



GENDER ROLE IN HOME GARDEN MANAGEMENT IN THE INDIGENOUS COMMUNITY: A CASE STUDY IN BANDARBAN HILL DISTRICT, BANGLADESH

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Abstract

This study was conducted on the Murong community in Bandarban Hill District of Chittagong Hill Tracts of Bangladesh in order to ascertain the gender role and the level of indigenous knowledge in the management and utilization of plant resources of home gardens. The study revealed that women play a vital role in all activities of home garden management. There was a variation in the selection and preferences of plant resource component based on nature of utilization by gender. Women prefer plant resources to meet household requirements rather than cash crops which are absolutely considered as men's domain. Besides, women's indigenous knowledge was significantly higher than that of men with respect to multiple uses of non timber forest products. However, domestication of a huge number of wild species of different habits in their home garden is also mainly done by women.

Keywords: *gender, home garden, indigenous knowledge, utilization, plant resource components, Bangladesh*

Introduction

Chittagong Hill Tracts (CHTs) of Bangladesh consist of Bandarban, Rangamati and Khagrachari hill district. Bandarban hill district mostly consists of forests and hills with an area of 4479 sq km, and is inhabited by twelve indigenous communities of different cultures and lifestyles. The proportional distribution of population is 22.4% among the three hill districts of CHTs (LGED 2006). Agriculture is the main occupation of indigenous people of which *jhum* i.e. shifting cultivation, is their primary agricultural hunt where both the men and women work together *jhum*. This involves farmers clearing a patch of vegetation by slash and burn, growing a variety of

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annual crops in the cleared land for one or two seasons and then moving to another plot. Generally, women bear the major responsibility in *jhum* activities together with all kinds of household activities. Women are also responsible for home garden management where they play a key role in growing activities of timber, fuel wood, fruit trees, and other species as well as in domesticating the various wild species in their home gardens. Due to women's dominancy in home garden production, the related indigenous knowledge on multiple uses of plants is more in the hands of women. Passing down of this knowledge from one generation to another is seen to be threatened owing to lack of proper documentation and its confinement to specific locations or communities. Women's particular responsibility for the management of home gardens has been extensively documented in other parts of the world (Boncodin & Vega 1999, LI-BIRD & IPGRI 2002). But, indepth understanding of the importance and influence of gender to the management of home gardens and their indigenous knowledge is lacking. Although women play a vital role in the production system under farming practices, there is nonetheless little understanding and recognition of their contributions to the community as well as to the national economy due to lack of gender disaggregated data. Considering these fact, this case study was conducted on the Murong community in order to determine the gender perspective in the management of home gardens and the level of indigenous knowledge in the utilization of plant resources.

Methodology

A preliminary survey was conducted using a pre-designed questionnaire through direct interviews from 10 selected households along with vegetation surveys in their home gardens by listing species present. Information on gender involvement in domesticating the wild species in the home garden, their management and utilization, and the level of knowledge difference by gender was recorded through group discussions in a group of different ages of men and women of selected households.

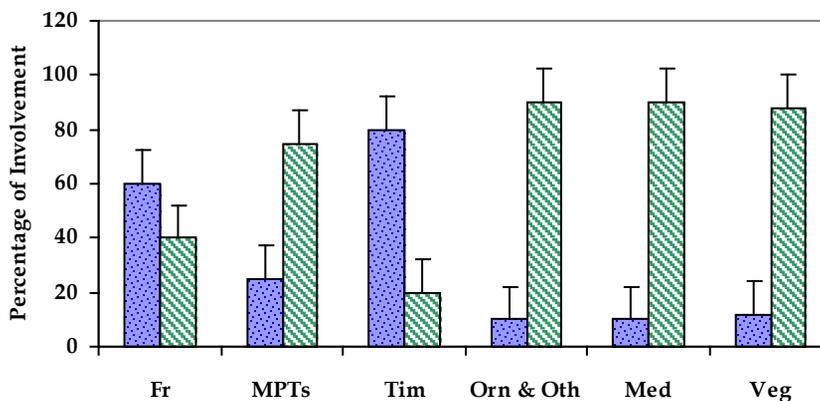
Results

Selection of Plant Resource Components for Home Gardens

Women's involvement in selecting various components of diversified species for home garden were significantly higher than men except in selecting fruit and timber species where men's involvement was significantly higher than that of women (Figure 1). Among the selection of six categories of species diversity, women's involvement was maximum (90.0%) in selecting ornamental and other and medicinal species followed by vegetable (88.0%) and multipurpose tree species (75.0%). On the other hand, men's involvement

