

EDIBLE FOREST GARDENS

Innovations and challenges for mimicking nature in temperate climates



THE WHAT AND WHY

Homegarden or food forest?

Forest gardens (sometimes called homegardens) are primarily or entirely perennial polycultures, containing at least three identifiable vertical layers of food-bearing plants including trees, shrubs and perennial herbaceous understory. They are characterized by a multitude of sizes, shapes and habitats, from rural to urban, from wooded landscape to dense forest (Jacke and Toensmeier 2011). Examples of forest gardens can be found in all continents, mostly in the tropics. Apart from

a number of environmental and social advantages, their economic benefits range from high value from new crops to improving income from marginal soil. Forest gardens aim to be self-maintaining, increase self-sufficiency of households. Edible food in forest gardens are used widely by the permaculture movement and are increasingly adapted to temperate regions, based on local conditions, suitable species and creativity (Mollison 1979, Jacke and Toensmeier 2005, Crawford 2010).



Newly designed and planted food forest in the Netherlands
João Palma



Multi-layer vegetation in a forest garden
Jo Smith, ORC

HOW IS THE CHALLENGE ADDRESSED

Towards diversity, complexity and balance

The first forest garden in Europe was established in UK by Robert Hart in 1981; this inspired large numbers of followers in temperate climates. Forest gardens are characterized by: a large number of species, giving great diversity in vertical structure and within guilds; the inclusion of plants which increase fertility, such as nitrogen fixers; the use of deep rooting plants as “nutrients pumps”; the use of plants that attract predators of common pests; the use, where possible, of pest and disease resistant varieties;

the role of tree cover and leaf litter in order to improve nutrient cycling and drought resistance. Recommendations also include using seasonal succession of plants in the lower layer and restricting tree pruning (Crawford 2010). However, local conditions may require specific patterns of garden design; from forest gardens in existing woodland through to managed edges of woodland to suburban community gardens and intercropped orchards.



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HIGHLIGHTS

Apart from a number of environmental (e.g. resilience to climate change) and social advantages (as a community resource), economic benefits of forest gardens range from high value from new crops to improving income from marginal soil and diversifying income streams. Forest gardens aim to be self-maintaining and increase the self-sufficiency of households.



Forest garden in Poland
Monika Podsiadła,
"Permaculture gardens"
Foundation

FURTHER INFORMATION

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ROBERT BOREK, JO SMITH

Institute of Soil Science and Plant Cultivation – State Research Institute,
Czartoryskich Str. 8, 24-100 Puławy, Poland.

Organic Research Centre, Elm Farm, Newbury, UK RG20 0HR
rborek@iung.pulawy.pl

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ADVANTAGES AND DISADVANTAGES

Learning limitations and possibilities

Forest gardens can be used to exploring the potential of novel species, although ecological, economic and cultural impacts of new species should be assessed before and after introduction. However, the use of native species, already adapted to local conditions and of traditional ecological knowledge is recommended. Advantages from growing plants are provided through their interaction at horizontal level (including allelopathy) and at vertical levels (proper design of shade-tolerant crops in seven layers, based on Crawford (2010)). Under conditions of Central Europe, the tallest layer (medium to large canopy trees >10m) need to be considered with caution, due to competition for light, but for example widely spaced limes *Tilia* or sycamores *Acer pseudoplatanus* may be sources of honeydew, nectar and lime tea/sycamore syrup. Small trees and large shrubs (4-9m) consists of fruit trees or nut trees (e.g. hazel *Corylus avellana*). Mountain-ash *Sorbus aucuparia*, shadbush *Amelanchier* or white mulberry *Morus alba* might be high trees but these three are also forgotten sources of nutritious fruits (and of leaves in the case of *Morus*). Siberian peashrub *Caragana arborescens* is another under-appreciated species; it is a leguminous plant, enriching the soil in nitrogen, and has edible pods and seeds. The layer of shrubs <3 m might include nitrogen-fixing plants (e.g. sea buckthorn *Hippophae rhamnoides* and Russian olive *Eleagnus angustifolia*), and edible-fruit bushes (e.g. *Vaccinium*, honeyberry *Lonicera caerulea*, quince *Cydonia* and *Chaenomeles*). The layer of herbaceous perennials and evergreen plants (0-3m) is good for cultivation of leaves (e.g. edible comfrey *Simphytum*, horseradish *Armoracia rusticana*, shepherd's purse *Capsella bursa-pastoris*, wild garlic *Alium ursinum*, winter rocket *Barbarea vulgaris*), culinary herbs (less common spices can be peach-leaved bellflower *Campanula persicifolia*, yarrow *Achillea millefolium*, *Nigella arvensis* or cabbage thistle *Cirsium oleraceum*) or shade-tolerant medicinal herbs (e.g. lungwort *Pulmonaria officinalis* or heath speedwell *Veronica officinalis*). Other layers include ground cover plants (e.g. with strawberries, ground-ivy *Glechoma hederacea*), climbers (with *Actinidia*, *Hablitzia* or *Vitis vinifera*) and underground layer with edible roots and tubers (e.g. marsh woundwort *Stachys palustris*, nut grass *Cyperus esculentus*, Japanese hedge parsley *Torilis japonica*).

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