Homestead Garden in Rural Assam: A Means of Botanical Importance and Economic Sustainability

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Abstract

A study was conducted to assess the botanical importance and economic sustainability of homestead garden in Assam. Assessment was done by means of multistage random sampling from a total of 60 households using a semistructured questionnaire in the Koliapani Development block of Jorhat district of Assam. The study found great extent of diversity in horticultural plants, timber plants, cash crops, medicinal plants, spices, herbs etc. Moreover both crop and non-crop enterprises also found to a large extent in the homestead gardens of the study area. The diversity of homestead garden is considered great importance from the side of eco conservation and means of livelihood security to the Assamese family. In addition, analysis of existing management regime indicates that growers lack scientific information, almost every household still follows traditional management systems. A specific and sound homestead forest management plan at the local level, conservation of different homestead species diversity through scientific management and obtaining training and support from government was found highly desirable by this study.

Keywords: *1.Eco-conservation, 2.Economic sustainability, 3.Homestead garden, 4.Homestead diversification.*

1. Introduction

Homestead garden is an operational farm unit, in which a number of crops (including tree crops), vegetables, fruits, and medicinal plants are grown along with livestock and fish production mainly to satisfy the farmers' basic need (Tejwani, 1994).Homestead farming system is a need based, self-provisioning, integrated, multi-species economically sustainable and environmentally safe farming system around the house where the soil is enriched by homemade biological formulations and integrated farming is undertaken (Bhattacharya et. Al. 2013). In Assam, homestead garden is an old agepractice. People of Assam traditionally well sound in maintaining a homestead garden for both economic and ecological importance. The conservation of cultivated plants in homestead gardens of Assam not only preserves a vital resource for humankind but plays an important role in household food security, as it is a sustainable source of food, fruits and vegetables. Moreover, in Assamese society homestead gardens are considered to be the best source of traditional medicine that is used to a large extent in Assam.

Although the ecological and economic importance of homestead garden in Assam, very few studies have identified in the literature that explore the hidden importance of homestead garden. Some studies like DasTapasi and Ashesh Kumar Das, 2005; Saikia P, B. I. Choudhury& M. L. Khan, 2012; Barooah M. and A. Pathak, 2009 etc., were covered the issue of ecology from the point of botanical research. The traditional use of the diverse resources in the homestead land and economic valuation of these resources have not been covered fully. Therefore, this study tries to make an attempt to examine the homestead garden from the point of eco-diversity, use value of the homestead resources in the traditional society, economic sustainability and homestead diversity. Thus, this study will definitely fill up the void of research and will help in policy implications.

2. Objectives

i) To identify the Botanical resources and their utilization pattern in the sample rural areas of the study.
ii) To examine the economic importance of homestead garden in the sample rural areas of the study.
iii) To examine the extent of homestead diversification in the study area.

3. Methodology

The study is conducted in the Koliapani Development Block of Jorhat district of Assam. A total number of 60 households have been selected from three villages namely KhargharíaGaon, DihingiaGaon and Dulia Gaon for the study during May, 2016 to July 2016. Samples have been drawn by following a multistage technique using random method of sampling. The primary data has been collected structurally designed household questionnaire covering information on homestead garden.

To meet the objective of the study, simple tabulation analysis is following. The data collected were tabulated and analyzed according to the need of the objective of the study. Simple statistical tools like percentage (%), average etc. were calculated wherever necessary.

3.1. Index for measuring Homestead Diversification

In this study, **Simpson Index** has been used to measure the extent homestead diversification.
The Simpson Index has been calculated by using the following formula-

$$SID = 1- \sum_{i=1}^{n} p_i^2$$

Where, SID is the Simpson Index of Diversity, and P_i is the proportionate value of i^{th} numbers of enterprises or species and livestock found in the homestead gardens in the study. The index ranges between 0 and 1. If there exists complete specialization, the index moves towards 0.

4. Results and Discussions

4.1. Homestead land holding

Area of homestead is an important factor for a typical home garden. A large size homestead has more scope of being economically developed than a small size homestead. Areas under different thing like tree garden, vegetable garden, livestock, pond etc. increased with the increase of homestead area. Hence, the scope of acquiring income is more in the large size homesteads. The table-1.1 shows the area under homestead garden of the sample households.

