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STRUCTURE AND DIVERSITY OF HOMEGARDEN AGROFORESTRY: A CASE STUDY OF GAZIPUR DISTRICT IN BANGLADESH

AHMED, M. Fariduddin*1; RAHMAN, S. M. Lutfor*2;
AHMED, A.S.M. Mesbahuddin*3 and ALI, M. Emran*4

Abstract

The study was conducted in three *upazillas* of Gazipur district in Bangladesh. It focused on the species composition, structure of homegarden, diversity of plant species, and contribution of homegarden to household food security, conservation of plant species, constraints of homegarden productivity, and socio-economic importance of the homegarden agroforestry for sustainable production.

The average size of the homestead in the study area was 0.08 ha which increased with the increase of farm size. The homestead areas occupied by trees and bushes in landless and marginal farm categories were smaller than those in the larger category. Total 43 useful tree plant species were identified from the home gardens. Diversity and abundance of fruit species were found higher in all farm categories followed by timber species. Total income was found to increase with the increase of farm size. Total income from trees in the last five years was higher in large farm category than that of landless farm category. Jackfruit was identified as an important cash-generating crop in the study area. Scopes for improvement of tree management practices were prevalent. The major problems faced by the farmers in tree establishment were damage caused by animals. Insect pest was also another common constraint. The homegardening can be improved by proper management practices, more research performance, cooperative and extension services etc., and by replacing the low economic value crops by high economic value crops.

Key words : homegarden, agroforestry, fruits, vegetables, sustainable production, Bangladesh.

1. INTRODUCTION

With about 125 million people on 143,500 square kilometers (km²), Bangladesh is one of the most densely populated countries. Just over two-thirds of the total land is cultivable, and the percentage is shrinking with the rapid growth of population. In Bangladesh, the need for maintaining the population-food-nutrition balance can hardly be overemphasized. Two important implications of the rapidly expanding population are that per capita land availability has declined from 0.19 ha in 1961 to 0.101 ha in 1992, which puts heavy pressure on land for human habitation and crop production.

*1 610 Pomeii Drive, Pinewoods, Bear, DE 19701-2528, USA.
*2 Texas A&M University, Texas Agricultural Experiment Station (TAES), Research and Extension Center, 17360 Coit Road, Dallas, Texas 75252-6599, USA.
*3 Horticulture Research Center (HRC), Bangladesh Agricultural Research Institute, Joydebpur, Gazipur-1701, Bangladesh.
*4 Graduate School of Policy Studies, Iwate Prefectural University, 152-52 Sugo, Takizawa 020-0193, Japan.

A homestead in Bangladesh is an integrated production system and a stable ecosystem that maintains the diversity of life as well as the biological wealth. It is the main source of supply of timber, fuelwood, fruits and vegetables for the household and is reliable source of household income. Shortage of fuel was common irrespective of farm size, but it was more acute in the smaller farm categories. About 85% of timber demand and 90% of fuel wood demand are met by homestead production. It was estimated that about 10% of the standing volume of wood on homesteads is removed every year, indicating that homestead plantations are under tremendous pressure. Michon et al. (1983), Swemarwoto and Conwey (1991) stated that homegarden agroforestry maintains high levels of productivity, stability, sustainability and equitability. Leuschner and Khaleque (1987) and Ahmed and Rahman (2004) stated that the homestead agroforestry system is very important in the economy of Bangladesh. In a country like Bangladesh, homestead areas involve more than three-quarters of all agroforestry issues, and consequently the term agroforestry is invariably associated with homesteads.

Nair (1993) stated that today there is a consensus of opinion that agroforestry is practiced for a variety of objectives. It represents as depicted in Figure 1, an interface between agriculture and forestry and encompasses mixed land-use practices. These practices have been developed primarily in response to the special needs and conditions of tropical developing countries that have not been satisfactorily addressed by advances in conventional agriculture or forestry. Agroforestry is an integrated approach to land use that is characterized by the deliberate maintenance of trees and other woody perennials in fields and pastures. Alcorn (1990) explains that these strategies help meet the demand for a variety of goods and services, while insuring the forest is not destroyed.

