

Environmental Friendly Cultivation Method and Profitable Agricultural Marketing -How Far being Implementing in Bangladesh

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Abstract—*This study investigates why farmers of Bangladesh are not eager to adopt environmental friendly way of cultivation and how are being deprived from desired profits. Most farmers are using lands for aggressive cultivation with hybrid seeds and chemical fertilizer in order to yield surplus and healthy profit margin that might cause unrepairable environmental damages. The distribution networks of agricultural products are strongly controlled by intermediary groups who grasp the lion share of benefit leaving a little for farmers. Traditionally farmers in Bangladesh have leaving with natural hazards like flood, cyclone, drought etc and unnatural hazards like crisis of production inputs seeds, fertilizers, insecticide etc. Reasonably, this study evidences the causes and consequences of not being environmental friendly by the framers and low financial returns.*

Keywords and Phrases: Environmental friendly, intermediaries, hybrid, high yield variety.

JEL Classification: Q13; Q18.

1. INTRODUCTION

In the year 2007 we have witnessed the impact of climate change in Bangladesh. The Daily Star reported that SIDR claimed approximately 3,447 lives and crops, forestry and other valued resources about \$ 450. In recent times climate change is one of the most prioritize issues to maintain intergenerational equity. The last decade has observed a dramatic increase in the awareness of environmental issues worldwide (Schlegelmilch *et al.* 1996). On the other hand, there has been a growing awareness of prevalent environmental deprivation among current and future generations (Grove *et al.* 1996). People have been conscious regarding ecological issues compare to earlier times, which have been, identified as significantly “the biggest business issue of the 1990s” (Kirkpatrick 1990). Hence, this era has been termed as the “earth decade” (Martin *et al.* 1995). Taking into consideration the earth decade, this research has made an attempt to essentially evaluate the importance of implementing environmental issues in the field of agriculture.

Marketing has diversified functions relevance to diverse framework. From the farmers' point of view or for a farm, marketing means selling their commodities with appropriate profit in return (Cramer *et al.* 2002). Marketing customs in cultivation is practically different in nature while in agro marketing more prominence is given on productions and trade especially when the producers are involved in commodity products rather than shopping or convenience products (Hossain, 2005). In agro marketing, production, a farm is the basic supplier and the marketing process begins at farm that continues until a consumer buys product at retail point for household consumption or for another manufacturing purpose (Cramer *et al.* 2002). Since production is the major deed of agro marketing, costs of production gets highest priority to gain competitive advantages. Producers put effort to secure surplus at a lower marginal cost whereas competing in a market economy to sustain. The concept of agro marketing is the crucial view of this research to find out the gap between the producers and ultimate consumers. Unfortunately, farmers are incapable to perform and implement all the functions of agro marketing. The fundamental aim of this research is to credibly unite environmental friendly agricultural practice with the aim to conserve the natural resources and proper implication of marketing tools in the agricultural farming to get desired return.

Hossain (2005) in previous studies argues that a complete practice of all the relevant functions of agricultural marketing is necessary to increase the profit margin of farmers. Farmers may gain more profit if they can sell the product in off-season provided proper storage facilities are available. Besides, it is necessary to adopt environmental friendly agricultural practice to reduce environmental pollution. In order to clarify the concept of agricultural marketing and environmental friendly cultivation, this research also highlights the concepts of environmental friendly field of agriculture and its sustainable development.

The analysis of the paper is in seven sections. Following this introduction, Section 2 presents a simplified "literature review" description of environmental friendly agriculture practice, which highlights some of the key considerations which will play a role in the subsequent analysis. Section 3 considers the objectives of this study. Section 4 outlines the research methodology. Section 5 & 6 delineate research findings and analysis and lastly Section 5 concludes.

2. LITERATURES REVIEW

The postulate 'The environmental friendly agricultural practice' is relatively new in Bangladesh. The environmental friendly practice issue is one of the central concerns of the consciousness of ecological issues. The evolution of academic investigation of environmental friendly issues has mirrored the evolution of environmental sensitivity in the general population (Straughan *et al.* 1999). The term 'environmental friendly' was stemmed from sustainable development, where it is very difficult to establish a good fit between development crisis and environment crisis (Adams 1990). Defining the concept 'environmental friendly' or 'green' is often found perplexing since there is shared link between growth, poverty and environment, which are relevant from developing country's point of view (Adams 1990). Conversely, he also argues that developed nations that follow capitalist economic views are increasing their

national output by using high tech machineries and somehow ignore the environmental degradation. As a result, so called 'Greenfield' cultivations become difficult when to grow more something without fertilizer, and tractors causing air pollution (Hossain 2005). Adams argues that those interested in economic growth by a new broader distribution of economic goods and avoid environmental harms should develop agriculture process.