was more (80.0%) in selecting timber followed by fruit species (60.0%) (Figure 1).

Figure 1. Percentage of Men (■) and Women (▨) Involvement in Selecting Species Diversity of Various Components of Home Garden



Diversified species

Note: Fr= Fruit species; MPTs = Multipurpose tree species; Tim= Timber species; Orn & Oth=Ornamental and Other species; Med= Medicinal species and Veg= vegetables

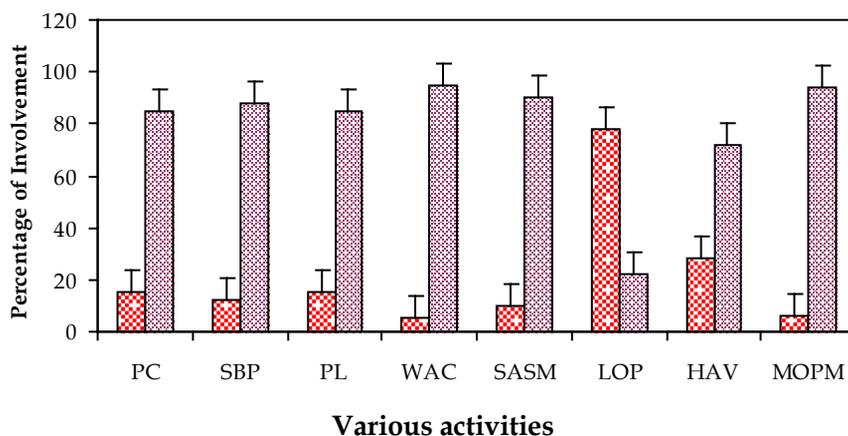
Species Composition in Home Garden

The home gardens were rich in species diversity through domesticating wild species. The harvested products from home garden are used for household consumption as well as commercial purposes. On the basis of the traditional species composition, there were 52% fruit trees, 26% timber trees and the rests were medicinal and ornamental species (see Table 1 in Appendices). Additionally, a huge number of wild species of different habits are domesticated in their home garden mainly by women. Among them 80% were herbs, shrubs and climbers and 20% were trees for their own uses (see Table 2 in Appendices).

Management of Home Garden

There was a gender division of labour in various home garden management activities. Women's involvement was significantly higher (72.0 - 95.0%) than that of men in all activities except in lopping. Men's involvement was significantly higher (78.0%) than that of women in this activity. However, men's involvement was also quite high (28.0%) in harvesting of home garden products in comparison with other activities (Figure 2).

Figure 2. Percentage of Men (▨) and Women (▩) Involvement in Various Home Garden Management Activities