Towards this end, we tried to investigate the present position of local farmers, their status, income, constraints and future motives. In fact, in Bangladesh, most of the native fruits, country vegetables, fuelwood and timber come from the homesteads, homeyards and marginal lands attached to or near a homestead. It has been estimated that thirty-thousand hectares of the homesteads provide 80% of total fruits and 85% of fuelwood and timber (Rahim 1994; 1997). Still then, there is very much shortage of food, nutrient and other forest products. There is absolutely no scope for increasing land under forestry/agriculture to fulfill national demands. Increase in the vertical distribution of yield, assumes that current resources are not fully utilized e.g. available light and water and that synergistic benefits exceed antagonistic effects, which may well be the case but should be recognized. Therefore, a well-planned and well-managed multi-layered cropping can play a great role in improving homestead production and fruit orchard development in Bangladesh. Multiple cropping especially multi-layer homestead production systems should be emphasized. Since the space limitation in the homestead, multi-storied cropping should be encouraged which could produce more economic return per unit area. Without increasing the land area the production of these items may be increased considerably by using management technology of horticulture and agroforestry under multi-storied cropping system. The utilization of land should be done in such a way (multi-layered gardens) that also maintains the ecological balance in the region. The multi-layer production system can also enhance the utiliza

tion of the natural resources (light, soil nutrient, land, etc.).

The homegarden is also an important source of fuelwood, particularly for poor households, supplying from 40 to 80 percent of the rural need (Wiersum, 1977). As we have argued, traditional homegardens have many desirable characteristics. Although gross yields per hectare are relatively low, they have tended to function largely outside the market economy to cheaply satisfy a wide variety of domestic needs. The produce, which is widely shared in the community, is an important supplement to diet and income, particularly during the critical time between rice harvests. They are valuable genetic resources, and they protect soil erosion. In general, homegardening is a stable and highly sustainable system.

Homegardening has been shown to be a source of additional income, because the household can sell a portion of the garden's produce. Studies suggest that this additional income is generally utilized to purchase supplementary food items, further increasing the diversification of the family's diet.

Homegardening is especially important in overcoming seasonal availability of foods and promoting household self-sufficiency. The objective of the study is to find out the structure and diversity of homestead of Bangladesh with particular reference to Gazipur district.

