



Food Forests

Think Outside the Raised Bed Box!

UCCE Master Gardener Program of Riverside County
Vetted by Riverside County Office of Education-STEM

Why Is This Important?

Benefits of
forests

1
Nurture our soils

2
Act as carbon sinks

3
Provide healthy food to millions

4
Are natural aqueducts

5
Host 80% of biodiversity on earth

 Food and Agriculture Organization of the United Nations

Working for  #ZeroHunger



Learning Goal

Educators will learn that a food forest is a practical, sustainable method of edible gardening that can be incorporated into a school or community garden program.



What are Food Forests?

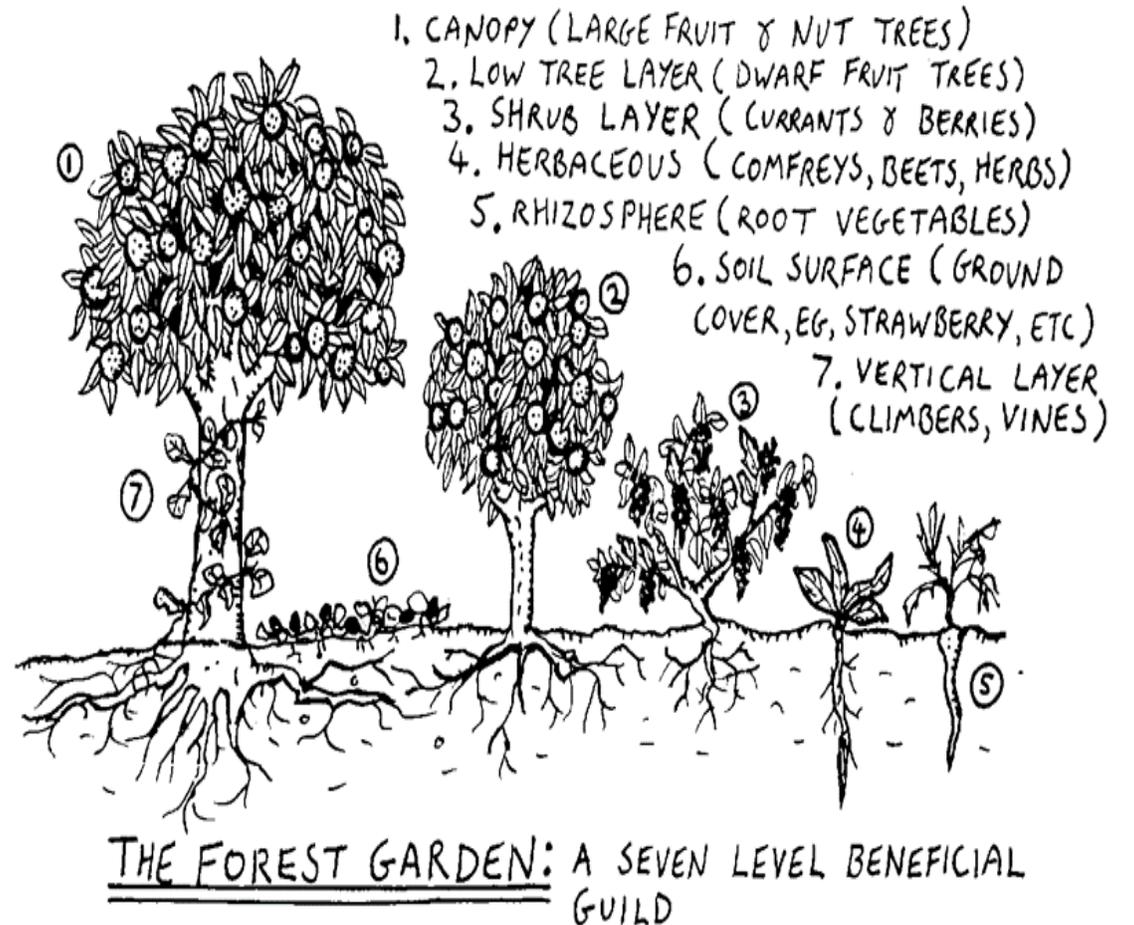
Food Forests are also called [Agroforests](#) or Edible Forests. They have become a popular garden design from the [permaculture](#) movement although growing edible forests can be found in many different agricultural traditions.

- Food forests are gardens *designed to mimic the structure and functions of natural forests*.
- As with natural forests, food forests support healthy populations of beneficial insects and animals.
- As with natural forests, food forests are mostly self-fertilizing and self-maintaining.
- As with natural forests, food forests *provide carbon storage* in woody biomass versus traditional plant and harvest methods that have zero annual carbon storage.

Layers of Edible Vegetation

Unlike natural forests, food forest plants are useful to humans in some way. As in natural forests, most edible forest plants are perennial. However, in a food forest edible plants fill all available spaces.

