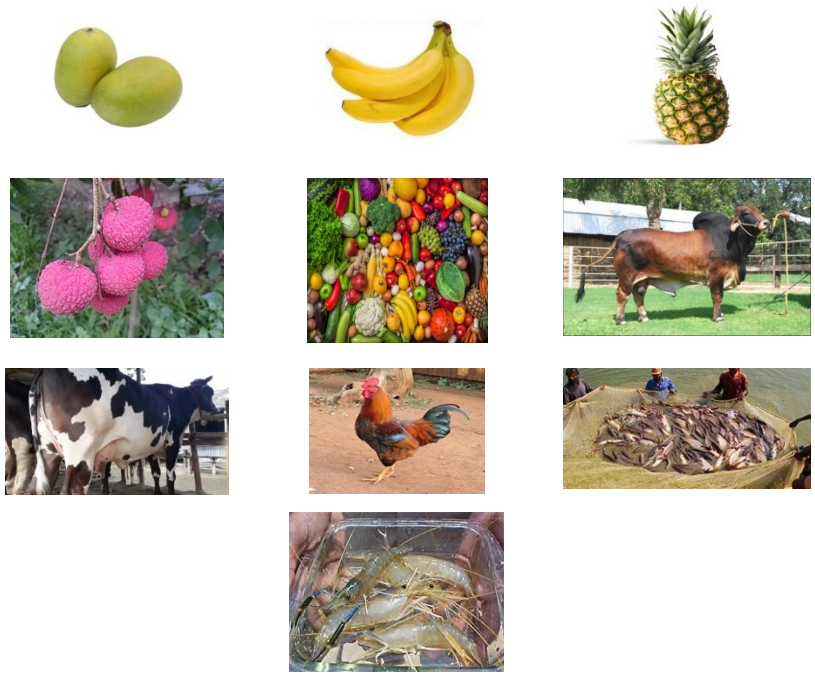
Determine the Prospects and Challenges of Ecological Farming (Agriculture, Livestock and Fisheries) in Bangladesh



Sustainable Enterprise Project (SEP)
Palli Karma-Sahayak Foundation (PKSF)
Plot-E-4/B, Agargaon Administrative Area
Sher-e-Bangla Nagar
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By

Prof. Dr. Md. Golam Rabbani
Team Leader of the Study
Department of Horticulture
Bangladesh Agricultural University
Mymensingh–2202
BANGLADESH

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EXECUTIVE SUMMARY

PKSF in collaboration with the World Bank is in the process of designing a micro enterprise development project titled "Sustainable Enterprise Project (SEP). The goal of this project is to increase the adoption of environmentally sustainable practices by targeted microenterprises (MEs). The proposed project will support microenterprises in agribusiness and manufacturing clusters with a focus on areas that are environmentally stressed and/or vulnerable to climate change and natural disasters. To assist the design process, PKSF decided to study “Determine the Prospects and Challenges of Ecological Farming (Agriculture, Livestock and Fisheries) in Bangladesh”. The present study is, therefore, designed to study the common services analysis, technological and environmental interventions required for fruit (Mango, litchi, banana and pineapple) sub-sector to make the sub-sector sustainable in the long run. The study covered the major production cluster of mango, litchi, banana and pineapple in Bangladesh.

The history of organic farming and organic agriculture in and national and internal perspective has been presented and principles, advantages and disadvantages have been discussed. The national and international trades of the organic products have been presented in the report with latest data. Methods of certification of organic and ecological products have been discussed in details and procedure for registrations of products in Bangladesh have been presented.

The entrepreneurs from 10 enterprises surveyed during present study are practicing ecological farming models as per the guidelines of POs following GAP (Good Agriculture/Animal Husbandry/Aquaculture Practice) for raising crops, livestock and fisheries in the project areas in collaboration with POs financial (as microcredit), technical and training supports from the respective POs involved in the subsectors. They calculate opportunity cost and benefit analysis along with other crops. The main prospect of ecological farming at growers’ level in agriculture, livestock and fisheries sector is the buildup of knowledge level of the growers about ecological farming because of the training imparted by the respective PO before start of the enterprise.

The knowledge level of the respondent (%) from different enterprises of agriculture, livestock and fisheries subsectors about different principles of ecological farming has been presented in the report.

