Sustainable Food Gardening

Dr. Laura A. Sanagorski  
Environmental Horticulture Extension Faculty

UF / IFAS  
Palm Beach County Cooperative Extension  
lsanagorski@pbcgov.org  
561.233.1748

Florida-Friendly Landscaping™ Program

Florida-Friendly™ Principles

1. Right Plant, Right Place  
2. Water Efficiently  
3. Fertilize Appropriately  
4. Mulch  
5. Attract Wildlife  
6. Manage Yard Pests Responsibly  
7. Recycle Yard Waste  
8. Reduce Stormwater Runoff  
9. Protect the Waterfront
RUNOFF FROM THE LANDSCAPE → LAKE WORTH LAGOON WATERSHED
550 square miles
Three major canals
  Earman River (C-17)
  West Palm Beach (C-51)
  Boynton (C-16)

Planning - Right Plant, Right Place

Function  Soil  Water
Existing Plants and Structures  Maintenance
Personal Preferences  Light
Salt Tolerance  USDA Plant Hardiness Zone
Grouping and Matchmaking
Keys to Success in Sustainable Food Gardening

- Good Soil!
- Water (soil only) in the morning
- Select appropriate plants
- Attract beneficial insects
- Plan to accept some losses
- Diversify
- Have fun!!

Soil Preparation

- Till / Double Dig to Loosen Soil
  - Allow tender new roots to establish
  - Provide oxygen
  - Ensure water percolation
  - No till method
- Introduce organic matter
Soil types

• Commercial garden soil
• Amended existing soil (compost, wood shavings, manures)
• Homemade mixtures (Sand + perlite or vermiculite)

Container Options

• Raised beds – wood, brick, concrete
• Buckets
• Recycled finds

• 6” soil depth minimum
• Provide adequate drainage
Use of containers for urban vegetable gardening

Use of containers for urban vegetable gardening
Planting

- Direct sow leafy greens and root vegetables
- Soak seeds, especially for hard-to-germinate types
- Transplant fruit bearing vegetables
- Transplant any vegetable when time/space sharing requires
- Transplant also useful to get jump on season
Collard Green Seeds

Collard Greens, Planted from Seed, at 4 days
Staking

• Reasons to Stake
  – Support
  – Direct
  – Maximize space

• Plants to Stake
  – Tomatoes
  – Peppers
  – Eggplant
  – Beans
  – Cucumbers
  – Squash

Harvest

• Life stages: Sprout, Micro Green, Baby Green, Completion/Full Size
• When to harvest is based on personal tastes, however some things require full amount of time to acquire best flavor and sweetness.

  Early harvest:  Micro Green:
  – Tomatoes          - Amaryllidaceae
  – Leafy greens      - Chenopodiaceae
  – Onions            - Cruciferae
  – Radishes          - Umbelliferae
  – Carrots

• Remember to clean thoroughly
• Best to harvest in the morning?
• Harvest as needed for best flavor
Water

- Vegetables cannot tolerate standing water
- Water ROOT ZONE in the morning ½” – ¾”
- Feel moisture level not just surface, BEFORE watering
  - Observe plant’s posture and coloring
  - Yellow has multiple meanings

Soil Testing
pH

• Best pH for vegetables: between 5.8 and 6.3

• Only adjust if pH is:
  – Below 5.5 – dolomitic limestone may be used at 2-3 lbs. per 100 square feet
  – Above 7.0 – acidic organic matter may be used to temporarily lower pH

• Containerized soilless mixes – dolomitic limestone

Fertilizer

• Synthetic fertilizer may be needed if you are not adding lots of organic matter

• Soil test, especially to determine whether Phosphorus is needed

<table>
<thead>
<tr>
<th>Soil</th>
<th>Fertilizer Makeup</th>
<th>lb./100 sq. ft.</th>
<th>10 ft/row, banded oz.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand, rock, clay, marl</td>
<td>4-2-4 &lt;br&gt; 6-6-6 &lt;br&gt; 8-10-10 &lt;br&gt; 9-0-9</td>
<td>4 &lt;br&gt; 3 &lt;br&gt; 2 &lt;br&gt; 2</td>
<td>6 &lt;br&gt; 5 &lt;br&gt; 4 &lt;br&gt; 4</td>
</tr>
<tr>
<td>Organic muck, peat, amended</td>
<td>0-12-20</td>
<td>1-2</td>
<td>2</td>
</tr>
</tbody>
</table>
Composting