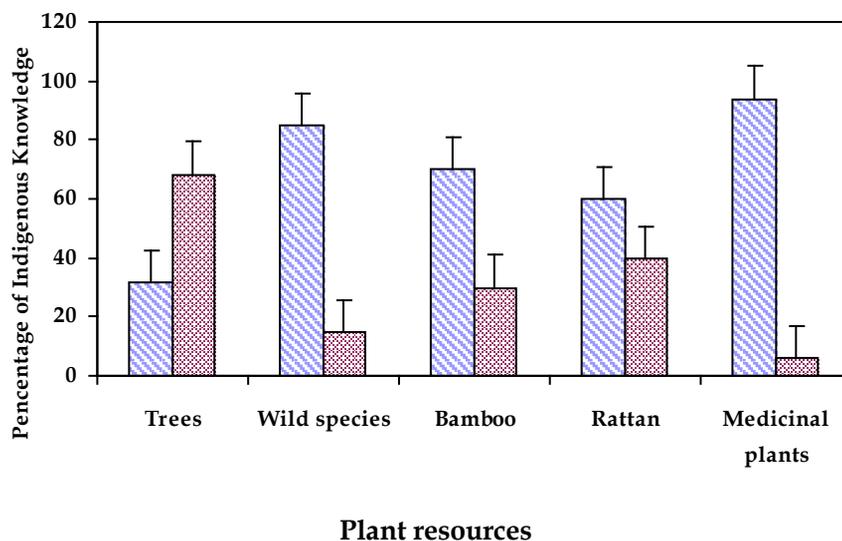


Various activities
 Note: PC= Propagules collection; SBP=Seed bed preparation; PL= Planting; WAC=Weeding and cleaning; SASM= Sapling and seedling management; LOP= Lopping; HAV=Harvesting; MOPM= Medicinal, ornamental and Plant management

Indigenous Knowledge in the Utilization of Plant Resources

There was much variation in indigenous knowledge of men and women in the utilization of five major categories of plant resources. Women’s indigenous knowledge was significantly higher than that of men in the

Figure 3. Percentage of Women’s (▨) and Men’s (▩) Indigenous Knowledge in Utilizing Different Plant Resources



utilization of all categories of plant resources although men's indigenous knowledge was more (68.4%) in the utilization of tree resources than that of women (Figure 3). The maximum indigenous knowledge of women was in utilizing medicinal plants (94.0%) followed by wild species (85.0%), bamboo (70.0%) and rattan (60.0%) respectively.

Discussion

Selection of Plant Resource Components for Home Garden

Variation usually occurs in the selection and preferences of plant resource component for home garden, generally based on nature of utilization by gender. The present study showed that men's and women's preferences in selecting and utilizing plant components in home garden were not the same. Women emphasize ornamentals and other plants species, medicinal plants, vegetables, fuel wood and multipurpose tree species to grow in their home gardens as they prefer plant resources to meet households' requirements. On the other hand, men's preference was mainly timber and fruit species as cash crops which are considered as men's domain. For example, as fuel wood species, women prefer *Erythrina indica* to grow in their home garden for its property of prolonged burning during cooking and subsequent leaving behind of enough ashes which can later on be used as nourishment to the plants. On the contrary, *G. arborea*, though a fast growing species, are not preferred to be grown in home gardens by the women for its nature of cracking sound and production of excess of smoke during burning as fuel wood; but men, due to inappropriate awareness of these disadvantages during cooking, frequently prefer *Gmelina arborea* only because of their fast growth. Moreover, *Cocos nucifera*, *Zizyphus mauritiana* and *Tamarindus indica* are also the more preferable species for women. This is due to the fact that all the species are mostly used to meet household needs which are women's domain. The green fruit of *T. indica* is used in cooking curries and ripe ones can be sold, while the fruit and twigs of *Z. mauritiana* is widely used as fuel and fencing material. The green and mature coconut is usually used in making different foodstuffs, with the leaves used in making brooms. This is similar to the observation made by Drescher (1997) about the gender specific differences in the role of men and women in vegetable production of rural home gardens, wherein women were involved significantly in subsistence oriented cultivation while men concentrated on market production. Moreover, a majority of plant species and varieties used for food and medicine are conserved and managed at household level by women (Balakrishnan 2000). However, women's role of most tribal communities to feed their families with food from the forest or the nearby wilderness has also been reported in many parts of the tropical world (Narayanan *et al.* 2004, IFAD 2008).

