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Agriculture for Food Security 2030
- Translating science into policy and practice



What do we know about food security in homegardens of Sri Lanka?

Agroforestry and other types of multifunctional land-use systems have increasingly been highlighted as a win-win-win solution to meet the challenges of climate change, agricultural intensification, secure ecosystem services as well as support to food security. Here the authors seek in the literature for evidence and information on the food security link to homegardens; a traditional agroforestry system common in Sri Lanka, and promoted by the government.

Maximising benefits

In recent years, agroforestry systems have been put forward as a key future land-use practice due to their large potential for climate change mitigation and adaptation and their role to mitigate household food and nutrition security from soaring food prices. Despite the vivid debate around the role of Sri Lankan homegardens as a desirable and sustainable land-use system, the scientific evidence of its role for food security is not yet totally clear.

In Sri Lanka, smallholder farmers are in charge of more than 80 percent of the total annual crop and timber production in which a large part are grown in agroforestry homegardens. Homegardens are prime examples of multifunctional land-use systems: spaces that combine agriculture, forestry and natural ecosystems in multi-storied layers, providing income to its users from food, fuelwood, timber and medicinal products. Therefore, by synthesising articles from

Key messages

1. In terms of homegardens and food security, the indirect effects such as adaptation to climate change or a variety of ecosystem services such as increased carbon uptake, better rainfall infiltration capacity and reduced erosion are the most commonly assessed (51%) impacts in the literature.
2. Homegardens in Sri Lanka are the poor land users' insurance in times harvest failures and is presently going through a transition due to urbanization leading to a fragmentation in populated areas. The rural-to-urban transition makes it expensive for remaining rural families to manage remaining gardens due to a lack of labour.
3. The commercial development or market interest such as value addition, certification schemes, or development of marketable goods is lacking within these productive systems which could be a lock-in effect of the systems and their users.
4. Our policy recommendations suggest a higher degree of inclusiveness of stakeholders aligned with long-term commitments and that guidelines should differentiate between biophysical variations (dry vs. wet zone) and socio-economic differences (urban vs. rural areas).

scientific databases and selected grey literature we investigated how food security in Sri Lankan homegardens are assessed in terms of quantifying its products or services and whether characteristics of food security are assessed as direct-, indirect impacts, synergies or trade-offs.

Side effects and ecosystem services most commonly studied

From our synthesis study results show that 27 percent of 92 articles analysed direct impacts that are relevant to food security. These articles focused on parameters such as number of edible crops, production (weight and/or volume) of food trees and crops and nutritional information including nutrient supply of for example vitamins and carbohydrates. Another 52 percent of the articles quantified indirect aspects that have relevance for food security, including climate adaptation or carbon uptake, soil, ecosystem services, structural and floristic diversity and economic aspects. Twenty-one percent of the articles were categorised as being qualitative or more conceptual and contained no direct assessments or quantification of food security (Fig. 1).

Homegardens – a poor person’s safety net

Homegardens are privately owned land areas close to homesteads that are used for multiple benefits; for example, perennial vegetation, cash crops, animal rearing or trees for fruits and timber or fuel used for subsistence farming. The system can be found in many parts of the world under different names.

One of the strongest food security evidence found in the literature is that poor people benefit from the products that homegardens provides.

Homegardens cover more than 13 percent of Sri Lanka’s land area.

Sri Lankan government promotes homegardens in times of urbanization

On a governmental level, there are high interests and hopes that promoting homegarden development is a key solution to increase self-sufficiency and food nutrition in Sri Lanka. However, it is important to address various threats and challenges facing homegardens as a land-use system as the country is undergoing environmental, demographic and