The environmental issues are becoming a governing matter in agricultural marketing. For last few decades consumers' are significantly conscious about environmental issues, as the environment has moved to a conventional issue (Kalafatis *et al.* 1999). Keeping the interests of customers and companies, today the environmental friendly agricultural practice concept has been largely practiced by developed countries but in a different way where developing country like Bangladesh is far behind. In 1972, Kotler first developed of marketing concept called societal marketing theory claiming good for individual not always good for society. In the same theory, he asserted that marketers are often more successful in satisfying the consumer's instant craving than society's well being. While defining environmental friendly, Roarty (1997) mentioned that an environmental friendly farm should consider while making their products which are environment friendly, use production assembly methods that diminish environment damages, and adopt a commercial attitude that squeeze environmental conciseness, make them proactive by an environmental policy with specific commercial objectives. Cateora and Gaham (2003) highlighted that environmental friendly marketing cover a broad range of impending positive and negative environmental consequences that occur from commercial activities. Environmental friendly marketing concept involves the production, product development, pricing, promotion and distribution of products that do not harm the environment (Pride & Ferrell 1995). The definitions and concepts of environmental friendly marketing have a new challenge while all the organizations are focusing on gaining profit by reducing production costs. Cost reduction greatly relies on farm's size and production capacity. Little farms face more difficulties to reduce cost since they are to operate in market economy competing big organizations. The practice of reducing cost is increasing productivity but it is damaging the environment at the same time. The market economy permits commercial interests to take preference above environmental issues (Raorty 1997).

The concept of agro marketing that was invented in developed country is somewhat critical to apply in developing countries like Bangladesh. Trifling landowner of Bangladesh who grows small quantity of crops is in unfavorable situation because they cannot attach value to their products such as, modification, standardization, product segregation, lucrative wrapping, advertisement, setting profitable distribution channels, preservation for non seasonal sales and others, these are the fundamental functions of marketing. As a consequence, they obtain lower farm gate price (Hossain 2002). With small productions small farmers cannot bargain in the market place for better price. In developed countries the scenario is opposite where most of the farmers cultivate and grow crops in their own land. As because they own large lands they can control the intermediary channel of distributors as well as can circumvent several middlemen and can get greater profit compare to our farmers (Hossain 2002). When the functions of agro

marketing works for the farmer's logically farmers will concentrate more on production and get the benefit from economies of scale even though they have small area of land for profitability.

Competitive market confers forces for the companies to cut costs to stay in business even when this tendency damages the environment consequently. Private enterprises are focused to make short-run profit rather than long-term sustainability in the business, which apparently results in overlooking environmental consequences (Hossain 2002). Economic growth has created a profit-orientated culture, which focusing on productivity and ignoring the issue of sustainability.

Small producers are more concerned in reducing cost and then giving priority to environmental damages (Kassaye 2001). The arguments of Roarty and Kayasse are related to this research because farmers are very much concerned in reduction of production costs and want to increase their productivity by using excessive fertilizer in their lands and hardly, they have considered environmental damages.

However, as mentioned earlier, farmers in a developing country realistically cannot practice environmental friendly ways of marketing (Hossain 2002). It was found that farmers with small pieces of land would emphasis more on higher yield to secure surplus and hardly consider the environmental damages (Taufique 2000). The feasibility of practicing environmental friendly and sustainable growth is in crisis while marginal farmers trying best just to yield out put from their little cultivation position. Diversification of crops in cultivation has become a novel trend among the farmers of Bangladesh and it has been accepted by the farmers that crops diversification is becoming a profitable strategy for them. Diversification of crops firstly refers to the species diversification of cultivated crops and secondly refers to the diversification of varieties and ecotypes of the same variety to maximize outputs of primary products as well as value-added processed products to enable farmers to enhance their incomes (Mengxiao 2004). Most of the farmers in Bangladesh are now heavily dependent on High Yield Variety (HYV) or modern variety than traditional varieties especially in case of rice or other cereal new species of crops which have recently been introduced and farmers are getting more yield than before (Hossain). But many studies on crop diversification have exposed that the frequent use HYV crops required excessive use of fertilizer which has negative impact on soil nutrition (Siddiqui *et al.* 2004). However, socioeconomic factors are critical in selecting HYV due to higher return on investment. Farmers who are sustaining below the poverty line may be more interested in more financial gain than environmental damage (Hossain 2002).