- tall trees (Not always an option)
- dwarf trees
- shrubs
- herbaceous layer
- roots
- groundcovers
- vertical vines



What Are the Advantages of Growing a Food Forest?

They are a Good Fit for School and Community Gardens





Food Forests Can Cost Less To Develop

- Costs focus for the most part on the initial purchase of perennial plants, mulch, and adapting irrigation.
- Compare this to costs related to construction of a series of raised beds, planting soil, fertilizer, ongoing purchase of annual seeds and seedlings, and more frequent watering of beds.
- Additionally, food forests can be integrated into existing landscaping.



Food Forests Are Easier For Busy Gardeners to Maintain

- Food forest plantings are not as fussy as annual vegetable bed plantings.
- Because most of the plants are perennials, edible forests can survive with more sporadic maintenance, watering, and harvesting schedule.
- As a result, they continue to thrive during school breaks, including the summer months.

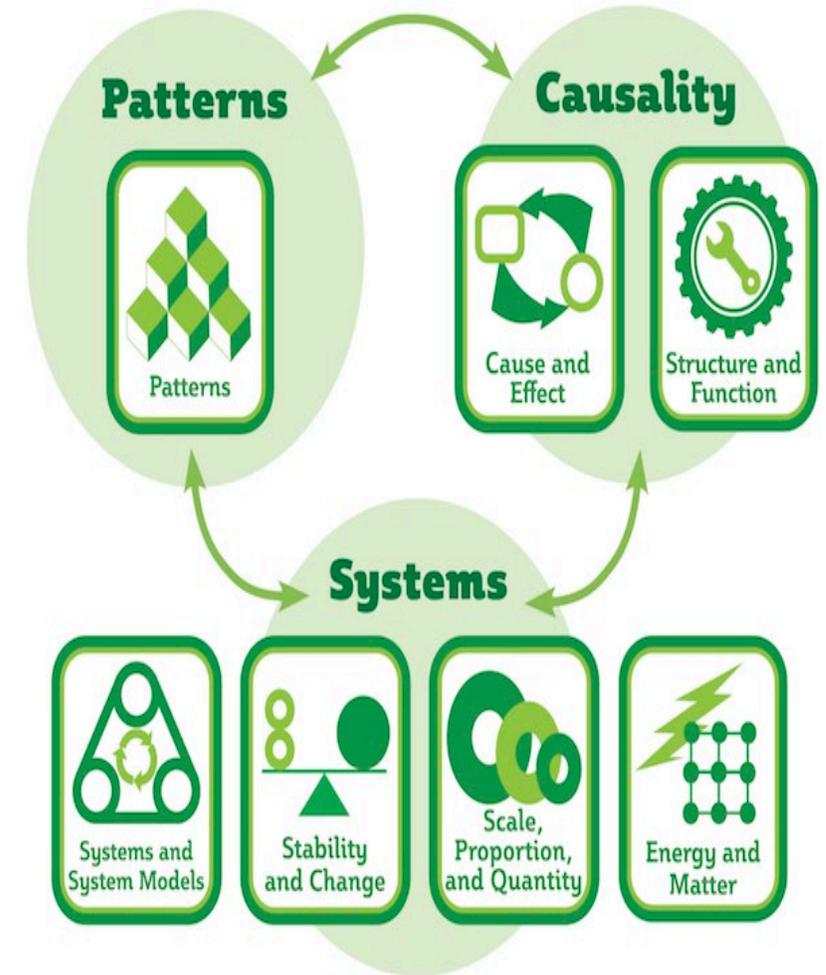
Easier Maintenance Also Aligns to Better Environmental Stewardship



- **Protects Existing Soil:** Because most of the plants are perennial, there's little or no need to dig, rototill, or otherwise disturb the soil. This preserves the natural soil structure and its intricate ecosystem.
- **Recycles Nutrients:** Leaves create a natural layer of mulch. Leaf litter feeds earthworms and soil microbes which, in turn, release the nutrients so they can be taken up again by the plants. Usually little to no additional fertilizer is needed.
- **Conserves Water.** Perennial plants generally have deeper root systems than small, annual plants. Trees and tall shrubs provide shade for lower-growing plants, reducing water stress. Ground covers and fallen leaves conserve soil moisture.

Food Forests are the Perfect Resource For Teaching Science Topics Across TK-12

- The design elements of a food forest address a range of science topics including soil biology, nutrient cycling, water cycle, plant pollinator relationships, food webs, local food systems, and global food systems.
- A food forest can provide tangible ways to apply the Next Generation Science Standards' seven [Cross-Cutting Concepts](#) when explored through the lenses of patterns, causality and systems.