Table-1 Distribution of sample households by possession of homestead areas		
Homestead (in Bigha)	No. of households	Percentage
0-1	46	76.7
2-3	12	20.0
3+	2	3.3
Total	**60**	**100**
Source: Field Survey.		

The table-1 shows that the average size of the homestead garden is within the range of 1 or less than 1 to more than 3 bighas. Majority of the sample households possess less than one bigha of land. Very less numbers of sample families possess more than three bighas of homestead garden.

4.2. Botanical Resources and their Utilization Pattern

4.2.1. Horticultural trees

Horticultural trees are the trees that are mainly used for fruit production. Fruits are the source of vitamins like vitamin A, B, C etc. that are essential for good health. In the study area 18 species of fruit trees are found in the homesteads. The availability of fruit trees in homestead reduces the buying cost of people. It is a good source of income for rural people as market price of fruit is very high compared to other high value added agro- products. Another benefit of horticultural trees is that people can get fruit, fodder, timber and fuel from the same tree. People generally prefer fruit trees in their homestead. Table-4.2 shows the use of horticultural trees by the sample households.

Table-2 Uses and availability of horticultural trees found in homestead garden				
Local Name	Common Name	Scientific name	Uses	Percentage
Aam	Mango	*Mangiferaindica*	Fruit, timber, fuel	93.3
Kol	Banana	*Musa sp.*	Fruit	6.7
			Fruit, fodder	91.7
Kathal	Jack-fruit	*Artocarpusheteraphyllus*	Fruit, timber, fuel	38.3
			Fruit, timber, fuel, fodder	45.0
Jolphai	Olive	*Elaeocarpusfloribundus*	Fruit, fuel	58.3
Kola-jamu	Black-berry	*Syzygiumcumini*	Fruit, fuel	38.3
Lesu	Litchi	*Litchi chinensis*	Fruit, fuel	25.0
Modhuri-aam	Guava	*Psidiumguajava*	Fruit, fuel	73.3
Nemu	Lemon	*Citrus limon*	Fruit	83.3
Mati-kathal	Pine-apple	*Ananascomosus*	Fruit	43.3
Atlas	Custerd-apple	*Annona reticulate*	Fruit, fuel	25.0
Dalim	Pomegranate	*Punicagranatum*	Fruit, fuel	35.0
Bael	Wood-apple	*Aeglemarmelos*	Fruit	31.7
Komolatenga	Orange	*Citrus reticulate*	Fruit, fuel	20.0
Narikol	Coconut	*Cocosnucifera*	Fruit, fuel	21.7
			Fruit, fuel, timber	58.3
Amita	Papaya	*Carica papaya*	Fruit	73.3
Tamul	Areca-nut	*Areca catechu*	Fruit, fuel	100
Rababtenga	Shaddock	*Citrus grandis*	Fruit, fuel	28.3

Leteku	-	*Baccaurearamiflora*	Fruit, fuel	11.7
Source: Field Survey				

The table-2 shows that people in the sample villages plant horticultural trees in their garden not only to fulfill the demand for fruits; but it fulfills their need for timber and fuel too. It has also been found that people plant horticultural tree as fodder for their home animals like goat, cow etc., during the sowing seasons of the winter paddy. Moreover, fruits are also the major source of vitamin and nutrition to the sample households.

4.3. Timber species

Another important and valuable homestead resource is timber species in the study area. Availability of various timber species makes a homestead rich and highly diversified. Timber species is a good source of getting high income for a household. It also makes a household self-reliant in case of using timber for household purposes i.e. for furniture, building material etc. Timber trees are an extra source of fuel and fodder also. People can spare their money for buying firewood and can also meet other expenses by selling excess firewood.

