

Angami Home Gardens

Archana Godbole
Applied Environmental research foundation

The role of Home Gardens in maintaining useful biodiversity was the theme of the workshop, and a field exercise was designed to study Home Gardens in the *Angami* Naga village of Khuzama. *Angami* Nagas are well acquainted with the environment around them and have learned to use and manage their limited land and water resources through experience and experimentation over the generations. *Angami* territory is restricted to the southern Kohima district. In *Angami* territory, a large amount of land is available for wet or terraced rice cultivation. It is a permanent agricultural system. However, because of intensive cultivation practices and low-quality soils, the *Angami* sometimes prepare new terraced fields and abandon the old ones. If these abandoned fields are close to the village, they are often used as Home Gardens. The tradition of Home Gardens is well developed and many are so extensive that there are areas for cultivation of maize and millet. Also large portions of *Angami* Home Gardens are occupied by commercial plantations of fruit trees such as oranges and crops such as potatoes.

Khuzama is a small village 25 km from Kohima on the Kohima–Imphal road. The participants formed two groups. One group led by Ajay Rastogi, S.K. Barik and Dhruvad Choudhary carried out ecological data collection from Home Gardens within the village. The other group led by Vincent Darlong and Archana Godbole collected data on socioeconomic and cultural aspects of Home Gardens.

By collecting socioeconomic data and information on needs, it is possible to identify two or three different types of Home Garden maintained by the *Angami* Nagas. They are (a) a small kitchen gardens around the house with small plots for chilli and vegetables with one or two fruit trees; (b) *tejeje*—larger traditional Home Gardens—away from the house situated on terraced fields on the upper level and cultivated like Home Gardens but with planned commercial objectives; and (c) *mejeje* community Home Gardens on community-owned terrace fields cultivated like Home Gardens.

Management practices are different for these three types of Home Garden system. In *tejeje* the main emphasis is on commercially important crops such as potato and fruit trees, and intensive water management is observed. *Tejeje* is in fact the extension of terrace fields but is different in terms of plant composition. These Home Gardens have more perennials than are found in kitchen gardens. Decision-making and selection of species are driven by market forces. Greater biodiversity is maintained in the kitchen gardens.

Many indigenous practices have been observed in these *tejeje*, for example, the traditional practices of manuring with *pidi* (*Solanum* leaves) to get rid of pests and insects. Alder trees increase soil fertility and improve the growth of fruit trees. Therefore a few alder trees are maintained in these gardens. Trees such

as *Melia* and *Cedrella* are also planted to increase soil fertility and control insect pests, while *Prunus* sp is used as a wind break on terrace bunds. Grafting, using wild plants to render plants resistant to pests and diseases, is common in Khuzama village.

Socioeconomic patterns observed indicate that such supplementary systems are extremely important for local people. Changes within the traditional *tejeye* management practices are mainly as a result of demand from the market, manpower availability, and the changing economic needs of the people.

The availability of terraced land and the well-developed traditional irrigation system of the *Angami* Nagas mean that the structure and management of *Angami* Home Gardens are strikingly different from other north-eastern communities. See for example the Home Garden system of the *Metei* community of Imphal, Manipur (Box 1), and that of the *Konyak* Naga community of Nagaland (Box 2).

The different types of *Angami* Home Garden observed in Khuzama clearly indicate that the concept of social attachment to Home Gardens and the linkage with culture are changing very quickly. The choice of species to be cultivated in Home Gardens is no longer dependent on the social and cultural needs of livelihood and house-building. Now it is directly dependent on the economic importance of the species and is driven by market forces. Historical linkages associated with Home Garden cultivation are also changing. Varieties of vegetables and fruits used since time immemorial are vanishing and being replaced by economically important newer species and varieties.

Another important feature of the *Angami* Home Garden is the aesthetic sense. In more than 90 per cent of the Home Gardens of Khuzama many ornamental plants and orchids can be seen. The choice of species to be grown in Home Gardens is very specific, e.g., in the Home Garden of Mr Punokiel many medicinal plants are seen. He is a traditional healer, especially interested in the cultivation of specific medicinal herbs. In many other Home Gardens, banana plantations (local varieties) are dominant. These bananas are sold on the roadside, as Khuzama is on the Kohima–Imphal highway, often by children. *Angami* Home Gardens are a good example of optimisation of limited space for economic purposes.

The field work in Khuzama village gave an opportunity to workshop participants to understand the need for documentation and research in ethnobotany. It exposed them to a completely different pattern of indigenous management practices with three different types of Home Garden. It also provided an insight into how and why indigenous knowledge systems are working and/or changing in today's context. A village development board meeting organized in Khuzama with participants gave an idea of village community organization in the Naga village.