Farmers are trying many new ways of cultivation to ensure the optimum yield. Many relevant factors that affect yield such as: poverty, cost of production, use of chemical fertilizer and crop diversification are causing environmental degradation (Hossain 2005). Farmers in a developing country are solely dependent on their marginal land since they have no other investment from where they can make more profits. As a result, farmers are adopting modern cultivation process to ensure higher yield and concentrating less on soil fertility (Hossain 2005).

3. THE OBJECTIVES

This research basically drives two objectives. Firstly, this intends to illustrate the significance of environmental friendly way of cultivation in agricultural process. Secondly, it hunts for an efficient implementation of agro-marketing in the country that can curtail the mighty middle men hands.

4. RESEARCH METHODOLOGY

Factors influencing farmers' approach towards environmental friendly way of cultivation and agricultural marketing in Bangladesh are sought by applying exploratory research methods.

4.1 Data Collection Methods

In this research, data collection method was adopted in two separate parts.

- In the first part, structured interviews have been conducted. While taking the interview checklist was used to identify key issues these are significant to the research. The interaction is informal with the interviewees and rivets two-way of communications and contains a wider assortment of opinions, knowledge and expertise of the interviewees.
- In the second part, Focus Group Interview (FGI) was conducted. Cooper (2000) defined FGI as a survey method that aims to observe a small group interaction when members are exposed to an idea or concept. Cooper and Schindler (2006) added that FGI became widely used in marketing research during the 1980s and is used for increasingly diverse research application. The researcher has the opportunity to talk directly to the respondent in order to clarify, elaborate, and better understand idea (Baker 1994). FGI facilitates the researcher to identify the feelings and frustration of farmers by participating in a group discussion, which may not be possible in communicating structured interview. Focus group allows people to discuss their own understanding, feelings, apprehensions and frustration and to articulate the depth of their conviction in their own words (Zikmund 1997).

4.2 Sample Size and Target Population

The sample of this research is the farmers of Talpotti and Bhangra villages in Bogra district. For the convenience of the research the whole population was divided into the following criteria.

1. Farmers owning land between 1-5 bighas.
2. In addition to own lands, farmers cultivate borrowed lands.
3. Experience of cultivating with loan from Banks and NGO's
4. Residing Talpotti and Bhangra village for minimum 5 years
5. Farming experience more than 10 years.
6. Regular farmers are only included in this research, seasonal or part-time farmers are not included in this survey.
7. Farmers who grow rice, maize, potato, wheat and vegetables.
8. Farmers who use natural and High Yield Variety (HYV) of seeds.
9. Farmers who use chemical fertilizers.
10. Farmers who are involved in both farming and selling to different local Mahajans (wholesalers) during the hut days.

Only twenty five farmers from these villages who have satisfied with above mentioned criteria are participated in the structured interview. In FGI the number of participants was eight as it was suggested by Cooper (2000). Sampling criteria mentioned above has secured the homogeneity of the participants. The duration of focus group interview was approximately two hours. For ethnographic method and in-depth interview notebook was used and for FGI audio tape recorder was used to record data.

5. RESEARCH FINDINGS

5.1 Use of Chemical Fertilizer

From the interview it was found that use of chemical fertilizer (CF) is more on maize than that of paddy, wheat, potato and vegetables. Minimum ten kg of CF is required in each bigha of maize field per year. Paddy, wheat, potato required more or less five kgs of CF bigha per year. Surprising but fact that proportion of using organic fertilizer is very less and infrequent. Because farmers believe that 'soil has lost its natural fertility and accustomed with CF'. Due to higher dosage of CF soil is becoming toxic and production capacity of crop from each bigha is decreasing day by day. In the last five years eleven small and medium cattle and poultry feed factory has setup in Bogra district. One of the main ingredient of cattle and poultry feed is maize. For the short profit gain purpose many farmers are switching from traditional maize to hybrid maize which proportionately consumes higher dosages of CF. The tendency of using hybrid seeds for paddy, wheat, potato and vegetables is also increasing very significantly. Because most of the farmers argued that their production cost increases if they cultivate traditional seeds because it requires more cultivation time, more labor and they get lower yield compare with hybrid seeds.

Due to excessive use of CF the soil is becoming toxic more over it is destroying some of the soil nutrients (Hossain 2005). It was found that farmers are even growing crops in their nearby empty land with CF and hybrid seed as a consequence they are destroying the grazing land for household animals such as cow, goat and buffalo. Lack of grazing land causes increased cost of raising household animals and the farmers lose interest to rear domestic animal what may supply organic fertilizer. Farmers are loved using more CF.