Table-3Uses and availability of timber spices found in homestead

Local Name	Scientific name	Uses	Percentage (%)
Shegun	*Tectonagrandis*	Timber, for sale	36.7
Dimoru	*Ficushispida*	Fuel	36.7
Moj	*Pithecellobiummonadelphum*	Fuel	63.3
Satiana	*Alstoniascholaris*	Fuel	51.7
Sopa	*Micheliachampaca*	Timber, fuel	36.7
Bohot	*Artocarpuslacucha*	Timber, tree	23.3
Krishnachura	*Delonixregia*	Fuel	10.0
Kadom	*Hymenodictyonexcelsum*	Timber, for sale, fuel	30.0
Sasi	*Aquililaariamalaccensis*	For sale	28.3
Nahar	*Mesuaferrea*	Timber, fuel	26.7
Gomari	*Gmelinaarborea*	Timber, for sale, fuel	30.0
Sonaru	*Cassia fistula*	Fuel	5.0
Shimolu	*Bombaxceiba*	Fuel	11.7
Ajar	*Lagerstroemia speciosa*	Timber, fuel	10.0
Modar	*Erythrina variegate*	Fuel	5.0
Patihonda	*Cinnamomumobtusifolium*	Fuel	11.7
Koroi	*Albizia spp.*	Fuel	8.3
Source: Field survey			

4.4Cash crops

A cash crop is an agricultural crop which is grown for sale to return a profit. These are crops for direct sale in market, as distinguished from a crop for use as livestock feed or for other purposes. In the study area people just naturally grow cash crops in their homestead as a source of generating cash for the family's needs and also for their own consumption.

Table 4Uses and availability of cash crops found in homestead			
Local Name	Common Name	Uses	% of household
Pan (*Piper betel*)	Betel vine	Consumption purpose, for sale	73.3
Kuhiar (*Saccharumofficinarum*)	Sugar-cane	Consumption purpose	31.7
Source: Field Survey			

4.5. Non-timber species

Non-timber trees are not of timber varieties but they fulfil people's needs to a great extent in household works. These non-timber varieties have also great economic aspects. In the sample area, two types of non-timber species are found. These two species are bambooand cane. Bamboo is widely distributed in most of the sample homesteads. People grow various kinds of bambooin their homestead traditionally and uses for different purposes. The details have been shown in table-4

Table 5 Availability and utilization pattern of non-timber species found in homestead			
Local name	Common Name	Using pattern	% of household
Bah *(Schizostachyumdulooa)*	Bamboo	For sale	75
		Leaves used as fodder for cattle	
		For construction purposes like foundation, frames etc.	
		Dead branches, dried leaves and old rhizomes used as fuel	
		For making handicraft	
		For making agricultural implements	
		For making fishing tools	
		For making handloom implements	
		Tender shoots used for making khorisa	
		For making trellis and fencing	
Bet (*Calamustenuis)*	Cane	Used as binding material	30
		Tender shoots used as food	
		For household work	
Source: Field Survey			

4.6. Vegetables

Vegetable gardening is another component of a homestead. One of the essential commodity in everyday life in household is vegetable. Rural people naturally grow a few species of vegetable. The target of their gardening is to meet their daily needed amount of vegetable thereby sparing money. Vegetable gardening has been playing an important role to alleviate poverty for resource poor households. If properly managed it can be a good source of generating income. The most important point is that most of the vegetables in their homestead garden are organic in nature.

Table 6 Availability of summer vegetables in sample homestead			
Local Name	Common Name	Scientific name	% of household having
Komora	White Gourd	*Benincasahispida*	48.30
Tiyoh	Cucumber	*Cucumissativus*	48.30
Jikaa	Cornered gourd	*Luffaacutangula*	33.30
Bhendi	Lady's finger	*Abelmoschusesculentus*	46.70
Jatilau	Bottle gourd	*Lagenariasiceraria*	38.30
Bhat-kerela	Teasle Gourd	*Momordicadioica*	33.30
Dangbodi	Yardlong bean	*Vignaunguiculatasesquipedalis*	31.60
Kunduli	Ivy gourd	*Cocciniagrandis*	18.30
Ol-kosu	Elephant foot yam	*Amorphophaluspaeoniifolius*	15.00
Source: Field Survey			

