

5. HOME GARDENS



Ethiopian peasant
in her small home garden.

Value and potential of home gardens

Home gardens have an established tradition in many rural communities throughout Africa, especially in humid and sub-humid areas (FAO, 2001a). They constitute a relevant agricultural space that typically contains notable plant diversity, including particularly crops with high micronutrient properties. Home garden crops represent a supplementary source of food and a privileged basis for nutritional quality in rural households. They can also become a source of income. They are helpful to cope with food shortage periods and failures of staple crops.

Home gardens embrace a genuine portion of agrobiodiversity with distinctive agricultural, food and nutrition roles, relevant in both food security action and AIDS mitigation (box 25). The crop diversity that home gardens typically or potentially hold can provide a wide range of resources, such as nutritious foods, marketable products, firewood, herbs, spices, and medicinal plants. Home gardens are usually managed by rural women, who use them as diversified agricultural spaces to fulfil a variety of household needs, from feeding their children and the sick, to cultivating vegetables and spices that are important ingredients in local diets, and to generating some income.

Among the rural poor, home gardens are strategic to improve food production and household nutrition. Traditional home gardens continue representing a key micronutrient source for rural communities and, thus, offer exceptional opportunities for food-based approaches to prevent micronutrient malnutrition (FAO, 1997; FAO/ILSI, 1997). In addition, home gardening may expand household income-generating opportunities, especially if connected to increasing food demands from growing urban populations.

Despite their food security and nutritional values, home gardens are largely neglected, receiving insufficient recognition and lacking technical support in agricultural development. Gender inequalities further discriminate this agricultural system: rural women are the leading managers of home gardens, but their limited access to land and water resources, and their lack of technical and financial support impede them to further develop this agricultural space and its associated agrobiodiversity. In addition, local unawareness further limits the development of home gardens, horticultural practices and food-based approaches to nutrition and healthcare.

Management of home gardens tends to be labour sensitive, particularly suiting the labour conditions of rural women. Home gardens often constitute a small farm area where intense food production occurs. If available, water resources are more easily and optimally managed in home gardens. Some home garden crops grow continuously, and others perpetuate themselves without needing frequent seeding. Practices like weeding and harvesting do not require strict timing, but can be diffused through time and adapted to the labour conditions of the household. The crop diversity acts as a natural weed suppressing. Finally, the usual location of home gardens close to the homestead facilitates the harmonisation between farm and household duties, particularly among rural women, who bear both farming responsibilities and household duties like caring for the children and the sick family members.

Home gardens can represent an income source for poor households. In this sense, policy and programme support to the processing, preservation, storage, packaging, transport and marketing of horticulture crops would ensure that home gardens serve to raising household income, whilst improving nutritional quality in urban and peri-urban populations. However, the monetary value of horticulture raises concerns on equitable food utilisation: income options should not be detrimental, but complementary, to the nutrition roles of home gardening.

The promotion and improvement of home gardens represents an agricultural strategy with potential benefits to the food security, nutrition, health status, and livelihood of poor rural households. It requires integrated, well-targeted and gender-sensitive interventions. Understanding the dynamics and potential of home gardens demands consideration of crop diversity, local culinary habits, traditional food preservation techniques, and gender aspects. For instance, the experience of rural women, the use of local vegetable and fruit crop diversity, and household nutrition are indispensable elements to enhance home gardens. In addition, support in terms of training, technical improvements, and participatory experimentation is equally required, so to improve home gardening and to effectively connect it with the food security, nutrition, labour and livelihood needs of rural people, and women in particular. FAO recently elaborated a comprehensive manual on home gardening in Africa with a practical field orientation and a priority focus on improving household nutrition (FAO, 2001a).