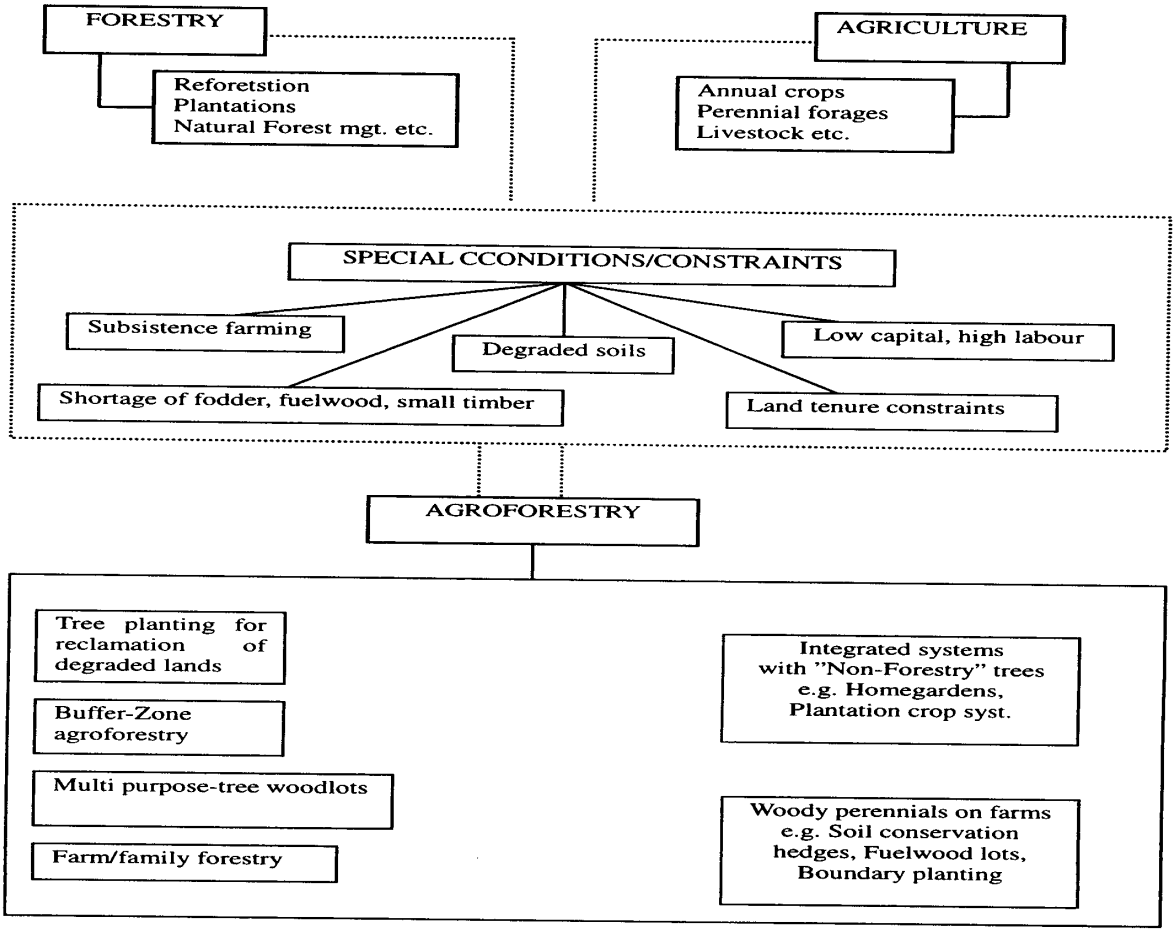

Figure 1 : Agroforestry has developed as an interface between agriculture and forestry in response to the special needs and conditions of tropical developing countries

Source : Nair,1993.

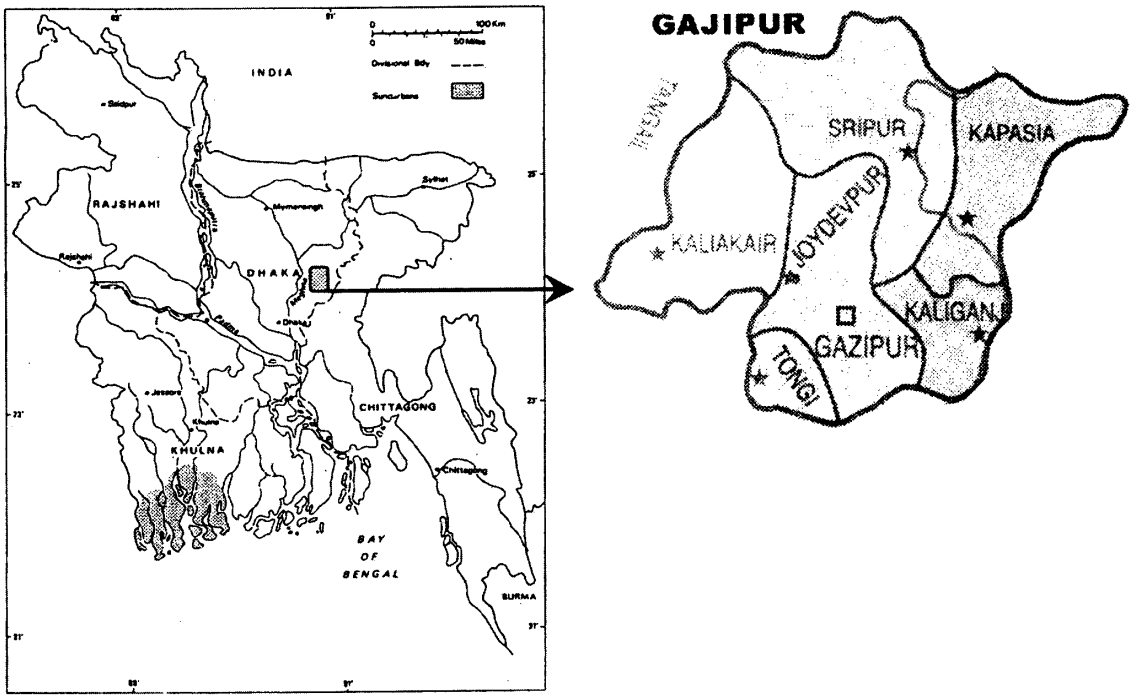

Figure 2. Bangladesh and Gazipur district

2. METHODOLOGICAL ASPECT

2.1 Geographical Location of the Study Area

Banglasdesh is located between 20° 34' and 26° 3' North latidude and between 88° 01' and 92° 41' East latitude. It is bordered by the Bay of Bengal on the South and by India on all other sides along with a small south Eastern boarder by Mayanmar (Figure 2.).