5.2 Crop Preferences

In Bogra district farmers grow two crops in one season and cultivate hybrid vegetable as supplementary yield for better market price. Paddy of high yield variety (HYV) is the highly preferred crop because farmers prefer paddy mainly due to their own consumption and insignificant for commercial purpose. Hybrid Maize is the second most preferred crop as a side crop after paddy. Farmers grow maize not for their own consumption but to sell in cattle and poultry feed factories as they informed that factory owners give them the assurance of sell their maize to them with standard price. They prefer hybrid vegetables to un-hybrid because of its higher yield and better market pricing in a short while.

5.3 Crop Switching Tendency

Crop switching tendency among the farmers is very high after the year 2000 most of the farmers are switching to maize and find it more profitable than paddy because in case of maize they have the assurance of sale and pre harvesting financial help by the buyers. Ease of cultivation and high yield is the major reason behind crop switching. Farmers agreed that in order to grow maize less effort is required than paddy even women and children member of the family can work in maize farming. Compare with maize and paddy, hybrid potato and vegetable is requiring less maintenance. For paddy farming specialized labor is required. Maize requires even less irrigation than paddy. More extra works are necessary during the post harvest period for paddy (boiling, cleaning, sorting, storage, carrying to market, etc.) than maize (traders come to the field and purchase) (Hossain 2005).

5.4 Farmers as Sharecropper

Most of the farmers of these villages are sharecropper cultivating in borrowed land. Sharecroppers' characteristic is different than the farmers who cultivate their own land. Sharecropper grows paddy, maize, wheat, potato and vegetables. Sharecropper grows paddy for their own consumption and all other crops for trading purposes. Farmers share their statistics that in a year they grow on an average 34 maund of paddy, 55 maund of maize, 25 maund of wheat, 70 maund of potato/bigha, production of vegetables varies depending on their types. Usually sharecroppers have to share fifty percent of their grown crops with their landlord.

5.5 Farmers as Commercial Cropper

Those farmers own cultivable land between 2 to 5 bigas they are basically a few in numbers. Like the sharecroppers they also grow paddy, maize, wheat, potato but instead of vegetables they like to grow maize. But unlike sharecroppers they grow all crops for trading purposes. According to their data individually they grow on an average 85 maund of paddy, 138 maund of maize, 63 maund of wheat, 175 maund of potato per bigha/year. Other than cultivation a few of them are stockiest of maize and working as agents of cattle and poultry feed factories.

5.6 Marketing Complexity

The farmers of these two villages suffer from a number of difficulties, which reduces their bargaining power; a long chain of intermediaries operating between the producers and consumer seize major share of the consumer's price. Agriculture process not been yet modernized in this area and farmers fail to get fair price. According to the Bangladesh Bureau of Statistics in 2006-2007 there were only 7 cold storages in Bogra district. Inadequate storage facilities in this area are the cause of heavy losses for the farmers and what is available is not within the reach of the average farmers. Thus the local methods used by most of the farmers are of an indigenous type (such as storage in woven-split bamboos, bamboo baskets, jars and wood, etc.). The hot, humid condition of almost all parts of the areas studied is favorable to insect infestation and mold growth in

food and to rapid decomposition of more perishable products. In order to avoid losses and deterioration in the quality of their produce and to obtain money to meet immediate debts and livelihood, many farmers are obliged to sell their produce as soon as harvested.

5.7 Marketing Channel

A marketing channel performs the work of moving goods from producer to consumers. It overcomes the time, place and possession gaps that separate goods and services from those who need or want them. The marketing intermediaries make up a marketing channel. In agro marketing, marketing channels the chain of intermediaries through which crops move from farmers to consumers. The marketing channels of agro products in the surveyed areas are shown in Figure.1. According to Table.1, four types of intermediaries are involved in the marketing channel in selling agro products to the consumers from farmers. It was found in the studies that Farmer sell their different crops through various groups of intermediaries to the consumers shown in table: 1. Farmers sale maize to the cattle and poultry feed factories through stockiest, paddy and wheat goes to consumer after passing local merchant, wholesaler and retailer, lastly potato reach final consumer through local reseller, wholesaler and retailers.

