Sustainable Solano

Solano Sustainable Landscaping Initiative

SEED PLOT DEFINITION

The design concept of the Solano Sustainable Landscaping Initiative is based on a standard model plot of a permaculture[1] food forest called "Seed Plot". We hired a professional permaculture designer to develop a model plot based on plants that thrive in the Bay Area, native or well-adopted to Mediterranean climate (resulting in moderate water use), high-yield and multiple functions of each plant to ensure creation of a vigorous healthy ecosystem providing food, supporting natural habitat and building up soil.

In the words of Bill Mollison, the founder of permaculture, "permaculture is a philosophy of working with, rather than against nature; of protracted and thoughtful observation rather than protracted and thoughtless labor; and of looking at plants and animals in all their functions, rather than treating any area as a single product system."

Scaled down to a regular suburban or urban backyard, permaculture takes form of a food forest. "Forest gardening is a low-maintenance sustainable plant-based food production and agroforestry system based on woodland ecosystems, incorporating fruit and nut trees, shrubs, herbs, vines and perennial vegetables which have yields directly useful to humans."[2]

Similar to woodland ecosystem, food forest has many layers of plants that grow and support each other. This technique of multi-layering is called "underplanting" in permaculture; a food forest in the Bay Area climate can support up to seven layers of plants:

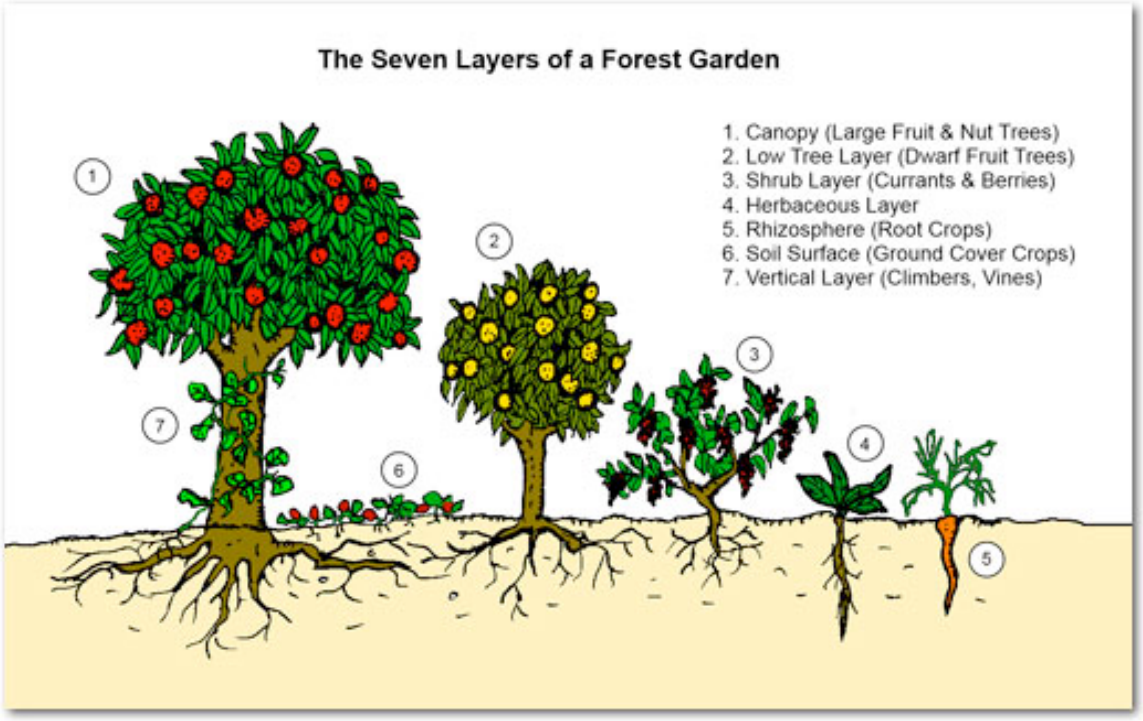

Image from Permaculturenews.org

Food forests “melt the best features of wild-life gardens, edible landscapes, and conventional flower and vegetable gardens, but they go beyond simply adding these styles togther. **They are more than the sum of their parts**. An ecologcial garden feels like a living being, with a character and essence that is unique to each. These gardens are grounded in relatively new concepts such as permaculture and ecological design, but they use time-tested technigues honed to perfection by indigenous people, restoration ecologists, organic farmers, and cutting-edge landscape designers. They combine low environmental impact, low maintenance (once established), and high yields with elegant aesthetics.”[3]

Image from Permaculturenews.org

This is one of the examples of a mature backyard food forest. Dense underplanting mixes food-producing and natives/ornamental plants; the resulting ecosystem provides food, supports diverse habitat and produces mulch and compost material for the site.