In case of mango and vegetable production 100% respondents reported to follow the principles of ecological farming followed by banana, beef fattening, poultry, fish farming, pineapple, prawn, dairy and litchi with an average of 79%. In case of litchi, lowest response may be due to the fact the implementation of the SEP project activities in the area yet to be completed. The prospect of ecological farming is the age of the entrepreneurs involved in ecological farming in agriculture, livestock and fisheries subsectors. The average age of the entrepreneurs varied from 34-45 year which is a good sign as these entrepreneurs are more innovative compared to the old people. The education of the growers also appeared to be satisfactory in the context of Bangladesh. The overall % respondent entrepreneurs facing challenges in ecological farming of mango, banana, pineapple, litchi, vegetables, Beef fattening, dairy, poultry, fisheries and prawn enterprises of the agriculture, livestock and fisheries have been presented in report.

Non-revenue generating physical activities help to support in common services which have critical influence on productivity of SMEs. They do not directly contribute in increase profit but they influence indirectly to increase profit for sustainable business. In the selected ME clusters, findings of the study revealed that there are some important physical activities that need to be focused in future. These identified physical activities are connecting road, community based bio-pesticide production plant, technology transfer center, input and output collection center, product markets for ensuring good environment (latrine, digital scale, waste dumping pit etc), availability of transport services, existence of toilet facilities (not sufficient or useable condition), existence of hotel and restaurant etc. In some places, like in Rajshahi, a fish market is under construction to help the fish farmers in this respect. In case of dairy in Shahjadpur, area of Sirajgong, Milk Vita has their milk collection where the farmers sell their milk directly.

The findings on revenue generating common services in the ME clusters revealed the MEs especially farmers and intermediaries reported that there should be environmental friendly packaging system for food supply, organic pesticides, availability of feeds prepared locally

from safe ingredients, technology for agribusiness, entrepreneurship facilities, credit facilities, processing industries and traceability facilities, processing industries, cold storage, ice making facilities for preservation of products like prawn and fishes. Only in case of prawn cluster in Monirampur, there is a report of the presence of traceability facilities as prawns are export item from there to abroad exporters from Khulna.

Presence of business enabling policy environment by the concerned agencies is mandatory for sustainable growth of any value chain. It is revealed that the micro entrepreneurs from the selected clusters are not happy with existing policy environment there. The majority of the farmers have the perception that they have relatively poorer access to all policy indices.

Findings regarding unavailability of technical support, quality inputs, skill labor, lack of customers, lack of proper price, lack of support for branding of the products and lack of linkage with premium markets as challenges revealed that the micro entrepreneurs of beef fattening sub-sector from Kashtia are quite happy and they do not face such problems regarding the above issues because of the activities of the PO involved whereas micro entrepreneurs from other sub sectors face such problems which vary for individual issue and MEs involved.

Assuring food safety and quality is one of the most important challenges in Bangladesh for domestic consumption as well export abroad. With a view to assure the availability of safe and quality food through proper practice of scientific procedures through coordination of food production, import, processing, storage, supply, marketing and sales related activities, establishment of an efficient and effective authority by repealing related existing acts and reframing act the Food Safety Act, 2013 of Bangladesh has been enacted and Bangladesh Food Safety Authority (BFSA) has been established to formulate rules and regulation s and implement those at field level to ensure the food safety and quality. As per act, “Food Safety Management System means the acceptable management of Good Agricultural Practices, Good Aqua-cultural Practices, Good Manufacturing Practices, Good Hygienic Practices during food production, processing, preparation and sale of safe and healthy foods, hazard analysis, traceability, food safety emergency response, national food control plan and food safety auditing system, and practice of relevant subjects which is existing in the approved guidance or directives of the relevant Act on specified standard and compliance”. Adoption of standard practices at various stages of food chain is needed so that

contamination (chemical and microbial) can be reduced or eliminated. This would minimize time, money and energy, for instance, inspecting final products where no measures could be taken but to destroy or withdraw food items which have been produced at the expense of significant amounts of inputs. So, a great deal of attention is needed to make adequate and need based intervention so that standard good practices like GAP (Good Agricultural Practices), GHP (Good Hygiene Practices) etc can be adopted and supply good quality and safe produce to the consumers.

The present regulatory environment regarding certification of ecological products in Bangladesh is very weak. Our current capacity to comply with the export markets requirements of agriculture, livestock and fisheries restricts the participation of trade in high value markets. The major supermarket companies are seen to exacerbate this challenge and create barriers to market access. Our production system has not improved and challenges remain to ensure the application of "Good Agricultural Practices (GAP) and to more fully demonstrate and document the safety of fresh produce sourced from smallholder farmers.