Role of women in local markets and maintenance of Home Gardens

During the first two field work sessions it was observed that women play key roles in the overall organization and management of Home Gardens as well as local markets. In most of the local markets surveyed from north-eastern India

Box 1: *Metei* Home Gardens of Manipur

The Home Garden in Manipur is a traditional conservation area. A number of micro-habitats in Home Gardens are favoured by animal components depending upon the religious and economic background of the community — besides their interest. It may be variable in size and shape. The Home Gardens vary from hill to valley, reflecting the variations of soil topography, climatic conditions, and cultural practices of the people. It appears that the regimes of moisture and nutrients must be varying in different areas, the penetration of light into the gaps creating a heterogeneous landscape and promoting patchiness.

In the valley, Home Gardens are quite diverse and complex. In hilly areas in the village that are permanent, large Home Gardens contain species for food, fibre, fuel, timber, medicine, and species of sociocultural importance. The hill Home Gardens have the following features.

- a. Cultivation of wild species such as oaks, cedars, tonas, and red wood.
- b. Economically important plants like *Ericas* and Bamboos
- c. Varieties of chilli, tomato, and cabbage along with other local vegetables
- d. Varied floristic patterns, representing trees from valleys and hills

Structure and organization of *Metei* Home Gardens

These Home Gardens, locally known as *lingkhol*, are a mosaic and include the following components

- a. Perennial, multipurpose trees of horticultural importance, timber or medicines
- b. Various micro-habitats such as water resources with aquaculture of fish, mat grass, *Euryale ferox*, a traditional delicacy, fishery, poultry, cowshed, rabbit house etc.
- c. Cash crop section for annuals
- d. Frontal hut, *Shangoy*, for socioreligious functions
- e. Sacred Basil plant in the centre of the courtyard (*shumang*)
- f. Separate areas for raising ornamentals, bananas, spices, vegetables
- g. Fencing with bamboo species.

Home Gardens are fenced by different bamboo species usually in the front and back, whereas the perennial species may demarcate the sides of it. The space for the traditional hut where the socioreligious functions are held is the characteristic feature of the traditional system in which the walls are made from thickly set reeds plastered with mud, wooden poles are used, and the roof is covered with thatch grass. This is the place where cattle may often be put for want of space. Fragrant flowers like *Thevesia*, *Nyctanthus*, *Jasminum*, and Lilies, etc and multipurpose banana plantations surround the deity temple located in the front of the house. The backside of the residential unit is grassland with many grasses used for thatching, binding and fodder purposes. Perennial wild or cultivated multipurpose trees characteristic of the region demarcate the ultimate boundary.

Asha Gupta, Kanchipur University, Manipur

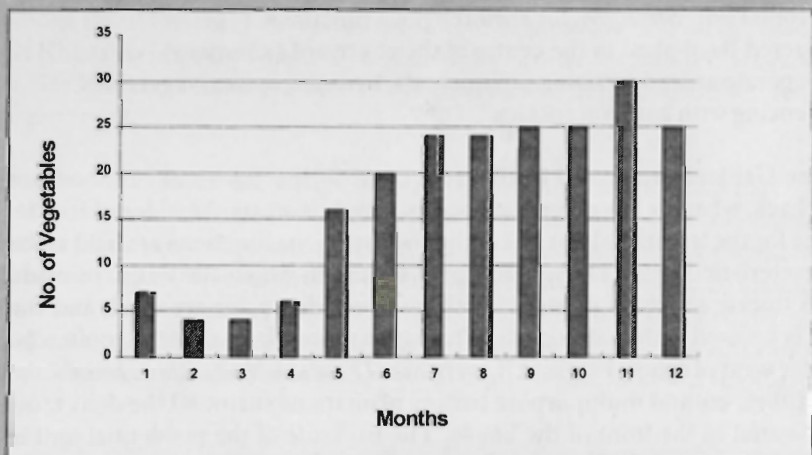
Box 2: Home Gardens of the *Konyak* Nagas of Nagaland, India

Konyak Nagas, considered the most primitive tribals of Nagaland, are in fact expert agriculturists who, even today, live in harmony with nature. *Konyak*(s) have successfully maintained a sustainable supply of natural resources for many years through various land management systems. These traditional systems of land management have been developed through indigenous knowledge blended with innovative skills. One of these traditional systems of land management is the Home Garden maintained around their houses.