Species Composition in Home Garden and Management

Women play a dominant role in all activities related to nurturing and maintaining home gardens (Stoler 1978, Ahmed et al. 1980, Hossain et al. 1988). A similar but more active and intensive role is played by the women in the development and maintenance of the home gardens as revealed by this study. Among all the home garden management activities, men's significant involvement was seen only in lopping of trees where women's share was considered as a helping hand in this activity. Moreover, the performance of men was higher in harvesting of fruit resources, especially papaya, banana, coconut, and betel nut in comparison with other management activities for cash earning. Traditionally women are solely responsible for conservation and management of the plant resources in their home gardens, because they are active in improving household nutritional security through the diverse use of plant resources of their home gardens. Since home gardens adjoin dwellings, women conveniently oversee the matters while attending to domestic tasks and thus they save precious labour-intensive time (Millat-e-Mustafa 2003). Their home gardens provide important contribution to the family income with its diverse product (fruits, vegetables, spices etc.). The diverse products from the home garden, available year-round, not only contribute to food security during the "lean" seasons, but also ensure food diversity (Kumar & Nair 2004). In most cases, the home garden furnishes a complementary contribution to the income and alimentation of the family (Lok & Me'ndez 1998, Marsh & Hernande'z 1998).

Indigenous Knowledge in the Utilization of Plant Resources

Women have the sophisticated indigenous knowledge because of their multiplicity of roles in managing and utilizing the natural resources to adopt and survive in a fragile environment (Shrestha 1988, Mehta 1990, World Bank 1990, Acharya & Bennett 1993). It has been observed in this study that women's indigenous knowledge was significantly higher than that of men's in relation to multiple uses of non timber forest species, wild species and medicinal plants because of their key role in collecting, processing and utilizing them. They have knowledge about each and every plant regarding its location, availability, factors influencing palatability, nutritional value and so on. For example, *Mangifera sylvatica*, *Dillenia indica*, *Oroxylum indicum*, *Alphonsea ventricosa*, *Albizia procera*, *Ficus hispida* and *Litsea monopetala* have been commonly used as fruits and timber together with ritual, medicinal and construction purposes, where women used these species other than fruits not for their own individual consumption, but also for their family members. Among the fruit yielding tree species, green fruit of *M. sylvatica* and male flower heads of *Artocarpus lacucha* have been used by women for making pickle. Moreover, women have knowledge about the medicinal values of

Momordica subangulata, *Cynodon dactylon*, *Boerhavia diffusa*, and *lal peanj* (wild red onion) for use in the treatment of common diseases like stomach and chest pain, cooling serious burns and also in ritual functions. The long hollow internodes of *Schizostachyum dullooa* are being used by women for carrying water in the hill slopes. Women have used the stems of all available rattan species in making and binding baskets (locally called *Thurung*). Other than these, young shoots of bamboo and rattan are also being used as vegetables by women. This is similar to the statement of various authors that wild plants and animals have provided an important source of food and medicine since time immemorial (Gammie 1902, Fernold & Kinsey 1958, Bell 1995); and that women play the predominant role in collecting and processing of wild greens for consumption which is assigned by the society. For that reason, women have more indigenous knowledge than men on different plant resources and different knowledge about the same plant resources.

Conclusion

There is a clear task between men and women in selecting plant resource components, domesticating wild species and managing home gardens where women play a central role in all activities of home garden management. Their efforts for domestic needs as well as for cash play a supportive role for men. Women are preservers of indigenous knowledge on multiple uses of plant resources. As the women are responsible for supplying their families with food and care, they generally have a special knowledge of the value and diverse uses of plants for nutrition, health and income. This has important implications for the conservation of genetic plant resources. Unfortunately, the importance of women's knowledge and expertise in biodiversity is often overlooked or ignored by development planners.

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Appendices

Table 1. List of Common Traditional Plant Species in Home garden of the Murong Community

Name of species	Habit	Main uses	Remarks/Other uses
<i>Erythrina indica</i>	Tree	Fuelwood	
<i>Tamarindus indica</i>	Tree	Fruits used in curry to make tasty; dry fruit for sate	Common species in every household
<i>Anthocephalus chinensis</i>	Tree	Good demanding timber for making plywood; Flowers used in worship at temple	
<i>Artocarpus heterophyllus</i>	Tree	Good quality timber; fruits and seed are edible	The Buddhist monks dye their saffron-coloured robes with the yellow dye obtained from wood
<i>Mangifera indica</i>	Tree	Timber is used for furniture and house post; fruit is edible	Shoots and leaves of mango trees are used to disperse water during prayer all around the home
<i>Michelia champaca</i>	Tree	Very good timber; flower used in worship	Flower preserved in airtight bottle and kept in front of portrait of Buddha
<i>Moringa oleifera</i>	Tree	Fruit and leaves used as vegetable	
<i>Gmelina arborea</i>	Tree	Fast growing timber; good demand to outside traders	
<i>Dillenia indica</i>	Tree	Fruit is used as vegetable, slippery juice of fruits and seeds are used as ingredient in healing bone fracture	

