Contemplative Food Gardening:

“GROWING FOOD WHEN PEOPLE & PLACE MATTER”
(FL WEATHER, CROPS & SOILS)

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OUTLINE

- Overview & Goals of Contemplative Food Gardening Presentation Series
- Short Review of Contemplative & Organic Food Gardens
- Sense of Place in Southcentral Florida:
  - Weather
  - Crops
  - Soils
- Soil Ecosystem Management
Contemplative Food Gardening Series Titles

• Introduction
• Feed Your Head (Edible Landscaping & Design)
• Growing Food When People & Place Matter (FL Climate, Crops and Soils)
• Ancient Traditions (Companion Planting and Biodynamic Agriculture)
• Sacred Community (Attracting Beneficials)
• Soil Food (Compost & Earthworms)
• Back to the Future (Contemplative Design & Container Gardening)
Goals for Talks on Contemplative Food Gardening

– Food for your freshest nutrition
– Food for thought
– Food for community benefits
– Food for your soul
Approach of Talks on Contemplative Food Gardening

• Integrate the concepts of contemplative gardens to edible landscaping, using organic food gardening practices

• Provide background information on the science and principles from agroecology for successful organic food gardening

• Offer an opportunity to participate in the setup of a contemplative food garden

• Provide additional educational resources
Contemplative Food Gardening

Gardening outside the rows…creatively for personal inspiration and growth, as well as physical nourishment and growth.
Review: Edible Landscaping

Edible Substitutions

Instead of a Shade Tree...

Plant a Fruit Tree

http://kanawha.ext.wvu.edu/r/download/93854
Edible Substitutions

Instead of an Ornamental Shrub...

Plant a Fruiting Shrub
Review: Edible Landscaping

Bountiful Vines

- Grape
- Hardy Kiwi
- Passion Flower

- Scarlet Runner Bean
- Malabar spinach
- Dragon Fruit
Review: Edible Landscaping

Great Groundcovers

- Thyme
- Oregano
- Perennial Peanut
- Strawberries
- Chives
- Sage
Review – Edible Landscaping

The ‘Planting Pallete’
Review: Contemplative Gardening

Mystery (Discovery Element)

Clarity (Threshold Element)

Complexity (Reflection Element)
Review: Contemplative Gardening

Refuge
(Feeling of Retreat from Worldly Cares Element)
✓ See the world as a garden
✓ Ideas are everywhere – e.g., study a natural forest to learn about canopy, understory and forest floor to design your garden to reinterpret them
✓ Keep a garden journal to record inspirations
✓ Develop a sense of place
✓ Use your garden to express your joy in the world which will radiate to others and yourself

Julie Moir Messervy, 1998
The first gatherings of the garden in May of salads, radishes and herbs made me feel like a mother about her baby – how could anything so beautiful be mine? And this emotion of wonder filled me for each vegetable as it was gathered every year. There is nothing that is comparable to it, as satisfactory or as thrilling as gathering the vegetables one has grown.

- Alice B. Toklas
Getting Started

• Choose suitable location
  – 5-6 hours of direct sunlight
  – Identify water source

• Design the plan
  – Decide what foods you want & can grow
  – Determine when you can plant
  – Choose growing method, e.g., soil, hydroponic, organic

• Does your soil need preparations?
  – Use soil test to check pH, fertility, etc
  – Add soil amendments
What To Grow?

• Crops that you enjoy and fulfill the goals of your contemplative food garden
• Crop adaptation & requirements
• Food availability seasonality
• Crop growing requirements (e.g., planting dates)
Food Crop Requirements

Growth Requirements

- **Moisture**
  - Flooding vs drought tolerance

- **Temperature**
  - Cool vs warm season

- **Light**
  - Full sun vs partial sun vs shade
  - Photoperiod

- **Nutrients**

- **Space & Time**
  - Long vs short season
Temperate Fruit Requirement

- Hours of 32-45 degrees F during dormant period of fruit grow
Temperature Variability Example:
Tampa Historical Mean Temperatures
(1961-1990)*