Box 25. Home gardens: Distinctive agricultural, food and nutrition roles

- The genuine crop diversity of home gardens supplements staple crops, provides critical nutritional supplies (especially vitamins and minerals), and enriches local diets.
- Home gardens may represent a nearly continuous supply of food and nutrition, performing an important function as *food safety net*.
- The practice of home gardening allows intense food production systems with optimal use of resources that may be scarce, such as land and water.
- Use of organic farming practices is highly feasible, such as particularly the use of green manure, compost and natural pesticides, which result in lower food production costs.
- Home gardens can provide income if adequate marketing channels are supported.
- Home gardens may produce medicinal plants and contribute to primary healthcare.
- Home gardens can produce non-food resources, such as flowers and firewood, thus improving rural livelihoods and income sources.
- Home gardens can represent a labour responsive strategy for food security, with tangible benefits for AIDS affected households; in particular: (i) home gardens have a favourable labour/production ratio; (ii) home gardens provide a good labour/nutrition ratio; and (iii) home gardens are often located close to the homestead and hence help women to better harmonise their farming and household tasks.
- The improvement of home gardens may contribute to gender equality in agricultural production, as home gardens are agricultural systems typically managed by women and particularly suited to some of their roles, such as household nutrition and meal preparation.
- Home gardens can serve as a space for the production of crop planting materials (such as particularly vines, fruit seedlings, and vegetable seeds) and, therefore, contribute to local seed security.
- Home gardens are excellent spaces for the conservation of plant genetic resources, for agricultural experimentation, and for the transmission of indigenous agricultural knowledge (e.g. children can acquire basic farming skills in their home gardens and in school gardens).

Sources: FAO (2001a), personal communication with Florence Egal, and personal field experience.

Crop diversity in home gardens

Home gardens are typically spaces with rich agrobiodiversity, basically vegetable crops and fruit trees. In particular, rural Africa has a wide diversity of traditional vegetables that are often cultivated in home gardens. They constitute an heterogeneous group of food plants whose leaves, fruits, tubers, roots, tender stems, flowers, beans or bulbs are consumed as vegetables. For instance, there is a rich diversity of traditional leafy vegetables that are well adapted to a wide range of environments, represent a rich source of micronutrients, and in some cases have economic value (Chweya and Eyzaguirre, 1999). The "African spinach" accounts for various vegetables whose leaves are widely consumed and highly appreciated, including cultivated, semi-cultivated and wild species. Amaranth (*Amaranthus* spp.) is a widespread vegetable that is both cultivated in gardens and harvested in the wild. In addition, most dark green leafy vegetables and yellowish roots are notorious for their superior provision of vitamin A. They thus represent affordable and locally available resources to arrest vitamin A deficiency, which is one of the most extended and critical malnutrition issues. Rural Africa has also native fruit vegetables that excel in adaptation, versatility of uses, nutritional properties, and marketing

potential, such as the African eggplant (*Solanum* spp.) and countless species and varieties of *Cucurbitaceae* (pumpkins, gourds, cucumbers *et al.*). There are also fruit trees that represent tasty, nutritious and somewhat therapeutic food sources, such as the distinguished baobab tree (*Adansonia digitata*), the mango tree (*Mangifera indica*) and papaya (*Carica papaya*).



Farmer with a local variety of *dodo* [amaranth], central Uganda.



Farmer showing an eggplant in her home garden, eastern Uganda.

Every rural community holds a specific array of horticulture crops, depending on the agroecological conditions, agricultural dynamics, and food habits. Humid and sub-humid areas are more suitable for home gardening due to water availability. They usually have richer horticultural diversity and more advanced practices than arid and semi-arid lands.

Field research in Soroti district, in sub-humid Uganda, illustrates the extent and condition of home gardens. Home gardens are ubiquitous in many households, but receive little social recognition at the village level and scarce support from agricultural programmes. Farmers themselves get surprised when a researcher investigates about this farming system and the crops associated. In Soroti district, Teso and Kumam farmers cultivate about 20 home garden crops, including local *Cucurbitacea*, leafy vegetables, fruit vegetables, and fruit trees (table 8). Vegetables, which are locally referred to as *oyototo*, represent an important supplement for local diets and a key source for household nutrition, especially micronutrients. They also include certain leafy vegetables that act as food catalysts ("etigo") during meal preparation. Some of these crops are also found in urban markets (table 9). Thus, they also have a potential in raising rural incomes, if adequate programmes were deployed. In the villages visited in Soroti, home gardens are poorly structured, partly due to recent social turbulences in the region and partly to the decreasing recognition of this agricultural space. Improving the structure, practices and crop diversity of home gardens would certainly improve food production, nutrition, income and labour management. Farmers already hold the genetic resource and knowledge base required, but lack awareness and technical assistance to further develop their home gardens.