Food Forests Also Align To Health and Nutrition Instruction

- Edible forests produce fruit, berries, perennial greens, vegetables, and culinary herbs.
- They are the perfect tool to get kids hooked on healthy, fresh produce.



Food Forests are Beautiful, Engaging Spaces

- An edible forest integrates landscape elements including trees, flowering nectar and host plants for pollinators, and groundcovers that enhance the appearance of a campus or community area.
- These landscape elements also provide areas of greenery and shade for outdoor learning.



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What Are Some Examples of School and Community Food Forests?

They vary based on climate, location, and defined needs.

- *This is a tiny food forest developed by 4th graders in the Netherlands.*



Oakland Unified School District

- The district's Garden Education goal is to establish and maintain a garden in every school. Resources are provided to encourage schools to develop Food Forests.
- "Through school gardens, students become stewards of the environment and gain a stake in the community and the world. This empowers them to discover the connections among personal health, education and opportunity."





Miami-Dade Unified School District



- The Education Fund's Food Forests for Schools Initiative is in 51 Miami-Dade elementary schools.
- "The initiative uses edible gardens and food forests as outdoor learning laboratories to instill in children the desire to eat nutritious food while learning to care for the environment. "



Seattle's Beacon Food Forest

- Demonstration site and a learning community that “reimagines what urban green spaces can offer.”
- Motto is “Public Food on Public Land.” The community worked with the City of Seattle whose Department of Public Facilities owned the land as a water reservoir site.



Atlanta Food Forest

- Located in an area identified as a food desert.
- Serves as a new model for a City of Atlanta park.
- “The food forest will produce a wide variety of fresh, flavorful, and healthy nuts, fruits, vegetables, herbs, and mushrooms, which will become available for public consumption.”





Can Raised Bed Gardening Be Included in a Food Forest?

Many school and community gardens already have traditional raised beds or find the need for raised beds to deter certain animals.

- Depending on the dimensions of the bed, dwarf fruit trees and/or vines could be planted inside the bed with annual vegetables.
- Planting areas can be extended around the raised beds to grow the layers of a food forest.

(Shown are a series of raised beds in Atlanta's Food Forest.)

Video:
Food Forest
Overview



The Food Forest Revolution by The Education Fund

Resources

- *Beyond School Gardens: Permaculture Food Forests Enhance Ecosystem Services While Achieving Education for Sustainable Development Goals*; Leni-Konig, Katrina, 2020; [Digital Access to Scholarship at Harvard](#)
- *From Wet Feet to a Tiny Food Forest*; Marthe Derkzen, April 4 , 2019; [The Nature of Cities](#)
- [The Education Fund](#)
- *Food Forests, Permaculture, and the Future of School Gardens*; Malory Foster; [Agritecture](#)
- [Kids Gardening](#): Food Forests: Growing Edibles from Soil to Treetops
- List of Edible Food Forests; [Mission Eden](#)
- [Oakland Unified School District](#)

Resources Continued

- San Diego County Office of Education Science Resources Center; [Using the Crosscutting Concepts to Build Student Sense-Making and Reasoning](#)
- *Why Plant a Food Forest?* Inside Agroforestry, Volume 24, Issue 2, page 8; [USDA](#)
- Video: The Education Fund
- Images: AgAtlanta; Creative Commons; The Education Fund; Oakland North Online News-UC Berkley Graduate School of Journalism; San Diego County Office of Education; Oakland Unified School District; Philly Permaculture; United Nations

California Standards For the Teaching Profession

Standard 1: Engaging and Supporting All Students in Learning

- 1.3 Connecting subject matter to meaningful, real-life context

Standard 2: Creating and Maintaining Effective Environments for Student Learning

- 2.2 Creating physical or virtual learning environments that promote student learning, reflect diversity, and encourage constructive and productive interactions among students

Standard 3: Understanding and Organizing Subject Matter for Student Learning

- 3.4 Utilizing instructional strategies that are appropriate to the subject matter
- 3.5 Using and adapting resources, technologies, and standards-aligned instructional materials, including adopted materials, to make subject matter accessible to all students

Master Gardeners

The University of California Cooperative Extension (UCCE) Master Gardener Program (MGP) is an educational program designed to teach and effectively extend information to address home gardening and non-commercial horticulture needs in California.

UCCE is the outreach arm of UC's division of Agriculture and Natural Resources (ANR). Master Gardener volunteers (MG volunteers) promote the application of basic environmentally appropriate horticultural practices through UCCE-organized educational programs that transfer research-based knowledge and information.



University of California

Agriculture and Natural Resources

UCCE Master Gardener Program

Gardening Questions?

Email the UCCE Master Gardeners of Riverside County

- Email Helpline: anrmgriverside@ucanr.edu
- School Gardens: mgschoolgardens@gmail.com

Website Resources

- [Riverside Master Gardeners Website](#)



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