In December, 2020, the Bangladesh GAP Scheme Policy has been approved by the Ministry of Agriculture through establishing BARC as the Scheme Owner (SO), DAE of the Ministry of Agriculture as the Certifying Body (CB) and Bangladesh Accreditation Board (BAB) of the Ministry of Industries as the Accreditation Body (AB) are still a 'work in progress and one that will take even more time consuming to be capable to comply the standard requirements in harmonization with Global G.A.P. Modalities developments are under process to build capacity of the stakeholders and enable the smallholder farmers to harmonize with regulation and inspection services.

As per IFOAM (2014), the international body for development and maintenance of rules and standards of organic products worldwide, certification of organic product consists of standard, inspection and receiving certificate. Standards describe which products can be labeled and sold commercially as 'certified organic'. The system includes farm inspector who check the farm record. Certification is primarily an acknowledgement that the products have been produced according to organic rules. There are three main categories of certification systems: Third party certification (TPC), Group Certification (GC) and Participatory Guarantee Schemes (PGS). TPC is the only accepted form of certification in most developed countries. Third party means the whole certification process is performed

by an external and independent organization, not by either the grower (first party) or the buyer (second party). The farmer's role is to comply with the set rules or standards of the certification body. They provide necessary information on their production techniques, e. g; land use patterns, management plans for future farming, field history etc. The skilled inspector checks every farm one time a year and inspects the entire production process and all farm records. The auditor's task is to ensure whether or not the farm is managed according to the relevant organic standards. In TPC, inspection and advice are strictly separated, which means the auditor is not allowed to give any advice to the farmers during the inspections. The records kept by the farmer and the auditor's report are then cross-checked by the certification body, which will then decide about the granting of the final certificate.

Group Certification has been approved by some developed countries for the farmers of developing countries. In this system, farmers are certified as a group and export their products at a premium price. They share the costs for certification and the final certificate. The group is formed on the basis of geographical location and follows identical production method and markets their products together. Therefore, these systems are well adapted to the local situation. The external certification body only inspects the efficiency of the internal control system (ICS) and carries out a few spot checks of individual smallholders. Unlike TPC, ICS schemes can be linked to the extension and advisory system within the group.

Participatory guarantee systems (PGS) are categorized as non-certified initiatives using their own standards, which are based on the IFOAM basic standards. The inspection of the organic standards is carried out by the farmers themselves in peer reviews and sometimes by appointed staff. In the formation of a new PGS, people who will use the system have a crucial role. PGS are localized and diverse (different products and production systems) in their nature and often link to local and alternative marketing approaches. The marketing of the products is not necessarily centralized for the group. The certificate does not belong to the group but to the individual farmers. Until now, it is legally accepted only for the local market. Similar to the Group Certification, inspections are based on peer reviews and social control. Like Group Certification schemes, PGS have a strong focus on training everyone involved in the system: farmers, workers and consumers.

Eco-labels are labeling systems for food and consumer products. Eco-labeling systems exist for both food and consumer products. Eco-labels are voluntary certification practiced around the world. It is developed by governments, manufacturers, and third-party organizations independently. Producers and service providers demonstrate through eco-label that they comply with high standards of environmental protection during the life-cycle of the product and the provided services.

The EcoMark is awarded to those consumer goods if they meet the relevant standards of the responsible organization and specified environmental criteria. The manufacturers should produce the consent clearance as per the provisions of relevant environmental laws, product packaging, displays environment friendly criteria in brief, and has eco-friendly packaging.
It is evident from the present study that most of the microenterprise owners have the knowledge about branding and eco-labeling of their produces. As revealed during the survey micro entrepreneurs follow Good Agriculture/Animal Husbandry/Aquaculture Practices (GAP) for production of agriculture, livestock and fisheries produces and expect to brand and eco-label their produces.

Due to increasing attack of insects and diseases and climate change like drought, high temperature in conventional farming is creating higher dependency on different agro-chemicals. The application of agrochemicals becomes an unbeatable part to in Bangladesh. Environmentalists, soil scientists, hydrologists and experts of other line Departments opined to phase off chemical pesticides gradually and to introduce bio-pesticides. The findings on micro entrepreneurs' perception about the use of agrochemicals and other hazards on environment have been presented in presented in the report and on an average 22% 0f the respondent perceived conventional farming cause environmental pollution.

Finance is very important for production of any commodity. Same is true for studied the sub-sectors especially where the micro entrepreneurs involved in production system. It appears from the findings that mixed financing system was used by the micro entrepreneur in agriculture, livestock and fisheries subsectors involving own finance followed by credit from NGOs, banks and other sources.