<i>Azadirachta indica</i>	Tree	Leaves used as medicinal purpose and also in cultural events	Shoots hung on the door during mid-April in order to keep them healthy and free from the diseases
<i>Aegle marmelos</i>	Tree	Fruit is edible and used for dysentery	
<i>Cocos nucifera</i>	Tree	Fruit is edible	Green coconut water good for health and used to entertain to the strangers
<i>Zizyphus jujube</i>	Tree	Fruit is edible	Thorny branches kept in pond to protect fishes from others
<i>Nerium indicum</i>	Shrub	Flowers used in worship	
<i>Ocimum sanctum</i>	Herb	Leaves used for medicinal purposes	Leaves mixed with honey or sugar is useful in stomach pain and cough of children
<i>Coccinea cordifolia</i>	Climber	Leaves used as vegetable and also as medicine	Leaf juice helps in vomiting out undesirable things
<i>Psidium guava</i>	Tree	Fruit is edible; bark and young leaves used as medicine	Juice of bark and young leaves used as diarrhea and dysentery
<i>Clerodendron infortunetum</i>	Shrub	Young leaves used for malaria treatment	
<i>Cynodon dactylon</i>	Herb	Shoot used in worship	Shoots along with flowers used in worship everyday
<i>Hibiscus rosa-chinensis</i>	Shrub	Flower used in worship	Common species in each home garden
<i>Artocarpus lacucha</i>	Large tree	Fruit is edible. Male flower heads are made into pickles.	

		Wood used for construction work	
<i>Albizia procera</i>	Large tree	Young leaves used as vegetables	Bark is used in making dye
<i>Diospyros toposia</i>	Medium tree	Fruit is edible. Wood used for furniture making	
<i>Terminalia bellerica</i>	Large tree	Fruit is used in medicine	
<i>Phyllanthus emblica</i>	Large tree	Fruit is much rich in vitamin c and has medicinal properties	
<i>Terminalia chebula</i>	Large tree	Fruit is used in medicine	
<i>Ficus hispida</i>	Medium tree	Fruit is cooked as vegetable	

Table 2. List of Domesticated Wild Plant Species in Home garden of the Murong Community

Species name	Habit	Edible part	Other uses
<i>Solanum nigrum</i>	Shrub	Leaves and fruits	Juice of leaves used for stomach problems of new born babies; to reduce the pain during menstrual periods
<i>Momordica subangulata</i>	Climber	Leaves and fruits	Juice of leaves used for stomach problems instantly at <i>jhum</i> fields and fruits as vegetable
<i>Colocasia esculenta</i>	Herb	Whole plant	Used as vegetable and in ritual function
<i>Amorphophallus sp.</i>	Herb	Tuber	Used against snake bites