The study was conducted in nine villages of Gazipur Sadar, Kapasia and Kaliakair *upazillas* under Gazipur district. The study area is located in the central part of Bangladesh and covers a total area of 1,762.72 ㎢. The distances from district headquarter to the study villages are 11, 20, and 25 km, respectively. Total number of households, average size of household, and literacy rate in the study district are 196, 169, 5 ha and 45%, respectively (BBS, 1996).

2.2 Site Selection and Sampling Procedure

The research was carried out in Gazipur district. There are five *upazillas* (administrative entities, sub districts) in Gazipur district from where three *upazillas* namely Gazipur Sadar (proper), Kaliakair and Kapasia were selected as study sites. Nine villages were selected from each of the *upazilla* using multistage sampling. All households of the nine villages were grouped into five farm categories i.e. Landless, Marginal, Small, Medium and Large according to Abedin et al. (1988) shown in Table 1. A sample of 90 households were selected, thirty from each *upazilla* with equal probability to each farm category by stratified random sampling.

Table 1. Farm category and farm sizes*

Farm Category	Farm Size (Hectare)
Landless§	≤0.20
Marginal	0.21－0.50
Small	0.51－1.00
Medium	1.01－2.00
Large	>2.00

* Farm size was defined in term of land area.
§ After Abedin and Quddus (1990).

2.3 Questionnaire Development, Data Collection and Data Analysis

In order to obtain relevant information, interview schedule was carefully designed keeping the objective of the study in view. It contained both open and closed form of questions. The questions were designed in Bengali language. The interview schedule was pretested with ten households before it was finalised. The pre-testing facilitated the researchers to examine the suitability of different questions and status of the instrument in general. The final version of the instrument was done on the basis of validity, suggestions, corrections and comments of the research supervisors and experts.

Data for this study were collected by the researchers with the active help of inspectors of Bangladesh Agricultural Development Corporation (BADC) and *Upazilla* Agriculture Officer (UAO) of Department of Agricultural Extension (DAE). To get valid and pertinent information, the researchers made all possible efforts to explain the purpose of the study to the respondents. Appointments with the interviewer were made in advance by the help of local leaders. This helped the researchers to have a friendly orientation to the group members. The interview schedule was administered by the researchers personally to the respondents. Rapport was established with the respondents through informal discussion regarding objectives of the interview. The collected data were verified through surveying the villages and discussion with the households. Cooperation was obtained from respondents during data collection. Data were collected from January to June in 1998.

Collected data were coded for processing and analysis. Survey findings were compared on the basis of farm size categories. Relative prevalence (RP) of tree species was determined by multiplying the number of trees per farm by the percentage of farms containing that species. It was calculated by the following equation.

Relative prevalence (RP) =Number of trees/farm x% farm with species.

Species diversity was expressed by species diversity index according to Shannon-Wiener Index (H'). It was calculated as follows.

$$H' = -\sum_{i=1}^{3} (p_i)(\log_2 p_i)$$

where, H'= information content of sample, index of species diversity, or degree of uncertainty, s = number of species and *pi* = proportion of total sample belonging to the ith species such that $pi = ni/N, N = \sum_{i=1}^{s} ni$.

3. RESULTS AND DISCUSSION

3.1 Demographic and socio-economic characteristics of the respondents

3.1.1 Age

The age of the respondents ranged from 18-57 years old. On the basis of age groups, the respondents were classified into three categories: young age (18-35 years old), middle age (36-50 years old) and old age (>50 years old). Number and percentage distribution of farmers according to their age group has been shown in the Table 2. It is revealed that the majority

Table 2. Distribution of respondents according to their age.

Category	Respondent	
	Number	Percent (%)
Young age (18-35 yrs)	9	10
Middle age (36-50)	66	73
Old age (>50 yrs)	15	17
Total	90	100

Table 3. Distribution of respondents according to their family size.