Table 7 Availability of winter vegetables in sample homesteads			
Local Name	Common Name	Scientific name	% of household having
Bengena	Eggplant	*Solanummelongena*	63.30
Alu	Potato	*SolanumTuberosum*	10.00
Bondhakobi	Cabbage	*Brassica oleraceaCapitata Group*	25.00
Phulkobi	Cauliflower	*Brassica oleracea Botrytis Group*	6.70
Oolkobi	Kohlrabi/Knolkhol	*Brassica oleraceaGongylodes Group*	21.70
Tita-kerela	Bitter gourd	*Momordicacharantia*	15.00
Gajor	Carrot	*Daucuscarota*	16.70
Laaihak	Mustard greens	*Brassica juncea*	71.70
Palenghak	Spinach	*Spinaciaoleracea*	68.30
Chukahak	Sorrel	*Rumexacetosa*	16.70
Mula	Radish	*Raphanussativus*	21.70
Beet	Beet	*Beta vulgaris*	18.30
Rangalau	Pumpkin	*Cucurbita maxima*	13.30
Dhunduli	Snack-gourd	*Trichosanthescucumerina*	10.00
Konbilahi	Currant Tomato	*Solanumpimpinellifolium*	36.70
Mua- alu	Lesser yam	*Dioscoreaesculenta*	15.00
Kath-alu	Air yam	*Dioscoreaalata*	16.70
Sojina	Drumstick	*Moringaoleifera*	33.30
Source: Field Survey			

4.7. Spices

Spices are used for flavouring, colouring or preserving food. Spices have also other uses including medicinal, or as a vegetable. Spices are used in various forms like whole, chopped, powder etc. These spices have high market value as these are very essential commodity in day-to-day life. Spices are traditionally grown in homesteads of people from time immemorial.

Table 8 Availability and using pattern of spice varieties found in sample homestead				
Local Name	Common Name	Scientific name	% of household having	Using pattern
BhotJolokiya	King chilli	Capsicum chinense	50.00	Consumption
Jolokiya	Chilli pepper	Capsicum frutescens	90.00	Consumption
Halodhi	Turmeric	Curcuma domestica	40.00	Consumption
Ada	Ginger	Zinziberofficinale	40.00	Consumption
				For sale
Nohoru	Garlic	Allium sativum	8.30	Consumption
Piyanj	Onion	Allium cepa	21.60	Consumption
Jaluk	Black-pepper	Piper nigram	35.00	Consumption
				For sale
Dalseni	Cinnamon	Cinnamomumverum	18.30	Consumption
Tezpat	Cassia-leaf	Cinnamomumtamala	38.30	Consumption
Source: Field Survey				

4.8 Herbs

Herbs are small plants that are that grows widely in the lap of nature. These are mainly used as food, in the form of vegetable. They have also some use in treating diseases. Some herbs are used in cooking to flavour foods. People often have various species of herbs in their homestead. Herb seeds and seedlings are inexpensive and they grow easily. The plants grow with little care. They take the place of vegetable to the rural poor by supplementing it. Now-a-days the importance of herbs increases as people becomes more health-conscious.

Table 9 Herbs found in sample homesteads and their availability			
Local name	Common Name	Scientific name	% of households having
Mandhonia	Long coriander	*Eryngiumfoetidum*	65.00
Podina	Mint	*Menthaviridis*	58.30
Bhedai-lota	Skunk Vine	*Paederiascandens*	55.00
Mosondori	Heartleaf	*Houttuyniacordata*	68.30
Modhuholeng	Chinese knotweed	*Polygonumchinense*	23.30
Konashimolu	Tropical spiderwort	*Commelinabenghalensis*	43.30
Khutura	Green amaranth	*Amaranthusspinosus*	45.00
Matikanduri	Sessile joyweed	*Alternantherasessilis*	71.60
Durun bon	Thumbai	*Leucasplukeneti*	48.30
Bor-manimuni	Asiatic pennywort	*Centellaasiatica*	81.60
Soru-manimuni	Lawn Pennywort	*Hydrocotylesibthorpioides*	81.60
Bon-jaluk	Snake-needle grass	*Hedyotisdiffusa*	50.00
Horu-tengesi	sleeping beauty	*Oxalis corniculata*	68.30
Bor-tengesi	pink woodsorrel	*Oxalis debilis*	68.30
Jilmilhak	White Goosefoot	*Chenopodium album*	40.00
Dhekia	Fiddlehead fern	*Blechnumorientale*	70.00
Kola Kosu	Elephant Ear	*Colocasiaesculenta*	75.00
Tengamora	Roselle	*Hibiscus sabdarifolia*	40.00
Huhoni bon	paracress	*Spilanthesacmella*	13.30
Hukloti	Patchouli	*Perillaocimoides*	5.00
Brahmihak	Brahmi	*Bacopamonnieri*	23.30

