hazards. In fact, so far as the health and environmental implications of tobacco cultivation is concerned, an appreciable percentage seemed aware of these hazards. But their inertia in shifting out of this crop emerged from the fact that they were ill-informed of alternatives and ways out of it, they faced a lack of initial capital and technology and the absence of adequate marketing channels.

Having said so much, a few policy recommendations are stated below.

1. First and foremost, it is imperative for the government to understand that tobacco is a merit bad and that the direct and indirect costs of tobacco related diseases offset the revenue accruing from this crop. Accordingly stringent measures must be taken up that would curtail the production and use of this commodity.

2. Appropriate policy measures must be taken up to inform the farmers regarding the true economies of tobacco cultivation and accordingly they must be guided about the alternatives to it. They need to be educated about the dangers associated with tobacco farming. Not only government officials, but also NGOs and other grassroots organisations could have an important role to play in this regard. In demonstrating the substitutes to tobacco crop, the farmers themselves must be involved which would be more effective than merely dictating reforms.

3. Apart from crop substitution the farmers can also be encouraged to take up alternate economic activities such as dairy farming, sericulture and horticulture. Earthworm cultivation is also a very profitable activity. [20] These worms can be cultivated in a regular size planter and take about 40 days to mature. Each planter can accommodate about 2 kilograms of worms and a kilogram sells for about Taka 1000. These worms, which have a tremendous demand in the countries of East and Southeast Asia, can be exported to these countries, thereby fetching valuable foreign exchange. Needless to mention, that appropriate marketing facilities have be created as well. Honey bee cultivation is another economic activity that can be actively encouraged. The farmers need to be informed of the various techniques involved in these activities through appropriate extension services. In addition to this, initial capital and adequate marketing facilities must also be provided. Once these are taken care of, can farmers be expected to actively indulge in alternate economic activities.

[20] Information obtained through an ex-tobacco farmers of Gaibandha district.

4. It is important to create confidence among the tobacco farmers in crops other than tobacco. Towards this end, the government must take up measures in the form of minimum support prices, effective and sustainable procurement drives, enhance storage facilities and provide adequate and timely marketing facilities.

5. The farmers must have easy access to quality inputs such as high yielding variety seeds, fertilisers and pesticides. Irrigation facilities must also be augmented since tobacco being a hardy plant does not require much irrigation.

6. They must also be able to access timely credit on reasonable terms which is not tied to any particular crop. The procedures for availing such loans must be simplified so that the transaction costs associated with these loans can be reduced.

7. Lastly, it may be mentioned that the economic value of tobacco is not zero. The plant has a high protein content which can be extracted and added to food supplements. It can also be used as a topical painkiller and antibacterial medicine. The most promising by-products of tobacco are paper and particle. If the soil and climatic conditions are such that tobacco needs to be cultivated, the above positive aspects of tobacco need to be focussed on.

The supply side measures delineated above have to be integrated with demand side measures aimed at reducing tobacco consumption. Once these instruments are effectively employed, can we expect the farmers to be motivated to quit the production of this so called 'profitable' crop and start growing crops which are 'green' in the real sense of the term.

References

Ahmed, Muzaffer. 1995. *Tobacco and the Economy of Bangladesh*, Keynote speech delivered on the occasion of World Tobacco Day, 31st May 1995 (mimeo), 19p.

Jugantor. 2001. 'Bharatiya tamak datai chheye gechhe Ranpurer bazaar' (Bangla article). *Jugantor*, Sunday, 17th June.

Campaign for Tobacco Free Kids. 2001. *Golden Leaf, Barren Harvest*, Washington: Inkworks Press, 40p.

Chapman, S and Wong Wei Leng. 1990. *Tobacco Control in the Third World: a Resource Atlas*, Malaysia: International Organisation of Consumers Union, 242p.

Chowdhury, K. 2000. *Multisectoral and Intersectoral Approach to National Tobacco Control*, Paper presented at the WHO International Conference on Global Tobacco control Law, New Delhi. 30p.