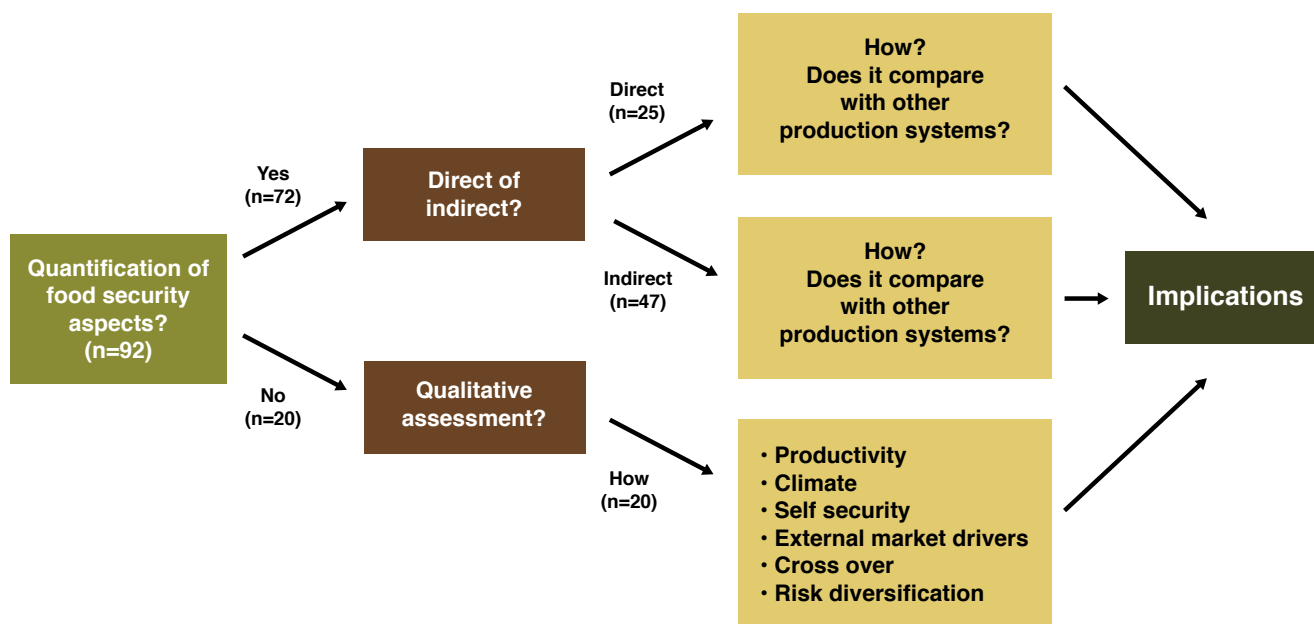


Figure 1. Flow-chart and the categorization results of our analysis based on 92 documents (peer-reviewed articles and grey literature).



Cultivating the land for vegetables in a dry-zone homegarden.

economic, socio-political change. Consultations held with Governmental and academic stakeholders in Sri Lanka by the authors show that land fragmentation due to urbanization is a threat to the sustainability of homegardens. For example, young people are often migrating to cities for seeking jobs. In the cities, they only have space to put up a house and leave little

room for a garden causing disappearance of the traditional agroforestry knowledge.

The rural-to-urban transition also makes it hard and expensive for remaining rural families to manage their gardens due to labor shortage, which in turn forces families to sell their gardens, spurring homegarden fragmentation.

Fragmentation and loss of traditional knowledge

Fragmentation of homegardens may be inevitable and a consequence of an ever changing world, that in the Sri Lankan case is driven by the migrations to urban areas and socioeconomic development. A problem is that this fragmentation weakens the traditional knowledge of maintaining them.

One of the main challenges ahead will therefore be to integrate traditional knowledge and practices of managing homegardens with modern technologies.

This must be done in close connection to evolving market opportunities while enhancing their resilience and provision of nutritious food products.



Growing ornamental flowers for decorative purposes as in this homegarden, provide aesthetic functions to families

Reaching the market to develop and sustain

Measures to reduce harvest losses and to improve market channels and value addition also need further attention. In an era of intensification of land-use practices, infrastructure development and new employment opportunities the dependence of farm families on their gardens for food needs and diet quality will likely decrease. To protect the multi-storied and multi-species nature of the homegardens, it will therefore be important to find means to increase the profitability of the homegarden system while maintaining ecosystem services such as biodiversity and water regulation, hence seeking synergies rather than trade-offs.

Way forward and the provision of evidence-based information

Our review shows that, although there are many studies concerning food security aspects of homegardens in Sri Lanka, the interlinkages with other land-use systems (including regular monocultures) including the impacts, trade-offs and synergies from food production remain relatively unexplored. The data shows a strong focus on the traditional farmers in the poor segment of the agriculture sector.

To avoid conserving a system with an aim to keep people collecting fruits and nuts, the policy focus should expand the use and benefits of homegardens beyond this, where value addition and market access can be promoted.

Therefore, long-term transdisciplinary, stakeholder inclusive and data-dense research programs with clear monitoring and evaluation methods are needed to understand the dynamics of homegardens in relation to changes in society and environment. The difference between biophysical and socio-economical context is also relevant to include in policy programmes and implementation, since wet and dry zones of Sri Lanka have different climatic



A typical dry-zone homegarden in Sri Lanka with banana plants growing alongside trees that provide shade.

preconditions while there are different drivers and opportunities between rural and urban homegardens.

This brief is written by Eskil Mattsson, Madelene Ostwald and SP Nissanka. It is based on the article 'What is good about Sri Lankan homegardens with regards to food security? – A synthesis of the current scientific knowledge of a multifunctional land-use system' (Agroforestry Systems DOI: 10.1007/s10457-017-0093-6).

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