

Transformation of Agriculture in North-Western Districts of Bangladesh*

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Abstract

The principal objective of this article is to initiate a discussion on a remarkable transformation within agricultural sector (transformation of agricultural land into fruit tree as well as wood tree plantation) which has started in recent past and has been getting momentum in recent years in some of the north-western districts of the country. Consequences of these changes have already been felt in different parts and would be felt more in coming years in terms of change in socio-economic life of the majority of the population in these areas. Based on the clues, important scientific research could be done and appropriate policies could be formulated to promote the beneficial transformation as well as to prohibit the harmful consequences of the transformation on the affecting people. Proper identification of the beneficial transformations would help to increase efficiency and could also help to generate new employment in some complementary economic activities.

1. Introduction

Transformation in agriculture in Bangladesh could be classified as from traditional subsistence to mixed commercial towards diversified commercial farming to a limited degree. In this process of transformation change in the composition of both the output as well as of the use of inputs could be observed. Increase in rice production at the cost of other crops, change in composition among different varieties of rice etc., could also be seen. On the input use, there is a marked increase in modern input use such as HYV seed, chemical fertiliser, pesticides, increased use of irrigation water etc. All these changes have reduced the vulnerability of the agricultural sector production and the post disaster recovery is very fast.¹

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¹ For more details of consequences of agricultural transformation see, *Out of the Shadow of Famine, Evolving Food Markets and Food Policy in Bangladesh*, edited by Raisuddin Ahmed, et. al., The Johns Hopkins University Press, Baltimore and London 2000.

These changes are common in the country and can also be seen in the North-Western Bangladesh also. But in this area, in addition, a remarkable transformation in agriculture has been taking place, which is plantation of fruit as well as wood trees in place of crop production.

Plantation was a felt need in this region during 1970s and early 1980s in order to improve the harsh temperature in summer and to increase the rainfall i.e. to stop the process of desertification as defined by many environmentalists in this country. So, plantation began under social forestry program and subsequently it has played a crucial role for the popularisation of plantation.

But during the last decade, plantation in this region has got a new dimension and the mango tree plantation is expanding very fast. As land is scarce, mango orchards are now taking the cultivable land indicating a massive change in the socio-economic life of the people in this area. The causes and consequences of this transformation is the principal focus of this paper and are presented sequentially in the following sections.

2. A brief survey of economic characteristics of this region

The districts focused in this paper are Rajshahi, Nawabganj, Natore, Naogaon, Dinajpur and also part of the neighbouring districts of the above mentioned districts. The soils in these areas blessed by the mighty river Padma and its tributaries. The soils in these areas are classified as river charlands and river flood plains. These soils are composed of sand to silt and occasionally flooded. These soils and climatic conditions are ideal for mango plantation.

Rice is the principal crop of these districts, in addition wheat, sugarcane, oilseeds, pulses, potatoes and other vegetables are also grown here. Mango is the principal fruit grown with other minor grown fruits like litchis, jackfruit, black berry, banana etc.

3. The observations about the transformation of agricultural sector in this region

About twenty people are interviewed regarding the change and their comments are summarised as follows:

All of the respondents have agreed that the plantation of wood trees as well as the fruit trees are very popular now in this region and it is taking place predominantly

in the cultivable land as land is very scarce. Among fruit tree plantation, the mango plantation² is spreading very fast. The other popular fruit tree plants are litchis, Jaam. Among the wood trees, mehagani is the most popular among others. This random plantation is not only transforming the agricultural sector but also transforming basically the socio-economic structure of this area.

This occupation of cultivable land by basically mango trees would make this once food surplus area totally dependent on other parts of the country for the supplies of basic food items like rice, wheat, pulses as well as oil seeds and vegetables.

4. The factors which created the environment for the rapid transformation

Financial benefits, technological advancement as well as security concerns in investments simultaneously created the environment for the rapid expansion of mango orchards in this area. Specifically the factors could be elaborated as follows:

1. introduction of new technologies has reduced the cost for plantation (grafting method), plantation of multi-varieties of mango trees in an orchard with much ease, and it has also reduced the risk of production failure to a greater extent. This is largely facilitating the promotion of mango plantation;
2. monoculture of rice causing a fall in soil fertility and productivity, increase in price of fertiliser and pesticides, increase in the cost of irrigation due to increase in price of fuel, and gradual fall in output price has reduced the profitability of rice cultivation significantly (Dorosh 2000) and has contributed in making mango plantation popular;
3. improvement of transport facility has also widened the market for mangoes;
4. a major share of land is under share cropping (unofficial and unwritten contract between the owner of land and the tenant), breaking down of social ties, falling moral of the mass population, ever increasing culture of

² A mango tree generally starts producing mangos within five years of its plantation and would produce continuously for more than hundred to hundred fifty years. The production increases with the growth of the tree and the price of the tree as wood also increases with the size of the tree. During the gestation period of first five years or even a little bit more, intermediate crops could also be grown in the orchards within the blank spaces.

mistrust, frequent breach of contract by the tenants, falling law and order situation, all these factors are pushing people on search for a secured investment and investment in mango orchards is one which still fulfils most of the criteria as a safe investment;

5. The owner of the mango orchard does not need to supervise it, which left enough free time to engage himself in other profession;
6. Very high rate of value addition to the land as soon as the plants are ready for production. Sometimes the value added is about 200 to 400 percent within five years span.
7. Accumulation of capital with the increased size of the trees. These trees could be sold only because of their wood value.