Category	Respondent	
	Number	Percent (%)
Small family (2－4 members)	24	26.7
Medium family (5－8 members)	56	62.2
Large family (>8 members)	10	11.1
Total	90	100

Table 4. Distribution of respondents according to their education level.

Category	Respondent	
	Number	Percent (%)
Illiterate (No schooling)	21	23
Elementary (I-V)	39	43
Secondary level (VI-X)	22	25
Higher degree (College, Univ.)	8	9
Total	90	100

(73%) of the respondents were in the middle aged category. This finding is commensurate with the national statistics indicating that the selected homesteads were typical homestead of the country.

3.1.2 Family size

Family size of the respondents ranged from 2 to 11 (Table 3). The family size of the respondents was classified into three categories. These were small (2-4 members), medium (5-8 members) and large (above 8 members). Data presented in the Table 3 indicated that 62.2% of the respondents were in medium size family which was also a representative of typical family size in Bangladesh.

3.1.3 Education

The levels of education were categorized into four groups. These were illiterate (no schooling), primary level (class I-V), secondary level (class VI-X) and above secondary level (college and university). The range of education level of the respondents ranged from no formal education to above college levels. The level of education of the respondents is shown in Table 4. It revealed that the highest proportion (43%) of the respondents had primary level of education, while 25% and 23% had secondary level and no schooling, respectively. Only 9% had above secondary level education. This observation is also in conformity with national average of education in Bangladesh.

3.1.4 Occupation

Rural inhabitants in Bangladesh are either involved in agriculture or sell their labor for cash. A small portion of the inhabitants invest their cash in business while some earn their daily life from service either in the locality or elsewhere. The occupation of the respondents was classified into four categories. Among the four occupations of the respondents, agriculture was the major occupation of the respondents (58%), and was followed by daily laborer (19%), business (12%) and service (11%). Although daily laborer was ranked second overall, it was only recognized by landless and marginal respondents. None of the respondents were found as daily laborer in small, medium and large categories. Similarly, although 11% of the respondents were found as a service holder in all farm categories, none of the respondents was found as a service holder in landless farm category (Table 5).

Table 5. Distribution of respondent according to their occupation.

Category	% of Respondent					
	Landless	Marginal	Small	Medium	Large	All farms
Agriculture	33	45	67	72	72	58
Business	6	11	14	11	17	12
Service	0	11	17	17	11	11
Daily labor	61	33	0	0	0	19

Table 6. Average farm size and homestead size in different farm categories.

Farm Category	Average Farm Size (ha)	Average Homestead Size (ha)
Landless	0.08	0.06
Marginal	0.22	0.11
Small	0.57	0.14
Medium	1.64	0.20
Large	3.86	0.31

3.2 Farm and homestead size

The size of farm and homestead of the respondents varied within the farm categories. A positive correlation (r=0.97) was observed (data not shown here) between the farm size and homestead size where the larger the farm size, the larger the homesteads. The average farm size for the large category was 3.9 ha, while the land holding for medium, small, marginal and landless categories were 1.6, 0.6, 0.2 and 0.08 ha, respectively (Table 6).

On the other hand, the average homestead size for large category was 0.31 ha whereas the homestead for medium, small, marginal and landless categories was 0.20, 0.14, 0.11 and 0.06 ha, respectively.

3.3 Farmer's information sources

Information sources included in this study were Radio, TV, NGOs, Agricultural Extension, local experienced person, neighbor, own sense and others. Table 7 indicated that in majority of the cases, the respondents used their own sense and knowledge for homestead management and development followed by diffusion of knowledge from experienced neighbor. Extension agents like Department of Agricultural Extension (DAE), NGOs covered only 5% of the respondents indicating that there remains wide scope strengthening extension services.

3.4 Livestock

It was observed from the study that the farmers who own large properties keep more

Table 7. Distribution of respondents according to their contact with different information sources.

Type of information sources	% respondents		
	Always	Occasionally	Never
Radio	6	38	56
TV	0	35	65
NGOs	2	20	78
Extension Worker	3	13	84
Local skilled men	20	30	50
Neighbor	2	23	75
Own sense	77	23	0
Others	0	10	90

Table 8. Average number of livestock in different farm categories (Average of 18 households in each category).