Dimitri, Carolyn and Edw rd Jaenicke. 1999.'Contracting in Tobacco?' *Tobacco Situation and Outlook*, Economic Research Service, USDA, December, 21-26.

Government of Bangladesh. Various years. *Statistical Yearbook of Bangladesh*, Dhaka: Bangladesh Bureau of Statistics.

Government of Bangladesh. Various years. *Agricultural Yearbook of Bangladesh*, Dhaka: Bangladesh Bureau of Statistics.

Hossain, Mosharaff. 1991. *Agriculture in Bangladesh*, University Press Limited, 464p.

Hussain, AMM *et al.* 2001. *BRAC Maize Cultivation Programme: an Impact Assessment*, Draft report, 39p.

Jha, Prabhat and Frank Chaloupka (Eds.). 2000. *Tobacco Control in Developing Countries*, New York: Oxford University Press, 249p.

Lindblom, EN. 1999. *False Friends*, American Heart Association, American Cancer Society and Campaign for Tobacco Free Kids, 89p.

Must, Emma. 2001. *ITGA Uncovered: Unraveling the Spin - the Truth Behind the Claims*, PATH Canada Guide, June, 6p.

Dainik Janakantha. 2001. 'Oshabhabic hare barchhe tamak chash' (Bangla article), *Dainik Janakantha*, Monday, 10th June.

Panchamukhi, PR. 2000. *Agricultural Diversification as a Tool for Tobacco Control*, Paper presented at the WHO International Conference on Global Tobacco control Law, New Delhi, 49p.

Web site: *http://tobaccofreekids.org/campaign/global/*
www.tobaccoleaf.org

Appendix Table: Trends in the area, production and yield of tobacco, 1974/75 to 1998/99

Year	AREA			PRODUCTION			YIELD		
	Rangpur	Kushtia	Bangladesh	Rangpur	Kushtia	Bangladesh	Rangpur	Kushtia	Bangladesh
1974-75	58400	2400	112740	25264	730	39732	0.43	0.30	0.35
1975-76	63510	4380	121575	29020	1560	44462	0.46	0.36	0.37
1976-77	90000	19600	168160	39825	7850	62530	0.44	0.40	0.37
1977-78	68600	13835	137185	26325	7165	49085	0.38	0.52	0.36
1978-79	63000	14045	123052	21555	7835	43053	0.34	0.56	0.35
1979-80	44450	14145	111420	18020	7599	38900	0.41	0.54	0.35
1980-81	48725	19230	126980	20725	9060	46635	0.43	0.47	0.37
1981-82	58335	20240	135920	24730	9855	50240	0.42	0.49	0.37
1982-83	52970	20985	129410	24136	10211	49650	0.46	0.49	0.38
1983-84	56160	20150	127690	24667	8124	47079	0.44	0.40	0.37
1984-85	59470	19300	128140	27170	7674	49330	0.46	0.40	0.38
1985-86	70600	16600	132235	28070	5210	46475	0.40	0.31	0.35
1986-87	59925	14845	114495	23635	4705	39990	0.39	0.32	0.35
1987-88	63985	14730	116565	25076	4827	41545	0.39	0.33	0.36
1988-89	63740	14575	113119	23341	4843	39301	0.37	0.33	0.35
1989-90	61390	14975	111370	22100	4420	37820	0.36	0.30	0.34
1990-91	55135	9950	93950	20840	3575	33775	0.38	0.36	0.36
1991-92	59180	9940	90910	23375	3615	34080	0.39	0.36	0.37
1992-93	61315	12660	89325	26365	5365	36380	0.43	0.42	0.41
1993-94	63375	13290	90545	27630	5675	37770	0.44	0.43	0.42
1994-95	63425	13140	89285	28145	5390	37760	0.44	0.41	0.42
1995-96	64300	13200	89525	29635	5635	39375	0.46	0.43	0.44
1996-97	60705	14885	86180	27680	6740	38100	0.46	0.45	0.44
1997-98	57320	14480	81105	26130	7245	36655	0.46	0.50	0.45
1998-99	54765	14550	78240	16720	18830	28795	0.31	1.29	0.37