



The importance of home gardens is often underestimated. The small areas of cultivated land immediately surrounding a homestead make a vital contribution to meeting various household needs, both rural and urban, in developing countries. Providing research and development support to home gardens is even more significant as it implies reaching out to the “invisible farmers” – women and children who often play the key role in establishing and maintaining home gardens.

Dynamics in Tropical Home Gardens

A Sponsored by the International Potato Centre (CIP), the Programme, Users’ Perspectives with Agricultural Research and Development (UPWARD) is an Asian agricultural research and development network dedicated to enhancing participation of users in technology and application, especially by marginalized groups such as women home gardeners.

HOME GARDENS IN PHILIPPINES

Home gardens are the small areas of cultivated land immediately surrounding a homestead. There has been an increasing number of global and local initiatives to promote and support home gardens since the 1980s. Most of the initiatives so far have been directed to improved household income, food production and family nutrition. Less attention has been given to exploring the inherent diversity within home gardens, and assessing its contribution to the achievement of the multiple functions and goals of this particular production system

Earlier studies by UPWARD (e.g. Verdonk and Vrieswijk 1992; Mula and Gayao 1992, Gayao et al. 1992, Prain and Piniero 1995) have not only confirmed the prevalence of home gardens in tropical Philippines, but also highlighted the intimate and interdependent relationship between the food security and nutrition improvement functions of home gardens, and their potential as a vehicle for helping to conserve local biodiversity.

These studies also showed that home gardening is also common among both rural and urban households. The choice of garden crops is generally a function of the intended use of the garden produce, e.g. food needs of the household, feed for backyard animal raising, or cash crops which serve as a potential source of added income, and further aesthetic interests of household members.

The range of crops is extensive, from vegetables and multi-purpose tree species to medicinal herbs and forage grasses. Most notably, assessment results suggest that the more biologically diverse a garden, the more likely the family is to consume a nutritionally healthy range of food types.

(BIO)-DIVERSITY DYNAMICS

Following up on these earlier works, UPWARD initiated a study in 1994 in southern Philippines to further examine biodiversity issues in home gardens, and their links to household strategies for food security and family nutrition. The study sought to:

- ❖ characterise the prevalent home garden systems in the area;
- ❖ assess their crop species diversity;
- ❖ identify home gardeners and their management of diversity;
- ❖ evaluate and enhance the contribution of home gardens to various householding objectives.

Lantapan, the study site, is part of the Manupali watershed in Mindanao island.

Elevations range from 320 to 2938 meters above sea level, extending from rain fed paddy fields to partially cleared forestlands. An initial survey revealed increasing erosion of biodiversity in the watershed. Plant and animal species were displaced due to deforestation and a shift away from subsistence farming towards a commercial monocropping system.

One recommendation to arrest further biodiversity loss and to help local households satisfy food and cash income needs, was through home gardens. To identify opportunities for introducing and testing improved home garden management practices, preliminary assessment and long-term monitoring activities were conducted through a mix of participatory methods and tools.



Fig. 1: Location of the Manupali Watershed, Lantapan, Bukidnon, Philippines

A complete inventory of home garden plants in the Manupali watershed identified 167 plant species which include 24 forest trees, 25 fruit trees, 4 cereal crops, 31 vegetables, 4 root crops, 20 herbs, 5 spices, and 54 ornamentals (Prain and Piniero 1994). The inventory supports the hypothesis that home gardens in the tropics adopt the vertical distribution of biological diversity found in

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Home garden contribution rises nearly to 50% among those in the lower income bracket

natural communities (Troutner and Holle 1979). The home gardens across the watershed varied widely in terms of their species composition, which ranges from 4 to 35 species and are maintained and harvested year-round (Medina et al. 1996).

Home garden diversity also varies according to the three distinct agro-ecological zones of the watershed. Home gardens found in the middle zone (at an altitude of approximately 700-1500 meters above sea level) have more plant species than those found both in the upper (1500 - 1800 meters) and lower (below 700 meters) zones. The dominant species in the two lower zones are the perennials (e.g. herbals, fruit and forest trees), thus no significant change in species composition in these zones was observed over the two-year monitoring period. The number of species in the upper agro-ecological zone, however, significantly varied over the same period. The gardens in this zone are planted with vegetables and ornamentals, which were mostly annuals, and thus much more reflective of other changes going on in households maintaining these gardens.

The study indicates that home gardeners in the area have consciously evolved some rather specialised management strategies, which cannot only be attributed to the differences in the micro-environments. This impelled the researchers to analyse

the relationship of home garden diversity to socio-economic variables. The analysis was able to substantiate the effect of the gardener's occupation and economic or wealth status to her home garden management strategies. Home gardens of farmers of the lower economic strata, are dominated by annual crops primarily for utilitarian purposes. Those maintained by professional and self-employed gardeners, belonging to the higher economic strata, are dominated by perennial crops primarily for homesteads' beautification and are mostly found in residential or "peri-urban" areas.

HOUSEHOLD FOOD SECURITY

Local households reported that home gardens contribute an average of 14% of daily food intake costs, which is 22% of the average household daily wage. More significantly, home garden contribution rises nearly to 50% among those in the lower-income bracket. It is not surprising therefore that home gardens maintained by the poorer households are dominated by annual vegetable crops.

The two-year long quarterly monitoring of home gardens also revealed cyclical changes in biodiversity ranges. Home garden diversity decreases during the dry season, which lasts from February until May. The onset of the rainy season in June is accompanied by an increase in diversity, peaking in November/December when most of the garden crops, planted at the start of the season, are ready for harvest or have been harvested.

Home garden crops are most important during the lean months, which start in May and become critical in July. By this time, the harvest of the previous field crops, such as rice and corn, have run low, but newly planted field crops are still not harvestable. Opportunities for casual labour are also few and far between at this time, putting further strain on family resources. Drought-tolerant crops planted early in the garden and early-maturing crops that can be quickly harvested are thus of great importance to supplement the households' food needs through these hard times. This is especially the case for the low-income home gardeners in the upper agro-ecological zone where the lean months most severely affect the households.

FAMILY NUTRITION

A total of 33 different food crops were identified in local home gardens including green, leafy, and yellow vegetables; starchy roots and tubers; as well as legumes, beans, nuts, and spices. While home gardening is directly aimed at providing subsistence and supplementary household food supply, it was shown to concurrently make a significant contribution to the amount of nutrients and variety in the household food intake. Home gardens provide year-round food supplements to households not only in terms of quantity but also in terms of food diversity and variation.

The study showed that home gardens play an important role in provision of Vitamin A, (compensating for the lack of retinol in the diet of local households) and Vitamin C while they also supply one-third or more of calcium and iron needs. These results are consistent with the findings in a similar study on urban home gardens in the Philippines (Velez 1997).

LINKING BIODIVERSITY CONSERVATION AND USE

A close correlation between household food security and nutrition improvement on the one hand, and home garden biodiversity conservation on the other was found. This offers significant research opportunities for exploring ways to improve and consolidate these complementary functions of home gardens in overall household management.

From the assessment results, the UPWARD project has subsequently worked with home gardeners to test and introduce new crop species and accompanying home garden management practices. The follow-up participatory action research, consisting of home garden trials, validation workshops and field monitoring, has a three-fold objective: first, to enrich the inherent biodiversity of home gardens; second, to improve access, regularity and adequacy of food supply for households; and third, to enhance nutritional quality in the household diet through the diversity of food crops made available by home gardens. Medium- and long-term impact assessments are still being carried out.

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