Farm Category	Average number			
	Cattle	Goat	Buffalo	Poultry
Landless	0.8	1.0	0.0	12.2
Marginal	0.9	1.5	0.0	13.6
Small	1.8	1.6	0.0	14.8
Medium	2.9	1.3	0.0	20.6
Large	5.6	1.8	0.2	28.2

Table 9. Crop associated with major tree species in the homesteads.

Tree species	Vegetable grown under trees		Creeper vegetables grown using trees as trellis	
	Major	Minor	Major	Minor
Jackfruits	Aroids, Chili, Turmeric, Sweet gourd	Indian Spinach, Pineapple, Cowpea	Sponge Gourd, Ribbed Gourd	Country Bean
Mango	Amaranthus, Spinach, Turmeric, Aroids, Country bean	Bitter Gourd, Cowpea, Zinger	Sponge gourd	Bitter Gourd, Ribbed Gourd
Date palm	Spinach, Amaranthus	Turmeric, Aroids, Bitter Gourd	–	–
Coconut	Amaranthus, Spinach, Turmeric, aroids, radish	Pineapple, Egg Plant	–	Sponge Gourd
Jujube	Amaranthus	Spinach, Turmeric	Country Bean	Sweet Gourd
Litchi	–	Amaranthus, Pineapple, Spinach, Radish	–	–
Mahogany	–	Amaranthus, Turmeric	–	Country Bean
Koroi	–	Amaranthus, Eggplant	–	–
Sisso	Amaranthus	Sweet gourd, Egg Plant, Ribbed Gourd	–	–
Babla	–	–	–	Country Bean
Drumstick	–	Amaranth, Pointed Gourd	–	Country Bean

animals than the farmers who own small properties (Table 8). However, some households from small and marginal farm categories do not keep animals probably due to shortage of cash to buy the animal. Lack of manpower for attending the animals and shortage of grazing land are identified as the main reasons for those who do not keep livestock. Large animal and poultry farms serve as contingent funds which are easily encased when needed.

3.5 Tree crop association

In the study area, different combinations of tree-vegetables associates were recorded (Table 9). A total 32 of vegetables were found to grow in association with trees either under direct shade or as creeper. The vegetables grown under direct shade were food and cash

Table 10. Total income from tree products during the last five years.

Farm Category	Farm		Income
	Number	Percentage (%)	(Taka*/farm)
Large	17	94	22,458
Medium	15	83	14,560
Small	13	72	8,700
Marginal	13	72	6,354
Landless	10	56	6,180
Mean	14	77	11,650

* 1 Bangladeshi Taka (BDT) = 0.01725 US Dollar (USD) ; subject to change

generating plants, and the associated trees were jackfruit, mango, date palm, coconut, jujube, litchi, mahogany, koroi, sissoo, babla, drumstick etc. Pineapple was grown under shade of jackfruits, litchi and coconut. Respondents recognized that vegetables under trees benefit the associated trees.

3.6 Tree products: income from trees

Trees in the homestead generate income to the farmers. The study showed that the average income generated during the last five years from homestead tress was 116,500 BDT (Bangladesh Taka) per farm. The income of the landless farmers from trees was much lower than the income of the other farm categories (Table 10). The lower income of the farmers from tree products was probably due to lower number of trees in the homestead.

3.7 Relative prevalence of tree species grown in homestead

Total 43 tree species were identified in the surveyed homesteads. The relative prevalence (RP) of tree species found in the study area is shown in Table 11. The most common species in the study area was jackfruit (26.3) and mango (22.5) followed by mahogany (10.3), coconut (10.0), teak (9.7), guava (8.2), while low prevalence species was minjiri (0.03), gora neem (0.18), tamarind (0.19), shimul (0.21) and beyleaf (0.30). The dominance of jackfruit (*Artocarpus heterophyllus*) and mango (*Mangifera indica*) was found in almost all the farm categories. The dominance of jackfruit and mango in the study area was probably due to ecological and socio-economic advantages. There were minor differences in relative prevalence of less common species.