<i>Oscimum sp.</i>	Herb	Leaves	Used as spice in cooking
Chigonshag(Local name)	Shrub	Young shoot	Used as vegetable
Mingoni(Local name)	Herb	Young shoot	Leafy vegetables, used for the treatment of dysentery
Paranga-aga(Local name)	Climber	Tender young shoot	Leafy vegetable
<i>Cuscuta reflexa</i>	Climber	Tender shoot	Leafy vegetable
Betel leaf	Climber	Leaves	Used for cultural events and chewing
<i>Oxalis comiculata</i>	Herb	Leaves	Used as vegetable and to cure worms for children
<i>Amaranthus spinosus</i>	Herb	Leaves and stem	Used as vegetable, for rheumatism and urinary infection
<i>Boerhavia diffusa</i>	Herb	Leaves	Vegetable and for chest disease
<i>Centella asiatica</i>	Herb	Leaves	Leaf juice is used in cataract and other eye diseases; plant is used in dysentery, internal and external ulcers, and convulsive disorders
<i>Amaranthus spinosus</i>	Herb	Leaves and stem	Used as vegetable, for rheumatism and urinary infection
<i>Boerhavia diffusa</i>	Herb	Leaves	Vegetable and for chest disease
<i>Acalypha indica</i>	Herb	Leaves	Expectorant, emetic, diuretic; used in bronchitis and asthma
<i>Achyranthes aspera</i>	Herb	Young leafy shoot	Purgative; used in

			renal dropsy and other skin eruptions
<i>Licula peltata</i>	Herb	Leaves	Used as thatching and wrapping material
<i>Imperata cylindrical</i>	Herb	Whole plant	Used as thatching material
<i>Polypodium spp.</i>	Herb	Young frond	Used as vegetable and sell in local market
<i>Entada scandens</i>	Woody climber	Fruit	Seeds are eaten cooked like chestnuts and fruit is used in medicine
<i>Costus speciosa</i>	Tall herb	Pith	Taken as vegetable and has medicinal values
<i>Blumea lacera</i>	Herb	Whole herbaceous plant	Taken as vegetable
<i>Spilanthes calva</i>	Herb	Whole herbaceous plant	Taken as vegetable
<i>Musa paradisiaca</i>		Inflorescence Inner stem	Taken as vegetable
<i>Sarcochlamys pulcherimma</i>	Herb	Whole herbaceous plant	Taken as vegetable
Lal peanj	Herb	Bulb	Used as spices; bulb pest apply on serious burn area in the body part as quick remedy
<i>Curcuma longa</i>	Herb	Flower	Taken as vegetable
<i>Premna esculenta</i>	Shrub	Leaves	Leaves are cooked as vegetables; medicinal used for worms
<i>Phrynium sp.</i>	Herb	Leaves	Leaves are used as thaching and wrapping materials
<i>Melastoma malabatricum</i>	Shrub	Fruit	Fruit is edible
<i>Anisomeles ovata</i>		Seeds	Seeds are used for

			treatment of gastric troubles
<i>Rawulfia serpentina</i>	Shrub	Root	Roots used for the treatment of stomach pain and blood pressure
<i>Dioscorea alata</i>	Climber	Tuber	Cooked as vegetable
<i>D. esculenta</i>	Climber	Tuber	Cooked as vegetable
<i>D. bulbifera</i>	Climber	Tuber	Cooked as vegetable
<i>D. dumetorum</i>	Herb	Tuber	Cooked as vegetable
<i>D. pentaphylla</i>	Shrub	Tuber	Cooked as vegetable
<i>Mangifera sylvatica</i>	Medium tree	Fruit	The green fruit can be made into chutney, pickles etc. more pleasantly aromatic than mango
<i>Artocarpus chama</i>	Large tree	Fruit	Fruit is edible
<i>Bridelia retusa</i>	Medium tree	Fruit	Fruit is edible; wood is used for house post and other building purposes
<i>Bursera serrata</i>	Large tree	Fruit	Fruit is edible; timber is used as house post and fuel wood
<i>Bombax insignis</i>	Large tree	Flower	Flowers used as vegetables; seed fibre used for filling pillows and mattress
<i>Oroxylum indicum</i>	Large tree	Fruit	Young green pods used as vegetable; bark juice used in the treatment of jaundice
<i>Alphonsea ventricosa</i>	Medium tree	Fruit	Fruit is edible

<i>Garcinia cowa</i>	Medium tree	Fruit	Ripe fruits are edible and sold in local market
<i>Sterculia villosa</i>	Medium tree	Seed	Seed is eaten; bark is used for making rope and strap of long bamboo basket (turutung)
<i>Litsea monopetala</i>	Medium tree	Bark	The mucilaginous bark used as binding material of mosquito coil