While a food forest can fill a backyard of any size, for the purpose of designing our Program we’ve limited the size of the Seed Plot to 1600-2000 sq. foot. Standard size of the plot allows us to quantify “input” (plants, material, labor) and output (yield, CO_2 reduction, water saving) for the Program, develop accurate budget, and create compelling, but realistic expectations for the Program’s participants.

Once established, the "Seed Plot" can easily be expended both horizontally (by increasing the planting area) and vertically (by adding other elements of a sustainable backyard: e.g. compost bins, potato towers, chickens).

Image from Permaculturenews.org

Here is another picture of a backyard food forest. Notice dense mixed planting, mulching and incorporated raised beds for annual vegetables.

Benicia Sustainable Backyard Seed Plot supports the following seven layers of planting:

Layer 1. Tall trees – 3 trees (can also serve as shade trees, if the plot's layout allows proper placement)
Layer 2. Low trees – 3 trees
Layer 3. Shrubs: 9-10 fruiting shrubs, 6 other shrubs (nitrogen -fixers, natives) and 2 raspberry beds of 6 plants each
Layer 4. Vines – 5-10 vines
Layer 5. Herbs – 32 plants
Layer 6. Ground covers – 16-32
Layer 7. Root level- 10

Total: 6 trees, up to 28 shrubs, up to 80 small plants

Sample plants for each layer:

Layer 1. Tall trees
Apple, Asian Pear, Persimmon, Cherry, Chestnut, Loquat, Avocado, Fig

Layer 2. Small trees
Plum, Pluot, Almond, Fig (severe pruning), Pomegranate, Pineapple Guava, Citrus

Layer 3. Shrubs
Berries, blueberries, Goumi, N-fixers (Ceanothus, Lupins and many other)

Layer 4. Vines
Kiwi, grapes, blackberries vining varieties, some Passionfruit, native vines (Dutchman's Pipe or Clematis)

Layer 5. Herbaceous
Herbs- Thyme, Oregano, Marjoram, Comfrey, Sorrel
Perennial Vegetables- Sea Kale, Asparagus, Artichoke, Cape Gooseberry
Natives- Native Salvias, Epilobium, Yarrow, Galvezia, Eriogonum, Erigeron (and others Asteraceae, Lamiaceae, and Apiaceae family)
Flowers- too many to list!

Layer 6. Ground covers
Strawberries & Wintergreen
Perennial Vegetables- Chinese Artichoke, Daylily, New Zealand Spinach, Okinawa Spinach, French Sorrel
Many Mediterranean herbs are ground covers, and also many Natives.

Layer 7. Root level
Jerusalem artichoke, Yacon, Scozonera, Skirrett, Andean crops- Mashua, Oca, Ulluco

<u>Site requirements:</u>

Limitations (conditions which may prevent the site from being chosen for a demonstration food forest):

- large tree removal (very costly)
- dense and overgrown shrubs or brush (very time consuming and a bit costly)
- hardscape or pavement removal (very costly)
- compromised hardscaping not to code; steep slope, damaged retaining walls, etc.
- lack of any irrigation infrastructure or hose bibs/spigots
- lack of light; minimum 6 hours of sun a day in the summer required
- greywater usually cannot work “upslope”; the site should be flat /graded away from house
- incompatible pet situation

Assets (conditions which make the site preferable):

- lack of perennial weeds or difficult to remove plants (annual grasses and weeds easiest to remove)
- functional irrigation system, minimum of controller/timer and one valve in working order, must be located near plot
- easy access to a laundry room for greywater installation (one exterior wall, next to the plot)
- good access for material dropping and loading
- good access for public visits
- contained and defined plot location
- full sun (6 hours or more)

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[1] *Permaculture*. A copyright word, owned as a common copyright by the Permaculture Institutes & their graduates. Derived from '*Permanent'* and '*Culture'*, as follows:
Permanent: From the Latin *permanens*, to remain to the end, to persist throughout (*per* = through, *manere* = to continue)
Culture: From the Latin *cultura* - cultivation of land, or the intellect. Now generalized to mean all those habits, beliefs, or activities that sustain human societies.
Thus, Permaculture is the study of the design of those sustainable or enduring systems that support human society, both agricultural & intellectual, traditional & scientific, architectural, financial & legal. It is the study of integrated systems, for the purpose of better design & application of such systems. (*from http://www.permaculture.net)*

[2] http://en.wikipedia.org/wiki/Food_Forest

[3] Toby Hemenway (2009) *Gaia's Garden*, p.3