3.8 Problems/constraints faced by the farmers in tree establishment

The major problem faced by the farmers in tree establishment was the damage caused by animals (Table 12). Animals, which are very essential for draft purpose and post harvest operations, damaged leaves and branches of trees, and trample the seedlings of young trees. Seedlings are also damaged by children and by storm. Farmers reported more damage caused by animals and insect pest in the homesteads. Strom was also reported to cause damage to the trees. In the homesteads trees obstructed ventilation or fresh air, caused difficulties in post harvest operation of crops and were in some cases a source of conflict with neighbors. Trees also damaged roofs of houses during rain and storm. Seven percent of the farmers said that they had no problem in the homestead.

4. CONCLUSION AND RECOMMENDATIONS

In the process, the researchers have studied a large number of individual farms and offered farmers choices in new technologies and production methods developed through location—specific research for crops, livestock, fisheries, agroforestry and the homestead. Then they followed up the farmers' response and progress. The amount of information generated is so large

Table 11. Tree species found in the homestead and their relative prevalence (RP).

Scientific/Botanical Name	Local/Common Name	Relative Prevalence (RP)	Scientific/Botanical Name	Local/Common Name	Relative Prevalence (RP)
Artocarpus heterophyllus	Jackfruit	26.28	*Albizia procera*	Koroi	1.43
Mangifera indica	Mango	22.53	*Moringa oleifera*	Drumstick	1.36
Swietenia mahagoni	Mahagoni	10.35	*Areca catechu*	Betelnut	1.31
Cocos nucifera	Coconut	9.93	*Citrus grandis*	Pummelo	1.09
Tectona grandis	Teak	9.68	*Samanea saman*	Raintree	1.08
Psidium guajava	Guava	8.19	*Dalbergia sisso*	Sissoo	0.86
Litchi chenensis	Litchi	5.65	*Spondias mangifera*	Hoghplum	0.75
Borasus flabellifer	Palmyra palm	5.06	*Feronia limonia*	Elephant apple	0.61
Aegle murmelos	Wood apple	5.06	*Acacia nilotica*	Babla	0.58
Syzygium cumini	Black berry	4.63	*Phyllanthus emblica*	Embilica	0.54
Eucalyptus spp	Eucalyptus	4.48	*Diospyros peregrina*	Gab	0.49
Phoenix sylvestris	Date palm	3.78	*Delonix regia*	Krishnochura	0.48
Bambusa spp	Bamboo	3.69	*Acacia auriculiformis*	Akasmoni	0.43
Punica granatum	Pomegranante	3.66	*Polyalthia longifolia*	Debdaru	0.43
Musa sapientum	Banana	2.86	*Shorea robusta*	Gazari/Shal	0.43
Averrhoa carambola	Carambola	2.37	*Annona reticulata*	Bullock's heart	0.41
Zizyphus jujuba	Jujubi	2.00	*Annona squamosa*	Custard apple	0.38
Citrus limon	Lemon	1.93	*Cinnamomem tamala*	Bey leaf	0.30
Azadirachta indica	Neem	1.83	*Bombox ceiba*	Shimul	0.21
Achras sapota	Sapota	1.73	*Tamarinadus indica*	Tamarind	0.19
Elaeocarpus floribundus	Olive	1.56	*Melia azadirch*	Gora neem	0.18

Table 12. Problems/constraints faced by farmers in establishing and raising tress.

Problems	(%) of Respondent			
	Gazipur	Kaliakair	Kapasia	Mean
Animals	65	71	68	68
Insect/pest	21	27	32	27
T.Storm	20	19	23	21
Children	13	16	19	16
Technical	18	13	15	15
Stolen	13	15	18	15
Strong wind	10	8	8	9
Post harvest operation	7	12	9	9
Conflict	11	9	8	9
Shade	9	7	8	8
No problem	6	9	7	7
Space	2	4	5	4

and complex that researchers need more sophisticated techniques to analyze the data and utilize them meaningfully.

The traditional homestead system at Gazipur district was found poor in terms of management level in cultural practices. Farmers depend on the naturally growing trees on the homestead. The modern technologies and extension

supports to develop the traditional production systems were almost not available. Increased tree plantation in the homesteads and their appropriate management including intercropping practices should be the strategy for enhancing tree cover of the study area in order to meet basic needs of its people and maintain environmental balance.

To get fruits, fuelwood, timber and various agricultural products as well as to bring back equilibrium in the ecosystem, establishment of multi-layered cropping systems in the homesteads and/or orchard is inevitable. The developed model should be applied in the orchards of jackfruit in central region and forest plantations in forest areas of Bangladesh.