Table 8. Selected home garden crops among farmers of Soroti district, Uganda

Local names ⁽¹⁾	English name	Scientific name	Crop category	Edible part	Distinctive micronutrient values
Akolel, okueker	Cucumber	<i>Cucumis</i> sp.	Fruit vegetable	Fruits	
Atungulu	Onion	<i>Allium</i> sp.	Vegetable	Bulbs	Vitamin C
Avokado	Avocado	<i>Persea americana</i>	Fruit tree	Fruits	Vitamin A
Cabbage	Cabbage	<i>Brassica</i> sp.	Leafy vegetable	Leaves	Vitamin C
Eboga, dodo	Amaranth ⁽²⁾	<i>Amaranthus</i> spp.	Leafy vegetable	Leaves	Calcium, Vitamin A
Eboo, boyo	Cowpea ⁽³⁾	<i>Vigna unguiculata</i>	Leafy and grain vegetable	Leaves / Grains	Calcium, Folic acid, Iron, Vitamin A
Ebrinyanya, berejanya	Eggplant	<i>Solanum</i> spp.	Fruit vegetable	Fruits	
Ecadoi, akeu ⁽⁴⁾	Cat's whiskers	<i>Cleome gynandra</i>	Leafy vegetable	Leaves	Vitamin A
Eimulalu, amulalu	Pepper	<i>Capsicum</i> spp.	Fruit vegetable	Fruits	Vitamin A, Vitamin C
Emalakany, malakuany	Roselle	<i>Hibiscus</i> spp.	Leafy vegetable	Leaves	Vitamin A
Emiebe, emiyembe	Mango ⁽⁵⁾	<i>Mangifera indica</i>	Fruit tree	Fruits	Vitamin A, Vitamin C
Enyanya	Tomato	<i>Lycopersicon esculentum</i>	Fruit vegetable	Fruits	Vitamin A, Vitamin C
Esuyo, suyu	Pumpkin	<i>Cucurbita</i> spp.	Leafy and fruit vegetable	Fruits / Leaves	Calcium, Vitamin A
Etigo ⁽⁶⁾	Corchorus, jute	<i>Corchorus</i> spp.	Leafy vegetable	Leaves	Vitamin A
Lavaro	Banana	<i>Musa</i> sp.	Fruit shrub	Fruits	Vitamin A
Mapera	Guava	<i>Psidium guajava</i>	Fruit tree	Fruits	Vitamin A, Vitamin C
Matonda	Passion fruit	<i>Passiflora edulis</i>	Fruit vine	Fruits	Vitamin C
Muchonga	Orange	<i>Citrus</i> sp.	Fruit tree	Fruits	Vitamin A, Vitamin C
Nanasi	Pineapple	<i>Ananas comosus</i>	Fruit vegetable	Fruits	Vitamin C
Pawpaw, apapalu	Papaya	<i>Carica papaya</i>	Fruit vegetable	Fruits	Vitamin A, Vitamin C

1. Local names in Ateso and Kumam languages, based on phonetic transcription from local dialects in villages visited. Taxonomic identification revised after Goode (1989).

2. People consume cultivated, semi-cultivated and wild species of Amaranth.

3. Cowpea is a major grain crop in Soroti, but leaves are equally an important and lasting nutritional source. In fact, cowpea plant, which is often planted close to the homestead and provides leaves for a long time from shortly after seeding till much after harvesting the grains. Accordingly cowpea qualifies as vegetable or home garden crop because of the local uses and considerations.

4. In Soroti area, *ecadoi* is a semi-cultivated plant as it often grows wild in the home gardens. It is also classified as *Gynandropsis gynandra*.

5. In many rural areas of Soroti, mango is often a wild tree, yet it has enormous potential for increased cultivation.

6. *Etigo* is also a generic name for a number of cultivated and wild leafy vegetables that are relevant in local culinary practices (e.g. food preparation).

Sources: Participatory research with Teso and Kumam farmers from different sub-counties of Soroti district, including particularly the villages of Aloet, Amoru, Obak, Obwakol, and Okunguro. Soroti, Uganda, 2001. Nutritional properties according to FAO (1997) and FAO (2001a).