Data source NOAA
Homestead Environment Example
Site selection - temperature

- Warmest areas
- South
- West
- East
- North

Moderately warm area

Coldest area
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<th>Harvest Seasonality: Food Crop Examples</th>
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### Four Seasons of FRESHNESS
Florida Produce Availability at a glance

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www.Florida-Agriculture.com
Food Crops

• A wide variety of food can be grown in southcentral Florida

• You need to be aware of limitations
  – Varieties
  – Diseases
  – Insects
  – Climate
  – Soil

Fruits

Herbs

Vegetables
Vegetable Categories that Can be Grown Successfully in Southcentral Florida

• Temperate

• Subtropical

• Tropical
Fruit Categories that Can be Grown Successfully in Southcentral Florida

- **Temperate**
  - Nectarine
  - Muscadine Grape

- **Subtropical**
  - Guava
  - Lychee

- **Tropical**
  - Mango
  - Sapodilla

[http://trec.ifas.ufl.edu/fruitscapes/](http://trec.ifas.ufl.edu/fruitscapes/)
Herb Categories that Can be Grown Successfully in Southcentral Florida

• **Temperate**
  - Comfrey

• **Subtropical**
  - Sweet Basil

• **Tropical**
  - Chinese Chives
Edible Native Plants in Southcentral Florida

- Elderberry
- Red Mulberry
- American Persimmon
- Plum Flatwoods
Food Crop Variety Information

- EDIS Publications (http://edis.ifas.ufl.edu/)
- UF/IFAS Research & Education Centers - Food Crop Trials Reports & Publications
- E.C.H.O., North Ft. Myers, FL (http://www.echonet.org/)

[Images of various vegetables and watermelons]
Food Crop Variety Information

• Seed Company Examples
  – SE USA Region
    • E.O.N.S. (http://www.eonseed.com/)
    • FL Tomato Growers Supply Company (http://www.tomatogrowers.com/)
    • Southern Exposure See Exchange (http://www.southernexposure.com/index.html)
    • E.C.H.O. (http://www.echonet.org/)
  – USA Region
    • Seed Savers Exchange (http://www.seedsavers.org/)
    • Johnny’s Selected Seeds (http://www.johnnyseeds.com/default.aspx)
    • Seeds of Change (http://www.seedsofchange.com/default.aspx)
"If fresh food is necessary to health in man and beast, then that food must be provided not only from our own soil but as near as possible to the sources of consumption."

-Lady Eve Balfour
Importance and Value of Soil Throughout History and Culture

• “Soil Is The Mother Of All Things”
  Chinese proverb

• “Mother Earth” . . . similar expressions in many cultures
  Bierman, OSU; http://www.ag.ohio-state.edu/~prec/soil/slides/

• “Feed the soil, not the plants”
  organic farming adage

What Is Soil?

Key=soil can be managed as an “ecosystem”

Kourik, 1986, Designing & maintaining edible landscape naturally.
Muck: Old lake Bottom, Everglades; organic layer over mineral

Coastal Plain: N. Fla. & Panhandle: very clayey, deep profile
Typical Florida Soils

Pine Flatwoods: Southcentral & SW FL.; shallow, with distinct horizons of different content, shallow hardpan at water table.

Central Ridge: also in dunes; deep coarse sands, two horizons (A & C).
What Is Soil?

There are many soil science disciplines to answer this question

- Physics
- Chemistry
- Hydrology
- Biology
- Classification
- Land Use
- Ecology
2 MAJOR PERSPECTIVES

- **Pedological (holistic)** - a product of nature based on
  - climate
  - living organisms
  - nature of parent material
  - topography of area
  - time

- **Edaphological (reductionistic)** – a habitat or support for plants (e.g., in food/fiber production & landscapes)

What is Soil?

- A soil is an ecosystem and the product of the functional interactions of living and non-living components.
What is Soil?

• A Proportional Mixture of Components

• Solids 50% (v)  • Pore Space 50% (v)
  - minerals  
  - organic matter
  
  - air
  - water

Soil Mineral Components

- **Sand**: large particles, 0.05-2.0 mm in diameter.

- **Silt**: medium particles, 0.002-0.05 mm. Settles within 48 hours.