Hatikhutura	Spiny amaranth	*Amaranthusspinosus*	18.30
Tita-bhekuri	black nightshade	*Solanumindicum*	2.20
Pahari-paleng	garden orache	*Atriplexhortensis*	21.70
Nol-tenga	Malayan Wild Vine	*Cissusrepens*	8.30
Puroi	Indian spinach	*Basella alba*	26.70
Kenharaj	false daisy	*Eclipta alba*	21.70
Tita-phul	Nongmangkha	*Phlogocanthusthyrsiflorus*	18.30
Source: Field Survey			

4.9. Medicinal plants

Medicinal plants are the plants that are used to treat any disease of human or animal. If any part of a plant including fruit, leaf, bark, root or gum etc. can cure some disease, that plant is considered as medicinal plant. Rural people confronted many health issues from severe malaria to uncontrolled diabetes, from a badly infected wound to cancer. Rural people also suffers various communicable diseases including diarrhoea, dysentery, jaundice, scabies, measles, small pox, cough and cold, which are spreading like wild fire.

Rural people are well versed with valuable knowledge accumulated through long period of experience. They are dependent on nature and easily available medicinal plants and herbs for the treatment of various ailments. There are plenty of different varieties of medicinal plants in every homestead of rural area.

Table 10 Medicinal plants found in the sample households and their using pattern

Medicinal plants	Parts used	Name of disease	% of household
Moha-neem (*Azadirachtaindica*)	Leaf	Scabies, vomiting, diabetes, eye disease, small pox, measles	63.30
Amita (*Carica papaya*)	Fruit, gum	Constipation, gastritis, burn	75.00
Modhuri-aam (*Psidiumguajava)*	Tender leaf	Thread worm, diarrhoea	73.30
Kachkol*(Musa sapientum)*	Fruit	Diarrhoea	100
Arjun (*Terminaliaarjuna)*	Bark	Heart disease, fractures and dislocation	18.30
Aam*(Mangiferaindica)*	Dry leaf, tender twigs	Wounds	55.00
Halodhi (*Curcuma domestica)*	Rhizome	Scabies, ring worm, healing pain, fractures and dislocation, headache, measles	41.70
Bael *(Aeglemarmelos)*	Leaf, fruit	Dysentery, blood dysentery, heart disease, piles	28.30
Amlokhi (*Emblicaofficinalis)*	Fruit	Scabies, thread worm, vomiting, jaundice, diabetes, repairs split hair and alopecia, loss of appetite, high pressure	30.00
Sewali (*Nyctanthusarbortristis)*	Tender leaf, flower	Thread worm, measles	45.00
Hilikha (*Terminaliachebua)*	Fruit	Diarrhoea, apesia, loss of appetite, nail disease	46.70
Bahek (*Vesicaadhatoda)*	Leaf	Cough, jaundice, measles	15.00
Nephaphu (*Clerodendrumcolebrookian*	Tender leaf	High pressure	16.70