Table 9. Leafy vegetables on sale in Soroti market (central Uganda)

Local name ⁽¹⁾	English name	Scientific name
Ecadoi	Ecadoi / cat's whiskers	<i>Cleome gynandra</i>
Emoros	-	<i>Cyphostemma</i> sp.
Eboga	Amaranth spinach	<i>Amaranthus</i> sp.
Atigo	Jute	<i>Corchorus olitorius</i>
Emalakany	Roselle	<i>Hibiscus sabdariffa</i>
Eboo	Cowpea	<i>Vigna unguiculata</i>
Sukuma-wiki ⁽²⁾	-	[unidentified]

1. Ateso language.
2. *Sukuma-wiki* is a generic name for a group of leafy vegetables with specific culinary uses in East Africa. In this case it represents an unidentified local leafy vegetable.



Women selling leafy vegetables in Soroti market (Uganda).

Source: Survey conducted in Soroti market, Uganda, on 29th November 2001.

Since home gardens are typically spaces of crop diversity, improving home gardening requires the optimal use of local agrobiodiversity, as well as the dynamic integration of additional crops and crop varieties with specific values and uses. Many neglected crops, such as the enormous diversity of African leafy vegetables, constitute important plant genetic resources for developing home gardening in Africa. The introduction of new crops is generally a feasible and desirable strategy, as home gardens boast notable degree of flexibility with low agroecological impact. There are many crops suitable to expand the agrobiodiversity base of home gardens, including leafy vegetables, fruit vegetables, root crops, and legume crops (table 10). The consideration of seed access and seed multiplication aspects is also relevant for the effective and continued development of home gardens.

Table 10. Selected crops for home gardening

Leafy vegetables

Amaranth	<i>Amaranthus</i> spp.
Bitter leaf	<i>Vernonia amygdalina</i>
Blackjack	<i>Bidens pilosa</i>
Cabbage	<i>Brassica oleracea</i>
Cassava	<i>Manihot esculenta</i>
Cat's whiskers	<i>Cleome gynandra</i>
Cowpea	<i>Vigna unguiculata</i>
Drumstick tree	<i>Moringa</i> spp.
Jute	<i>Chorchorus</i> spp.
Kale	<i>Brassica carinata</i>
Leek	<i>Allium porrum</i>
Mustard	<i>Brassica campestris</i>
Nettle	<i>Urtica</i> sp.
Pumpkin	<i>Cucurbita</i> spp.
Rape	<i>Brassica napus</i>
Rosella	<i>Hibiscus sabdariffa</i>
Runner bean	<i>Phaseolus coccineus</i>
Sweet potato	<i>Ipomoea batatas</i>
Taro	<i>Colocasia esculenta</i>
Water spinach	<i>Ipomoea aquatica</i>

Fruit vegetables

African eggplant	<i>Solanum</i> spp.
Bitter cucumber	<i>Momordica charantia</i>
Cucumber, melon	<i>Cucumis</i> spp.
Okra	<i>Hibiscus esculentus</i>
Pineapple	<i>Ananas comosus</i>
Pumpkin	<i>Cucurbita</i> spp.
Sweet pepper	<i>Capsicum</i> sp.
Tomato	<i>Lycopersicon esculentum</i>

Root & tuber crops

Carrot	<i>Daucus carota</i>
Cassava	<i>Manihot esculenta</i>
Hausa potato	<i>Plectranthus esculenta</i>
Oromo dinich	<i>Amorphocallus abessynicas</i>
Potato	<i>Solanum tuberosum</i>
Sweet potato	<i>Ipomoea batatas</i>
Taro	<i>Colocasia esculenta</i>
Yam	<i>Dioscorea</i> spp.

Beans and legumes

Bambara nut	<i>Voandzeia subterranea</i>
Beans	<i>Phaseolus vulgaris</i>
Broad bean	<i>Vicia faba</i>
Chickpea	<i>Cicer arietinum</i>
Cowpea	<i>Vigna unguiculata</i>
Lima bean	<i>Phaseolus lunatus</i>
Locust bean	<i>Parkia clappertonia</i>
Long bean	<i>Vigna sesquipedalis</i>
Mung bean	<i>Vigna radiata</i>
Pea	<i>Pisum sativum</i>
Peanut	<i>Arachis hypogaea</i>
Soybean	<i>Glycine max</i>
Winged bean	<i>Psophocarpus tetragonolobus</i>