In spite of the immense scope and prospects of the homegardens, no systematic program has been undertaken so far to improve the productivity of the homegarden. In order to bring in a positive change in the productivity of the homegardens, the following recommendations are made on the basis of the findings of the current study: The homegarden system can be improved by proper care management practices, more research performance, cooperative and extension services etc., and replace the low economic value crops by high economic value crops. This will ensure sustainable production for the poor farmers of Bangladesh. Efforts should be made to make the rural farmers aware of the appropriate planning and management of the homesteads and to provide them with necessary training and other technical supports for these purposes. Agrobased industry should be built for more income generating activities. Jackfruit *(Artocarpus heterophyllus)* being a multi purpose fruit tree commonly found in all locations, could provide the basis for a food process industry. The efforts should be made to identify different shade tolerant vegetables and to motivate and train the farmers to increase the vegetable production of the study area and to cultivate them under the trees in the homestead. Women work efficiency should be increased by training, education and extension supports since they are mainly involved in home gardening. Future research must address many factors which constrain or limit the achievement of sustainability objectives. Addressing such constraints will require efforts in such areas as:

1. Planning and management of the homesteads and to provide them necessary training.
2. The conservation, evaluation, and use of germplasm in genetic improvement efforts with crops and livestock.
3. Crop management, including fertilizer use, pest control, and various cultural practices.
4. The development of improved and more intensive systems that might evolve from traditional, indigenous systems.
5. Soil and water management, effective and efficient use of irrigation water, etc.
6. The management of homestead gardens, animal systems, including animal health and nutrition.

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アグロフォレストリーの構造と多様性：バングラデシュ、ガジプール地区のケーススタディ

アーメド　M. ファリドウヂン、ラハマン　S. M. ルトフォル、
アーメド　A. S. M. メスバーウヂン、アリ　M. エムラン

要　旨

本研究はバングラデシュ、Gazipur 地域（以前はDhaka地域と称していた）の最小行政地区（uapzillas）としてのGazipur, Kapasia, Kaliakair を対象とし、各地区から30戸の農家を選定して調査したものである。調査にあたり、農家菜園の構造、作物構成、作物の多様性、農家の食糧確保に対する貢献、作物種類の維持、作物の生産性の制約、社会経済的な農業森林体系維持上の重要性に着目した。

農家菜園の平均規模は8アールで、農家規模が大きくなると菜園も大きくなる傾向が認められた。土地なし農家と小規模農家の菜園では、樹木並びに疎林は狭小である。調査地域平均では、43種類の有用樹木（果樹並びに木材用樹木）が確認された。すべての農家で果樹が最重要であり（Shanon の多様性指数はH=7.25）、ついで木材用樹種となる(H=4.83)。全43樹種のうち28種は園芸用であり、15種は用材、燃料用である。農家経営規模が大きくなると農家所得も多くなる。調査地域では多岐にわたる野菜(32種)が生産されているが、多くは自家消費むけである。ジャックフルーツ、マンゴー、ナツメヤシ、ライチ、マホガニー、ナンバンサイカチの下作としてアマランサス、インド・ホウレン草、アロイド、カボチャ、唐辛子、パイナップル、ウコン、豆類、蕪などが栽培されている。また、カントリー・ビーン、苦ひょうたん、スポンジひょうたん、ささげ、しょうがなどはジャックフルーツ、マンゴー、ライチ、マホガニー、ナンバンサイカチに這わせて栽培している。農家は菜園で生産した樹木、果物、野菜の一部を販売して所得を得ている。大規模農家では樹木からの所得が大きく、この5年間の平均で22,458カタ（バングラデシュ通貨単位：1タカは約2円に相当）に達し、ランドレス・ファーマーでは6,150タカにとどまる。総所得も農業経営規模が大きくなるにつれて多くなる。ジャックフルーツはとりわけ収益性の大きい樹種である。多くの農家は用材、燃料材より果樹を好んで栽培する。樹木の栽植にあたって問題となるのは獣害であり、調査農家の68%に及んでいる。虫害も多く、27%がその被害を報告している。

菜園は、より適切な管理、調査、協力体制の整備と普及によって改善の余地がある。また、低生産性の作物を生産性の高い作目に転換することにより改善できる。

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