um)			
Jetuka *(Lawsoniainermis*)	Tender leaf	Repairs split hair and alopecia, high pressure, nail disease	25.00
Kordoi (Averrhoacarambola)	Fruit	Jaundice	36.70
Narasingha (*Murrayakoenigii)*	Tender leaf	Thread worm, apesia, abdominal gripes	66.70
Akan *(Calotropisprocera)*	Leaf	Insect bites, tooth-ache, healing pain, rheumatism	11.70
Tulasi (*Ocimumbasilicum)*	Leaf	Cough, ring worm, insect bites, diabetes, pneumonia, apesia, malaria	81.70
Nayantora (*Catharanthusroseus)*	Leaf, flower	Diabetes, abdominal gripes, cancer	21.70
Monisal *(Sapindusmukorossi*)	Seed	Tonsillitis, repairs split hair and alopecia	13.30
Hiju *(Euphorbia neriifolia)*	Leaf	Asthma, rheumatism	25.00
Harjora-lota (Cissusquadrangularis)	Whole plant	Healing pain, fractures and dislocations, cancer, rheumatism	6.70
Posotia*(Vitexnegundo)*	Leaf	Cough, wounds, tonsillitis, healing pain, alargy, headache, rheumatism	11.70
Borali-bokua (*Pouzolziazeylanicca)*	Leaf	Wounds	15.00
Jom-lakhuti (*Costusspeciosus*)	Root	Pneumonia	10.00
Dupartenga (Bryophyllumpinnatum)	Leaf	Jaundice, piles, kidney stone	10.00
Kuji-thekera (*Garcinia Morella)*	Fruits	Dysentery, abdominal gripes	8.30
Lai-jabari (*Drymariacordata)*	Leaf	Asthma, headache, pneumonia	63.30
Bishalyakarani (Amaranthus tricolor)	Leaf	Epistaxis, wounds	6.70
ToruaKadom (Acacia fernesiana)	Leaf. Bark, gum	Diabetes, tonsillitis, mums, eye disease, burn	3.30
Tezmuri (*Xanthozylumnitidum)*	Leaf	Anaemia	15.00
Sengmora (Lasiaspinosa)	Root	Pneumonia	5.00
Sal-konwari *(Aloe barbadensis)*	Leaf	Fever, repairs split hair and alopecia, headache, burn, piles, high pressure	28.30
Dhatura *(Daturafastuosa*)	Leaf, flower	Thread worm, mums	11.70
Dhapat-tita (*Clerodendruminfortunatum)*	Tender leaf	Diarrhoea	11.70
Nuni	Leaf	Fractures and dislocation	21.70

(*Merus alba)*			
Outenga (Dilleniaindica)	Seed	Repairs split hair and alopecia	25.00
Gul-nemu (Citrus aurantifolia)	Fruit, seed	Thread worm, dysentery, anaemia, eye disease	85.00
Mati-kathal *(Ananascomosus)*	Tender leaf	Thread worm	43.30
Dubari bon (Cynodondactylon)	Leaf	Dysentery, alargy, epistaxis	100
Kola-jamu *(Syzygiumcumini)*	Bark	Diabetes	40.00
Kuhiar (*Saccharumofficinarum)*	Stem	Jaundice, abdominal gripes, heart disease	30.00
Source: Field Survey			

5. Livestock

Livestock rearing is an important economic activity of earning supplementary income. It can create employment opportunities to the rural poor, especially to the women and the unemployed youths. Livestock provides animal protein (meat, milk, egg) which is important for the nutritional well-being of rural people. It also contributes to land fertility by return of dung and urine as these are used as manure to the trees and vegetables in homestead. Livestock contribute a major share to family income through its by-products i.e. milk, meat, egg besides manure.

Table 11Production purpose of livestock found in homestead of sample area

Name	*Production purpose*	*No. of household*	*Percentage of households*
Cow	*Sale, milk*	*29*	*48.30*
	Sale, milk, ploughing	*10*	*16.70*
	Milk, ploughing	*5*	*8.30*
	Milk	*11*	*18.30*
Goat	*Sale, meat*	*29*	*48.30*
Pig	*Sale*	*7*	*11.70*
Duck	*Sale, egg, meat*	*25*	*41.70*
Hen	*Sale, egg, meat*	*19*	*31.70*
Pigeon	*Sale, meat*	*22*	*36.70*
	Meat	*2*	*3.30*
Fish	*Consumption purpose*	*23*	*38.30*
	Consumption purpose, sale	*13*	*21.70*
Source: Field Survey			

6. Status of homestead diversification

Homestead diversification is the process through which a household or farmer distributes own homestead lands in different activities like horticulture, timber, livestock, spices, herbs and different medicinal plants etc. The objective of homestead diversification is to give variety to one's homestead. It can be defined as an expansion of resources from one activity to a larger combination of crops, horticulture, medicinal plants, timber and non-timber, cash crps and livestock within the homestead area.

Diversification of homestead can bring development to a household. Effective diversification of homestead can make a family self-reliant, and sustainable. It can make the economic condition of a household

better. As the price of essential commodities like vegetable, fruit, animal protein, timber etc. are increasing at an incredibly higher rate; it slowly becomes unaffordable for rural poor. To solve such a problem homestead diversification can be a best way. A diversified homestead would provide a household almost all the basic needs. It can also be a source of earning income to a household by selling the excess productions.