Fruit and nut trees

Avocado	<i>Persea americana</i>
Banana/plantain	<i>Musa acuminata</i>
Baobab	<i>Adansonia digitata</i>
Breadfruit	<i>Artocarpus altalis</i>
Cashew nut	<i>Anacardium occidentale</i>
Citrus	<i>Citrus</i> spp.
Cocoa	<i>Theobroma cacao</i>
Coconut	<i>Cocos nucifera</i>
Coffee	<i>Coffea</i> spp.
Guava	<i>Psidium guajava</i>
Jackfruit	<i>Artocarpus heterophyllus</i>
Mango	<i>Mangifera indica</i>
Oil-palm	<i>Elaeis guineensis</i>
Papaya	<i>Carica papaya</i>
Passion fruit	<i>Passiflora edulis</i>
Soursop apple	<i>Annona muricata</i>
Tamarind	<i>Tamarindus indicus</i>

Grains

Maize	<i>Zea mays</i>
Sorghum	<i>Sorghum bicolor</i>

Oil-seed crops

Nug or niger seed	<i>Guizotia abyssinica</i>
Oyster nut	<i>Telfairia pedata</i>
Safflower	<i>Carthamus tinctorius</i>
Sesame	<i>Sesamum indicum</i>
Shea butter	<i>Butyrospermum paradoxum</i>
Sunflower	<i>Helianthus annuus</i>

Herbs, spices et al.

Chilli pepper	<i>Capsicum annum</i>
Coriander	<i>Coriandrum sativum</i>
False cardamom	<i>Afromomum melegueta</i>
Fenugreek	<i>Trigonella foenum-graecum</i>
Garlic	<i>Allium sativum</i>
Marigold	<i>Calendula officinalis</i>
Mustard	<i>Brassica nigra</i>
Neem	<i>Azadirachta indica</i>
Onion	<i>Allium fistulosum</i>
Sugar cane	<i>Saccharum officinarum</i>
Tea	<i>Camellia sinensis</i>
Turmeric	<i>Curcuma longa</i>

Multipurpose crops

Calliandra	<i>Calliandra calothyrsus</i>
Drumstick	<i>Moringa oleifera</i>
Gliricidia	<i>Gliricidia sepium</i>
Guinea grass	<i>Panicum maximum</i>
Leucaena	<i>Leucaena</i> spp.
Pigeon pea	<i>Cajanus cajan</i>
Scarlet wisteria	<i>Sesbania grandiflora</i>
Setaria grass	<i>Setaria anceps</i>
Velvet bean	<i>Mucuna pruriens</i>
Vetiver grass	<i>Vetiveria</i> spp.

Source: FAO (2001a).

Targeting household nutrition

Household nutrition is a central factor in the development of home gardens in rural Africa, due to the extent of malnutrition, the insidious micronutrient deficiencies, and the critical nutrition care needs of people living with HIV/AIDS. In particular, home garden crops are privileged resources for food-based strategies to improve rural nutrition, as they inexpensively provide key nutrients, including particularly micronutrients such as vitamins, calcium and iron (table 11). They are thus a valuable nutritional complement to staple crops.

Table 11. Common home garden crops that are rich in key nutrients

Nutrient	Selected crops
Carbohydrates	Avocado, bambara nut, banana, breadfruit, cashew nut, cassava, coconut, enset, groundnut, maize, millet, oilseed plants (oil) ⁽¹⁾ , sorghum, sweet potato, taro, yams.
Protein	Bambara nut, baobab seeds, beans, cowpea, groundnut, kapok (seeds), melon (seeds), peas, pigeon pea, pumpkin (seeds), soybean.
Fat	Avocado, bambara nut, coconut (cream), groundnut, oilseed plants (oil) ⁽¹⁾ , soybean.
Vitamin A	African spinach ⁽²⁾ , amaranth, bean (leaves), carrot, cassava (leaves), cat's whiskers, chillies, jute, kale, maize (yellow), mango (ripe), okra, papaya (ripe), pumpkin, rape, red palm (unrefined oil), rosella, sweet potato (leaves), sweet potato (yellow/orange coloured roots), many green leafy vegetables.
Vitamin C	Baobab (fruit), cabbage, cashew nut, citrus fruits, custard apple, guava, mango, papaya (ripe), passion fruit, pineapple, sweet pepper (orange), sweet potato (yellow/orange coloured roots), tomato.
Iron	Beans ⁽³⁾ , peas ⁽³⁾ , some green leafy vegetables ⁽³⁾ .