- **Clay**: extremely small particles, less than 0.002 mm.
• Mineral composition determines Soil Texture Class

• Florida soils are typically in different sand texture classes
Soil Texture and Water Holding Capacity

- SAND
- CLAY
- LOAM
Macronutrients:
(needed in large amounts)
- Nitrogen (N)
- Phosphorus (P)
- Potassium (K)
- Calcium (Ca)
- Magnesium (Mg)
- Sulfur (S)

Micronutrients:
(needed in small amounts)
- Chlorine (Cl)
- Cobalt (Co)
- Copper (Cu)
- Iron (Fe)
- Manganese (Mn)
- Molybdenum (Mo)
- Nickel (Ni)
- Zinc (Zn)

Soils and Plant Nutrition

Nutrients provided by the soil ecosystem include:
Soil Chemistry & Plant Nutrition

Potassium (K) Example

Soil solution source of nutrients for crop uptake

Cation exchange capacity of soil minerals = nutrient source for soil solution
Soil Food Web Impact

Root tip & OM contact →

Rhizosphere OM decomposition →

Rhizosphere & protozoa & predaceous nematodes →

Protozoa & nematode → N wastes →

Root uptake of N wastes →

OM Root Tip

Rhizosphere microbes

Food web
Soil Profile

- Arrangements of layers or “horizons” of soils with distinct characteristics.
- Product of living & non-living factors
- Indicator of soil types, landscapes & ecosystems
Soil Pore Sizes

Pore size & soil texture:
- Sand – macropore
- Loam – mesopore
- Clay - micropore

www.homepage.montana.edu/~ueswl/307%2008A.ppt
Soil compaction occurs when soil particles are pressed together, reducing pore space between them.
Excessive soil compaction impedes root growth and therefore limits the amount of soil explored by roots.

This, in turn, can decrease the plant's ability to take up nutrients and water.

In dry years, soil compaction can lead to stunted, drought stressed plants due to decreased root growth.
Study was conducted by Sarasota Bay NEP in 2007-08

Demonstrated increased soil density and decreased porosity and plant growth, as well as increase stormwater runoff

Compaction study results
- Higher in all homesites compared to undisturbed sites
- Generally highest in homesites less than 15 years old when compared to homesites greater than 15 years old
Figure 5.2. Trophic relationships among different groups of soil organisms are controlled by accessibility to their resources. This illustration represents approximately 1 cm$^2$ of a highly structured microzone in the surface horizon of a grassland soil. Courtesy of S. Rose and T. Elliott, personal communication.)
Agroecosystem Concept

- An approach that looks at your vegetable garden as a functional whole of interacting living and non living components.
- Analogy to the human body and its interacting levels of molecules, cells, tissues, organs, and systems.
- Properties include:
  - Structural & functional levels
  - Hierarchical and temporal scales
  - Emergent properties - i.e., “whole is more than sum of parts”

Soil Ecosystem ‘Emergent’ Property Examples

• Aggregation
• Soil profile development
• Nutrient cycling
• Biotic mutualisms
• Organic matter
• Soil ‘quality’ and ‘health’

• Soil ecosystems have functional properties & subsystems (e.g., nutrient cycling, etc) from biodiversity.
Garden Goal: Soil Quality & Health

Soil Fertility

Physical Properties

Biological Activity

“The ability of soil to function; to supply plants with adequate nutrients, have good drainage and aeration, promote root growth and biological activity.”
Resources

• Ayen, E. 2006. Incredible Edible Native Plants of Central Florida. UF/IFAS Okeechobee Co. Extension

• Crane, J.H., C. F. Balerdi and M. S. Orfanedes. 2010. Tropical and Subtropical Fruit Crops for the Home Landscape: Alternatives to Citrus. EDIS Publication #HS 812


Resources

• Stevens, J.M. 2009. Organic Vegetable Gardening. UF/IFAS EDIS Publication #CIR375 – see http://edis.ifas.ufl.edu/vh019

• Stephens, J.M. et.al. 2010. Florida Vegetable Gardening Guide. UF/IFAS EDIS Publication #SP103 - see http://edis.ifas.ufl.edu/vh021


• Worden, E. and S.P.Brown. Edible Landscaping. UF/IFAS EDIS Publication #ENH971 - see http://edis.ifas.ufl.edu/ep146