The data collected from three villages—Liangnyu, Mon and Tanhai from Mon District of Nagaland—highlight the following details of Home Gardens.

In all 32 Home Gardens were surveyed from three villages, of which 10 Home Gardens were from Liangnyu, 11 Home Gardens from Mon, and 11 from Tanhai (covering around 10-20 % of the total households). Tanhai had the maximum number of species (122) and the largest average size of Home Garden. 87 species have so far been recorded from Mon and 45 species from Liangnyu.

Konyak Home Gardens exhibit a wide diversity in size, shape, location and composition. The management, organization and spatial patterns show the maximum use of available land using different combinations of trees, shrubs and herbaceous plant species in a year. Generally, selection of plants depends on daily necessities. Many of these species have multiple uses. The owners show a tendency towards cultivating mainly edible fruit and vegetables. Other categories include plants yielding timber, fuelwood, fumigators, masticators, spices, beverages, construction materials, basketry materials, medicines, poisons and ornaments. The numbers of vegetables available in the *Konyak* Home Gardens each month are illustrated in the box below.



Number of Vegetables Available in Each Month from Home Gardens

Archana Godbole, Swapna Prabhu and Aparna Watve
Applied Environmental Research Foundation, Pune.

vendors are mainly women. The number of women vendors was far greater than men vendors. Women vendors are associated with all types of products whereas male vendors specialise in the sale of certain products such as the meat of wild animals, etc. Hunting is done by men. Men help to carry the goods from village to local markets, paying rent for the permanent or temporary stalls, etc. However, women are the key persons deciding the price of items and overall transactions. They help the household economy with extra earnings made in the market.

Women are aware of the utility of plant diversity and means for maintaining it. In many traditional societies it is only women who have accumulated traditional knowledge about food and other household products that plants can supply. Women are engaged in cooking and understand the requirements for it. They have developed the skills to cultivate and maintain important plant species to supply these requirements. *Konyak* women, for example, could name 29 products of plant origin from Home Gardens while men could name only 12. Women are better judges at selecting species to be cultivated in Home Gardens in response to the needs and demands of local markets.

Traditional *jhum* (shifting cultivation) of the *Angami* Nagas

Together with the visit to the *Angami* Home Gardens, a visit to observe the traditional fallow management practices of *Angami* Nagas in the village of Khonoma was also undertaken. For several generations *Angami* Nagas have been managing their *jhum* fallow using alder (*Alnus nepalensis*) trees. These alder trees grow profusely within the cycle years, i.e., 8-10 years, and provide valuable timber and fuelwood. The stumps are kept in the field, which in turn increases soil fertility. These stumps, located on the contours, also help to check soil erosion. Primary land shaping using alder trunks is common. *Angami* farmers recognise that crops growing near *Alnus nepalensis* perform better, and this observation has provided the impetus for *jhum* cultivators to begin experimentation with cropping patterns that exploit the agronomic properties of alder on a more systematic basis.

Anecdotal evidence shows that, through centuries of trial and error, Nagaland farmers gradually evolved their contemporary system of maintaining *Alnus* stumps scattered throughout their *jhum* fields. The age of the system is evident in farmers' estimates that individual trees are up to 150 years old, their careful management passed from generation to generation almost as family heirlooms. During the fallow period, rapid coppice growth from these interstitial stumps forms a closed canopy and shades out light-demanding weeds. Significant N-fixation and copious litter fall rejuvenates soil chemicals and physical properties. Fallow is reopened by careful pollarding of the coppice against the main trunk. Harvested coppices are used for poles and fuelwood and the remaining slash is burned in tightly controlled fires. *Jhum* crops, generally upland rice, maize, sorghum and millets and an array of secondary cultigens, are then dibbled di-

Alder-based fallow management
- Ajay Rastogi



rectly. This innovative manipulation of *Alnus* has permitted Nagaland farmers to intensify swiddening into a two-year cropping and two-year fallow cycle (total cycle length of four years)—a relatively intense 1:1 ratio of cropping to fallow periods. Other than manure deposited by livestock and the decomposition of crop residues, no external inputs are applied to the system, yet crop yields are reported to be as high now as at any time within memory.

This field visit also gave participants a chance to observe the Zhulake forest—the best-maintained prime forest in Kohima district. The population is comparatively sparse around Zhulake forest. Villages around Zhulake manage and maintain the forest for timber and wildlife resources. The forest also serves as grazing grounds for semi-domesticated *mithun*(s) (bulls), which are an important meat source in Naga life and have tremendous cultural significance. Interactions with local people provided much information about the fallow management and community forest management of the *Angami* Nagas.