1. Oilseed plants include groundnut, maize, safflower, soybean, and sunflower.

2. African spinach is often a generic name for diverse local leafy vegetables.

3. Combining these foods with vitamin-C-rich foods in the same meal increases Iron absorption.

Source: FAO (2001a).

The goal of household nutrition requires duly consideration to gender aspects in home gardens. Rural women are in general the major actor in home gardening, from crop diversity management to labour, and to food preservation. They also play a critical role in household nutrition through meal preparation. Accordingly, gender considerations are essential to effectively connect home gardens and household nutrition. That demands not only to empower women's roles in home gardening and household nutrition, but also to involve both men and women (and children) in developing home gardening as a nutrition strategy. That is more urgent in view of the scale of malnutrition in rural Africa and the nutritional care needs

of people living with HIV/AIDS, women and children. Gender equality is thus essential to fully incorporate home gardens in community nutrition action.

In some cases, the role of home gardens in household nutrition conflicts with the potential of vegetables in income generation. Home gardening oriented to market exchange raises concerns about equitable food utilisation because food production serving the marketplace may be detrimental to household nutrition. Although income is a key need among the rural poor, established experience among rural development practitioners indicates that income does not often turn into improved nutrition. Accordingly, the promotion and improvement of home gardening requires adequate consideration of equitable food utilisation, so to harmonise income opportunities with household nutrition. In addition, when home gardens generate income, gender equality is also a issue, as women often devote significant efforts in home gardens but are later excluded in the control of resulting income (whilst women tend to be more inclined to spend income in nutrition). Gender equality around home gardens is thus required to optimally use home gardens for household nutrition, either directly through food-based approaches as indirectly through the better allocation of income for nutrition.



Community water well that also serves to irrigate surrounding vegetable gardens in a village in northern Ethiopia.

Food preservation and processing

Food preservation and processing is a relevant aspect for the optimal use of home gardens, as many home garden foods are perishable. Food preservation, processing and storage practices ensure the full use and prolonged availability of those foods.

Traditional techniques for food preservation include drying (sun drying, solar drying, shade drying), blanching, curing, and strategic mixing of certain foods. Rural women hold significant indigenous knowledge, practices and techniques for food processing and preservation. However, these are being abandoned, poorly transmitted, and nearly lost. The erosion of agrobiodiversity also results in the abandonment of associated food processing and

preservation techniques. Traditional food processing and preservation knowledge is tied to techniques that are inexpensive, adapted to local resources, and culturally rooted. For instance, solar drying of beta-carotene-rich fruits and vegetables is an effective and inexpensive technology for the preservation of these vitamin A sources (FAO/ILSIS, 1997).

Consequently, the maintenance and transmission of local knowledge and techniques on food preservation and processing expands the long-term availability and consumption of nutritious foods. It is equally required to explore and deploy technical improvements in order to enhance the quality and durability of foods, to expand food processing and preservation means, and to better meet market and commercial opportunities.

Recommendations

Home gardens are distinctive agricultural spaces, notably neglected, but with significant potential in raising the food security, nutrition, and livelihood of the rural poor. Rural women are prominent actors in home gardens. The promotion and improvement of home gardens requires special emphasis on the following actions:

1. Institutionalise and raise awareness on the value and potential of home gardens among the rural poor, particularly as it affects household nutrition.
2. Expand the agrobiodiversity content of home gardens to improve their food, nutrition and livelihood roles.
3. Deploy agricultural projects that focus on improving home gardens through an integrated approach to the following pillars: (a) the agrobiodiversity content, (b) technical support and best practices, (c) food processing and preservation practices, (d) household nutrition and food habits, and (e) commercialisation options.
4. Support and improve indigenous knowledge relevant to home gardens, such as knowledge on local vegetable crops, traditional food preservation techniques, local food habits, and meal preparation skills.
5. Explore and deploy new home gardening technologies and practices, as well as farmer-based home garden experimentation and improvement.
6. Consider gender as a transversal issue for the effective promotion and development of home gardens, including equal consideration of men's and women's priorities around home gardens, and gender equality on the control of income generated from horticulture.
7. Consider food utilisation issues, including the prioritisation of nutrition (over income) and the securing of gender and generational equality in food access.