The return on investment (RoI) analysis of the micro enterprise in agriculture, livestock and fisheries subsectors has been calculated. In case of crop subsector, the highest total cost of production per acre (Tk. 176700) was recorded with gross, net margin and BCR of Tk 270000 and Tk. 93300, 1.53 respectively in conventional vegetable production. On the other hand, in case of ecological vegetable production; the total cost of production, gross margin, net margin per acre and BCR were Tk. 130800, Tk. 240000, Tk. 109200 1.83. It implies that ecological vegetable production system is more profitable with higher net margin per acre with high BCR. More or less similar patterns were recorded in other enterprises of crop sectors as well as livestock and fisheries subsectors. It may be mentioned here that unit price of ecologically produced commodities was always higher in the market as they are produced following the principle of GAP and sold in the market as safe foods. On the other hand, in case of conventional farming system, no principle of GAP is followed, the higher costs of inputs particularly fertilizers/feeds, pesticides, medicines, vaccines contribute in higher cost of production. On the other hand, low market price as they are not regarded as safe foods by many consumers results in low net margin as well as low BCR. During the survey, the growers particularly the growers from livestock, poultry and fisheries subsectors reported the unusual higher costs of feeds for the low net profit margin.

Associations of have the potential to both facilitate the work of their members and to achieve greater efficiency in the production and marketing chain. Associations can, in theory, increase the possibility that this role is recognized and taken into account in policy formulation and can assist in improving the infrastructural and regulatory framework under which production and trading take place. In the present study both producers' and traders' associations were found in case of mango, banana and pineapple. But no association was found in case of litchi but the respondents desire to have an association. In case of mango both growers and traders' associations are functional and providing information on cultivation technologies, market information, awareness building campaign against early harvesting of immature fruits, use of PGR for fruit ripening, use of culter for regular crop etc along with welfare activities of their association members. In case of banana all the growers' associations were found functional. In case of pineapple cluster, growers' and traders' associations are in existence. But only the traders' associations found to be functional. In case of litchi, they are group members of the PO (OSACA) for microcredit for production of litchi. Other MEs do not have any formal associations except for microcredit group membership of the respective PO with whom they are involved.

The micro entrepreneurs' view obtained from the FGDs for ecological farming have been scored and analyzed using Likert scale (1-7) and results on strength, weakness, opportunities (scope) and threats (challenges) of ecological farming in agriculture (mango, banana, pineapple, litchi and vegetables), livestock (Beef fattening and Dairy and poultry) and fisheries (Fish farming and prawn farming) sub-sector of Bangladesh have been provided in the report in details. It is found that that average highest strength of ecological farming is less pollution of the environment (mean score 6.2) followed by production of healthy produces and sustainability in the long run. The weaknesses of the ecological farming as opined by the FGD participants are lack of branding and Eco labeling followed by lack of proper price of the produces produced through ecological farming. The areas of opportunities are earning foreign exchange following GAP/Eco-labeling, having organic certification possibility to get premium market price, more employment and income by setting processing industry, possibility to reduce import of processed fruits & export processed fruit products, possibility to value addition through branding, possibility to solve production and marketing problems through farmers' cooperatives, possibility to reduce long term climate change through increasing green belt. Also, the constraints for implementation of true ecological farming at actual field conditions have been provided and prospects of ecological farming in Bangladesh have been discussed along with the proposed guidelines of ecological farming for consideration by the SEP authority of the PKSF.

Recommendations

It is quite natural that a change in the agricultural system of country of about 180 million people in an area of 147570 square kilometers with a population of density of 1265 per square kilometer should be a well thought out process, which requires utmost care and caution. There are several constraints/problems on the way to achieve the target of implementing ecological farming system in Bangladesh. Based on the findings of the present study and consultants' experiences in the sector, the following recommendations are formulated for consideration by the authority of the Sustainable Enterprise Project of PKSF for implementation for expansion of ecological farming of agriculture (mango, litchi, banana, pineapple, vegetable), livestock (beef fattening, dairy, poultry-Sonali chicken) and fisheries (fish farming and prawn cultivation) sub-sectors for sustainability of sub-sectors economically, socially and environmentally for food and nutritional security as well as safe food production in Bangladesh:

