

Permaculture Forest Garden Guidelines

My advice based on 16 years experience planting and observing a forest garden
in Farmington, New Mexico

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Permaculture Ethics are Forest Garden Ethics: Take care of the earth, Take care of people, Share the abundance

There are two ways to conceptualize creating a forest garden (food forest).

With **guilds** you are thinking of plant functions and how plants benefit each other. Most guilds are built around a desired fruit tree. Near that tree, you plant companions - nitrogen fixers, insectary plants, pest confusers, nurse trees, ground covers etc. The goal is to make as many functional connections between species as possible.

With the nine **layers** you are thinking of plant structure and filling every niche - overstory/nurse trees, midstory/fruit trees, woody shrubs, herbs/flowers, ground covers, vines, roots, fungal, riparian.

Whether designing in terms of guilds or layers, remember to bring in the widest diversity of species possible but remember that the diversity of connections between species is just as important.

Remember this is all theoretical. The trees will teach you. Do the planting and observe through the years. The plants will sort themselves out. Ask a question and then go out and look. What trees are growing well here? Are they being pollinated? Which ones consistently produce fruit? Which ones have disease or insect problems? Which ones spread from suckers? Where do the suckers go? Which ones reseed? Which ones do the birds like? Which ones have memorable fragrances? Which flowers do the hummingbirds like? How do the plants change as they mature? Where does each herb prefer to grow? How is the soil changing? What new species have arrived unannounced? Which guilds are doing the best? Which plants have died away? Which fruits are your favorites? Which herbs have you used for teas or medicine? Which plants are your livestock's favorite forages? Are there any niches empty? What new companions suggest themselves?

Make the food forest regenerative – let it build soil, let it be habitat for the entire food chain, harvest the yield, welcome volunteer plants, return all plant material to the ground to feed the soil builders.

Be aware of food chains. All “waste” is food for beings in another Kingdom – dead wood is food for fungi, animal manure is food for plants, plant matter is food for animals. Plants and animals and fungi have co-evolved and are interdependent – flowers and bees need each other, predator insects need aphids, nuts need squirrels to bury and forget some of them. Trees often rely on each other, on mycorrhizae fungi and on other soil microbes for nutrients they do not have direct access to – interplant nitro-fixing species, introduce and support fungi, feed the soil and keep it covered.

Honor the green plants. They do photosynthesis, the original energy production. They transform sunshine into food for most of the life on earth. In the process, they produce the oxygen that the animal kingdom requires to breath. Wow.

Prioritize soil building. It is the living foundation of the food chain and of the forest garden. Mulch or compost all organic matter produced on-site. Keep the ground covered. Artificial fertilizers, herbicides, pesticides and fungicides all kill the organisms that build soil.

The forest garden will require less maintenance as time passes, but it will always need its human guild member to observe and make the small changes that keep it diverse and productive over time.

The conventional role people take in our planted and managed landscapes is CONTROL – mowing, pruning, weeding, raking, fertilizing, spraying the weeds, spraying the bugs, removing unproductive,

diseased or ugly plants, replacing planted areas with concrete, gravel or asphalt, etc.

Your role in the forest garden is SUPPORT – observation, engagement, imagination, making connections, planting, harvesting and sharing what is given, building soil, creating habitat.

Your forest garden has the potential to provide for you the eight “Fs” - food, fiber, fuel, fodder, fertilizer, framing, pharmaceuticals and fun.

Plan your infrastructure first – home, sheds, greenhouse, roads, pathways, fences, animal pens and shelter, your annual garden space, swales, irrigation, windbreaks, etc. Then plant the food forest.

Reserve your annual garden area in full sun – it is difficult to grow the summer sun-loving vegetables like tomatoes, peppers, corn, squash, cucumbers, melons, beans, peas, etc in the shade.

Once you plan out the location and shape of your food forest, plant your canopy/ nurse trees as soon as possible. They provide the gentle shelter from intense sunlight, evaporation, wind and frost that will help all your other plantings flourish. In areas where you want to prevent total canopy closure in the future, you could plant a line of nurse trees to the west or southwest of your fruit trees to block the most wind and to shade the food forest at the end of the day when the heat is most intense in the summer. For our area (Farmington, NM) I recommend planting locusts, hackberrys (common and netleaf) and oaks. Locusts are nitrogen fixers and have small leaves that come on late and fall off early so they allow a maximum of light in for lower plants. Common hackberrys have dense leaf cover so they provide heavier shade where you want it. Netleaf hackberries are beautiful desert natives that don't grow quite so tall and can get along with less water. Locusts and common hackberrys grow almost as fast as siberian elms. Oaks grow more slowly but are beautiful trees that you will be glad you planted 10 years later. Other trees worth trying for canopy are arizona walnut, bigtooth maple, thinleaf alder, western soapberry. I discourage the use of siberian elm – though they are hearty, fast growing and produce edible seeds, leaves and inner bark - but those seeds sprout everywhere creating a constant weed problem for you and your neighbors. If allowed to grow, just ten siberian elms on a half acre will close canopy in ten years and negatively effect the fruit trees they were meant to shelter.

Carefully consider the practice of growing vines in living trees. A hearty vine (grapes, lacevine, virginia creeper on my site) can overcome, dominate and even kill most trees. Never let one creep into a high value tree like an oak or your fruit trees. You might allow them into a tree you are willing to sacrifice, like a siberian elm. But once a grape grows high into the tree all its fruit production will be way out of reach. A siberian elm covered with trumpet vine would be dream come true for the hummingbirds but, so far, I haven't had one be able to overcome the shade produced by the tree.

Protect the surface of the ground as much as possible with mulch, wood chips or living ground cover. Collect plant debris and fallen leaves for compost piles and mulching. Promote the capture of blowing autumn leaves and other plant debris by allowing the dead parts of plants to stand through the winter – they act like a net to catch and hold precious organic materials.

Beware the habit of tidiness. Nature does not rake up every brown stem and leaf and branch and send it to the dump. Nature does not judge some plants to be bad and call them “weeds.” Nature does not allow bare ground. There is no “waste” or “trash” in nature. All dead plant material is food for the bacteria, fungi and other small critters who build the soil. It belongs on the ground as mulch or in compost piles where it will be returned to the soil after composting.

Books:

Forest Gardening by Robert Hart

How to Make a Forest Garden by Patrick Whitefield

Edible Forest Gardens, two volumes by David Jacke and Eric Toensmeier

Integrated Forest Gardening by Weiseman, Halsey and Ruddock

Permaculture Food Forest Field Guide prepared by Grant Curry

Free online: www.thegardenprojectswcolorado.org/permaculture_food_forest_field_guide

Sources for trees:

New Mexico State Forestry Conservation Seedling Program

www.emnrd.state.nm.us/SFD/treepublic/ConservationSeedlings.html

Colorado State Forest Service Seedling Tree Nursery

csfs.colostate.edu/seedling-tree-nursery/

Oikos Tree Crops oikostreecrops.com