5. A comparison of financial return of mango with other crops

A rough estimation of returns from a mango orchard in comparison to other crops during one year time is presented in table 1. The advantages of mango production can be easily seen from the table values. The return from the sugarcane production could be most remunerative in comparison to other crops and sometimes the monetary return could be as good as mango production, but there are many other benefits where the mango orchards have greater advantage. Again sugarcane can only be grown in very special type of soil.

The most important is for a mango orchard the owner does not need to involve his labour for the caring of the orchard but in case of cultivation of other crop not only the owner but also his other family members must involve themselves directly or indirectly in the production process. Again for the cultivation of other crops the owner needs to invest a considerable amount of money on capital goods but for the mango orchards the owner does not need any other investment. So only the comparison of them the monetary returns would not be sufficient to depict the advantages of mango productions. Other factors mentioned in section 4 should be considered here.

In fact the return from mango orchards should be considered as an asset income.

Table 1: Comparison of returns of mango plantation with major crops

Mango / other crops	Estimated return in one year in one acre
Mango first round of sale ³	20 to 25 thousand taka
Mango second round of sale	25 to 30 thousand taka
Mango third round of sale	30 to 35 thousand taka
Mango fourth round of sale	35 to 40 thousand taka
Mango fifth round of sale	40 to 45 thousand taka
Rice when owner is the cultivator (single crop)	8 to 9 thousand taka
Rice when owner is not the cultivator (single crop)	4 to 4.5 thousand taka
Sugarcane when owner is the cultivator	18 to 20 thousand taka
Sugarcane when owner is not the cultivator	9 to 12 thousand taka
Potatoes owner cultivator	15 to 16 thousand taka
Potatoes owner not cultivator	6 to 7 thousand taka

Source: Authors estimation with help of business people and those involved in cultivation.

Note: Current market prices are used for the estimation. For a mango orchard where the trees are approximately 15 years old are considered. In an acre, there could be 14 to 15 mango trees. Importantly, a fully-grown mango tree could produce mangoes of 50 thousand taka in a season. Again as the variability of mango prices is higher, estimation of return is tricky. So, in estimating the return, these factors are considered and in an average minimum return ranges are presented here. Interestingly, after selling off the trees for a certain time period (contract), the owner generally does not bear any responsibility during the production process.

In short, mango orchards are the safe and most lucrative of all the investments in agriculture in this region.

³ Mango orchards (the mangoes) could be sold four to five times from the beginning to end. Here first round of sale indicates sale of the trees well ahead for one season or for couple of seasons or even more. It is actually a contract between the owner and the business people, where the owner receives money for certain time. During that time the buyer takes care the orchard and entitled to get the production. After that time the owner gets the orchard back and re-sales it according to his convenience. The second round of selling generally indicates sell of mangos when those are as big as a chick pie. The third round of selling generally indicates the sale of mangoes when they are fully grown and good in shape and size. The fourth round of sale indicates whole sale of ripe mangos and the fifth round of sale indicates retail sale of the fruit. A business man can buy at the first round as defined earlier and keep the orchard to him or sale the mangoes as retailer to get the maximum profit or could sale it off at any of the above defined stages.

5. Consequences of the transformation

The transformation is basically affecting the employment and income of the people of this area and needs to be investigated thoroughly. Generally perception is that the expansion of the mango orchards are creating a win win situation for both the rich and poor as it is expanding employment opportunities during the season where the intensity of work as well as the return is very high. So, although the poor may loose the employment because of the plantation of those lands where they used to work, counting the number of days they work in the orchards during the season duely considering their income, they can earn more by working intensively in four/five months than they could by working whole year on those pieces of land. *These opinions are not yet statistically defended and need careful examination before reaching to any conclusion.* More specifically the consequences as reported by the respondents are,

1. transformation within agriculture in a certain region which is affecting the income distribution of majority of the population in this area;
2. in the short term, increase in unemployment among the tenants and to preserve their employment there are many examples where they tried to prevent the expansion of mango plantation;
3. area under regular rice, sugarcane, vegetables and other crop cultivation is decreasing very fast;
4. change in the composition, intensity and seasonality of employment;
5. income gap is increasing between rich and poor in these areas, the rich are generally the owners of the orchards and the poor are naturally the tenants who are marginalised gradually;
6. mango leafs are high quality fuel for domestic cooking. So the increase in the number of trees would be able to meet the increasing demand for fuel for household cooking in these areas.

6. Conclusion and policy guidance

Expansion of mango orchard means loss of job in agricultural lands and increase in landless people, increase in income gap (inequality) among the people and significant change in the socio-economic balance in the society. In mango orchards people only involved during a certain period of time (generally 4/5 months time in a year) and then rest of the year they remain jobless or look for job

elsewhere. This is certainly a transformation towards diversification of the agricultural sector but the nature of change is so significant, it demands a very careful and thorough investigation.

Production would increase drastically within next ten years when a vast among of plants will start producing sufficient amount and the trend of increase in production would continue for long long time as new plantation will mature the production will be in full swing. So proper estimation of production as well as demand is urgent in order to help this sector to flourish not only to meet the growing domestic demand but also possibly to use it to earn foreign currencies or at least to help in substituting some luxury fruit drinks. This sub-sector could contribute substantially in employment generation in mango based industries in this region. One good example could be “Pran Agro Limited” which is started producing mango juice, mango jam and other mango based products.

Unfortunately there is no statistics available about the area of the plantation at the disaggregated level and also about the people involved directly and indirectly in mango business and also the rate of growth of the plantation in this region. So it is very important first to have a sufficiently disaggregated and reliable database regarding this matter and then appropriate analysis could be done where the dimensions of change in socio-economic variables could be identified.

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