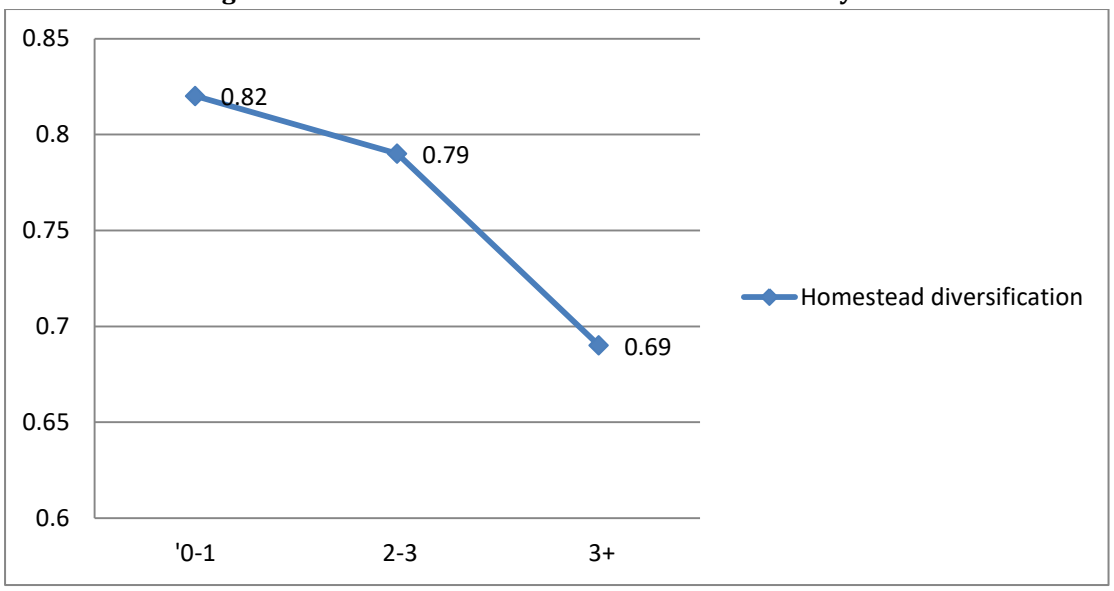
Any size of homestead, small, medium or large can be get benefited from the diversification process. If scientifically managed even a small size homestead also give good outcome. Income can be earned from complementary enterprises including crop (horticulture, timber and cash crop), vegetable gardening, etc. at the same time. In this chapter an attempt has been made to examine the diversification of homestead in the study area. Table 4.11 shows the extent of homestead diversification subject to homestead size.

Table 12- Extent of homestead diversification in the study area

Homestead area (in bighas)	No. of households	Homestead diversification
0-1	46	0.82
2-3	12	0.79
3+	2	0.69

Source: Field Survey

Fig. 1 Extent of homestead diversification in the study area



From the Table 11 and Figure 1 it is observed that smaller size of homestead is more diversified than the larger size of homestead. This is because the small homestead owners always try to get higher return than the big homestead owners. Furthermore, the small size of homestead can be easily maintained than the larger size of homestead land. Implications can be drawn from table-11 that more homestead diversification can generate self-sufficiency and provide regular income to the small and marginal farmers of the study.

7. Conclusions and Policy Implications

The overall findings of the study shows that homestead gardens in the study areas have both ecological and economic importance. The higher diversity of homestead garden in horticultural trees, timber & non-timber trees, herbs, medicinal plants, vegetables, livestock, fishery etc., indicates the ecological consciousness of the

rural people, their knowledge about indigenous medicines and uses, nutritional security and self-sufficiency though commercialize of their homestead products. In other words, homestead gardens are the source of livelihood in the rural destinations of Assam. The study has great implications in the study of Botany and Pharmaceutical Science. The indigenous knowledge of the Assamese people can be widely researched and contributed to the existing literature of Pharmaceutical Science. The government can undertake different policy initiatives to provide a organize structure of these homestead gardens and the knowledge of the indigenous people. Through the findings of the study the potentialities of organic farming in Assam can also be realized. The basic problem associated of these homestead gardens is the unorganized nature and lack of awareness of the people about the importance of the homestead diversified products. Therefore, proper policy initiations at different levels are required to solve or preserve the emerging issue raised by this paper.

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