1. The prospects of ecological farming in agriculture (mango, litchi, banana, pineapple, vegetable) livestock (beef fattening, dairy, poultry-Sonali chicken) and fisheries (fish farming and prawn cultivation) sub-sectors appears to be high in future as the demand for healthy foods and organic products is in increasing trend particularly in premium and export markets and needs attention for expansion gradually in selected areas of Bangladesh for food and nutrition security as well as food safety as well as to earn foreign exchange in sustainable manner.
2. Policy supports such subsidies in fertilizer in crop sector should be gradually decreased and increase of tax in case of import of powder milk powder to discourage import and providing subsidies in ecological farming of crops, livestock, poultry and fisheries should be gradually increased for production of safe, healthy and nutritious foods for the nation in sustainable way to save our environment, protect climate change and also our future generation. Subsidies should be provided to the growers particularly during the period of conversion from conventional to organic production as well as during the initial period of organic production system when the yield is relatively low due to full function of organic system takes some time.
3. Eco -village concept may be established for ease of extension of ecological f
4. Non-revenue generating common service activities such as availability of security guards, good road communication facilities, market distance, market shed, electricity, water supply, community latrine, community-based veterinary clinic, mobile soil and water testing facilities, demonstration on eco-natural farming, soil testing services, analytical services for pesticide residues & heavy metal, demonstration on technology transfer of bio/organic pesticide, Vermi-/tricho compost/Solid waste etc should be ensured at field be by farmers group, market communities, businessmen associations and government level for sustainability of ecological farming the of the subsectors in the long run.
5. Revenue generating common activities such as establishment of farmers' market, cold storage, small scale processing industry (SMEs), nurseries for QPM, fish and poultry hatcheries, tissue cultured planting materials for banana and pineapple promotion of bagging technologies, promotion of safe food production technologies using safe technologies such bio-pesticides, herbal medicines, bio-hormones, bio-and organic fertilizers. Some of those activities can be done by the public sector under public private partnership (PPP) where public sector will provide the land and private sector will bear construction cost or may be vice-versa and revenue earned can be shared.

6. Establishment of certification system for the ecological products of the above sub-sectors is needed to build consumers' confidence as third-party certification of true ecological production system is mandatory before start of production and marketing of ecological foods and food products. Also, like other countries of the world like in USA, India etc government should provide subsidies to compensate the certification cost as it is a costly system.
7. Local branding and eco-labeling of the ecologically produced products should be promoted through the establishment proper authority like our neighboring country, India for promotion of national and international business of the ecologically produced products.
8. Extension of technologies for ecological farming and marketing of the ecological products should be carried out using ICT such as mobile phone, internet, Facebook and other social media.
9. Producers of the quality and safe foods through ecological farming should be linked with the premium markets such AGRORA, PRAN, Swapono and exporters for better price and to earn foreign exchange.
10. Research and development on ecological farming considering the local situations should be promoted and climate resilient varieties/strains of crops, livestock, poultry and fisheries should be developed and mitigating technologies through research and promotion of their uses at field extension service providers should be ensured
11. Registration of processed products for marketing should be simplified and less time consuming as far as possible.
12. Mango, litchi and other long duration fruit crops long time to get the returns, therefore, long term soft loan i.e interest at bank rate may be given to the SMEs involved in this sector.
13. SMEs involved in production of safe and quality foods from mango, litchi, banana, pineapple, vegetables, beef fattening, dairy, poultry, fish farming and prawn cultivation and input suppliers involved in supplying of inputs for ecological farming such as organic fertilizers, organic/pesticides/ bio-hormones, fruits bags, environmentally friendly packaging and processing materials may be provided with soft loan to encourage them to stay in the business
14. Illegal practices such as excessive or unlawful use of inputs such fertilizers, toxic substances, pesticides, hormones, steroids for beef fattening or hormones for increase milk production at field level, harvest and during processing should be strictly

prohibited. Awareness building campaign against those issues should be carried out at growers, traders, processors and consumers' level using mass media such as radio, TV, mobile phone, internet, stakeholders' meeting etc.

15. Training of the SMEs in different aspects of production, marketing, quality, safety and standard of fresh fruits, vegetables, beef cattle, poultry, and fisheries and food products from fruits, vegetables, dairy, poultry and fisheries is needed for sustainability of sub-sectors in the long run.
16. Efforts should be taken for keeping the SMEs associations functional and vibrant to implement government policy in the agriculture, livestock, poultry and fisheries sub-sectors along with implementation of many activities such as non-revenue generating physical activities, revenue generating activities, dissemination of cultivation technologies, market information, awareness building campaign against illegal practices, at different levels of the value chain.