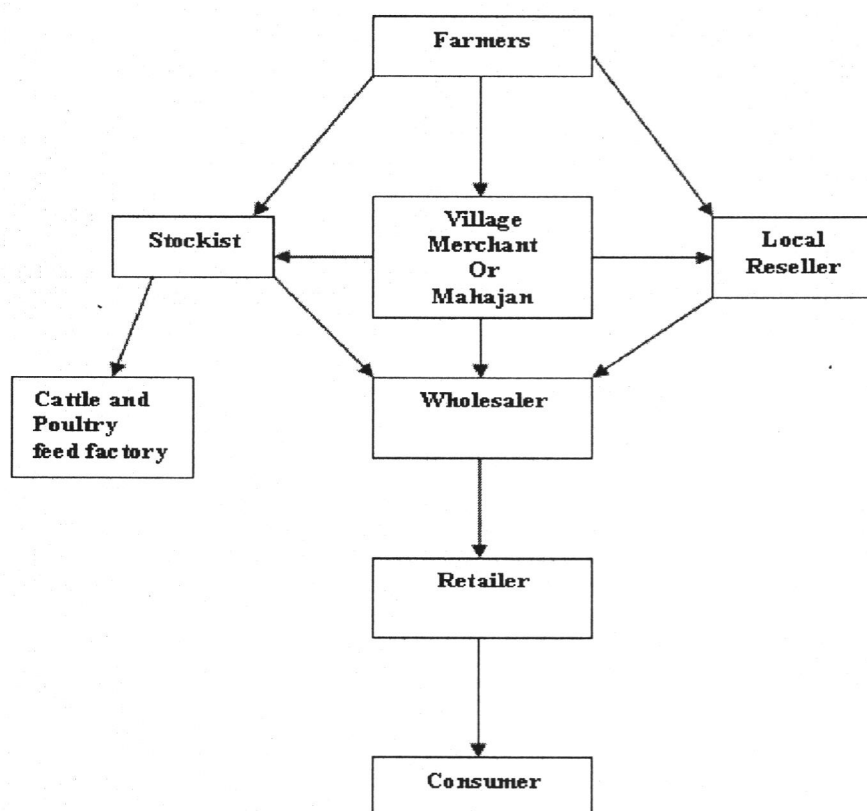


Figure 1. Marketing channels of agro products

Table 1. Seller and Buyers in the Marketing Channel by Nature of Crops, Talpotti and Bhangra Village, Bogra District.

Name of the crops	Seller	Intermediaries	Customer
1. Maize	Farmer	Stockiest	Feed factories Wholesaler
2. Paddy	Farmer	Local Merchant Wholesaler Retailers	Consumer
3. Wheat	Farmer	Local Merchant Wholesaler Retailers	Consumer
4. Potato	Farmer	Local Reseller Wholesaler Retailers	Consumer

6. DISCUSSION ON FINDINGS

It is discovered that the framers are only concerned about the profitability that force them to go for higher yield from cultivation consequently they are facing the adverse conditions of cultivation and low profit return with degradation of soil and environmental conditions.

- It is found that the farmers prefer using tractor to bulls. Specially, who grows three crops a year.
- Diversification of traditional seeds to hybrid seed and crop switching tendency is becoming popular in these villages.
- Farmers are prone to more chemical fertilizer than before but the output is decreasing.
- Farmers of these villages are switching to seasonal vegetable and maize as yield of paddy begins to fall.
- Marketing costs are needed in the flow of goods from producers to consumers. It affects the prices of goods at the producers' and the consumers' level. Reduced marketing costs increase the farmer's earnings, indicating the marketing efficiency of the farmer. But marketing intermediary affects the marketing profit of the farmers and consumers as well.
- Farmers in these villages grow very little amount of crops and do not prefer to perform other marketing activities such as crop seasoning, crop modification or standardization, crop segregation, packaging, personal advertisement and others.
- After production farmers do not get much benefit out of their yield due to their less bargaining power in the marketplace.

7. CONCLUSION

The traders in rural areas cannot imply most of the agricultural marketing functions. The balance of agricultural marketing functions is not equally distributed among farmers and traders. As a result, farmers are depending more on production and are applying different mixture of chemical fertilizers and switching to different crops just to gain productivity. Developed countries have many government-sponsored programs to promote natural farming methods and cooperative trading through farmers associations. Government intervention in price control and proper distribution of fertilizer throughout the country is appreciated. Information about the market and competition need to be delivered to the farmers so that they can set their price properly. A community based transportation and storage system need to be implemented by the government support. A proper management of different functions of agricultural marketing will give incentives to farmers to get better price during off-seasons and an intensive training on fertilizer application is also vital. Because countries like China and South Korea have improved their agricultural marketing by developing policies and practices on price, subsidies policies, procurement, distribution, and marketing channel.

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