• Hot composting or worm composting
• Provides nutrients and organic matter to plants
• Improves your soil
• Recycles yard and food wastes naturally
• Reduces what goes into your garbage (20%)

Sustainable Pest Management

1. Observe the landscape
2. Identify insects correctly
3. Select the most sustainable control method
4. Prevent future problems
5. Use integrated methods and monitor
Identify Insects Correctly

- Spider Mites
- Mealybugs
- Scale
- Aphids
- Leaf Loopers
- Whiteflies
- Weevils
Sustainable Pest Management:
Biological Control

- Uses the insect’s natural enemies
- Predators & parasitoids
  - Beneficial nematodes
  - Beneficial Wasps
  - Ladybugs
  - Green Lacewings
  - Beneficial Mites
  - Predator Scents
Sustainable Pest Management:
Pesticides

Use the least toxic, most sustainable method first.
Sustainable Pest Management: Insecticides

- **Chemical**
- **Botanical**
  - Neem, Pyrethrum, Rotenone, Sesame, Sabadilla, Limenene & Linalool, Nicotine
- **Microbial**
  - Spinosid, Bt: *Bacillus thuringiensis*, Diatomaceous earth
- **Mineral**
  - Bordeaux Mixture, Sulfur, Lime Sulfur
- **Natural Solutions**
  - Horticultural Oils, Insecticidal Soap

![Image of insecticides]

![Image of less toxic pesticide options]
Scouting

• Daily visits to the garden are necessary
• Look for plant posture, signs of disease and insect
• Where are the insects eating?
  – Reproductively and new growth
  – Old and dying leaves
• “The best fertilizer for the garden is the gardener’s shadow”

Season

• South Florida commercial farm growing season is from Sept – May.
• South Florida has 365 growing days!
• Diversified crops including hot weather sub-tropical varieties can be grown throughout the year.
# Easy Vegetables for South Florida

## Fall, Winter, Spring

<table>
<thead>
<tr>
<th></th>
<th>Beans- (bush or pole)</th>
<th>Beets*</th>
<th>Broccoli</th>
<th>Cabbage*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrots</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cucumbers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kale</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chinese Cabbage</td>
<td>Chives</td>
<td>Collard Greens</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Eggplant</td>
<td>Escarole</td>
<td></td>
<td>Gourds</td>
</tr>
<tr>
<td></td>
<td>Leaf Lettuce</td>
<td>Melons</td>
<td>Mustard Greens</td>
<td></td>
</tr>
</tbody>
</table>

*Salt Tolerant

Adapted from the *Florida Vegetable Gardening Guide* and *Growing Vegetables in South Florida*
## Easy Vegetables for South Florida

### Fall, Winter, Spring

<table>
<thead>
<tr>
<th>Okra</th>
<th>Onions (bulbs)</th>
<th>Onions (green or spring)</th>
<th>Peas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peppers (bell)</td>
<td>Peppers (hot)</td>
<td>Radish</td>
<td>Spinach*</td>
</tr>
<tr>
<td>Squash*</td>
<td>Sweet potato (including boniato)</td>
<td>Tomato* (cherry, large, and plum) – VFN</td>
<td>Turnips</td>
</tr>
<tr>
<td>Watermelon</td>
<td>Herbs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Salt Tolerant**

Adapted from the *Florida Vegetable Gardening Guide and Growing Vegetables in South Florida*
Oregano and Thyme

Apple Mint
# Easy Vegetables for South Florida

<table>
<thead>
<tr>
<th>Summer</th>
<th>Bean (jack, lima, yard-long)</th>
<th>Calabaza</th>
<th>Cassava</th>
<th>Chayote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collard Greens</td>
<td>Eggplant</td>
<td>Ginger</td>
<td>Spinach (New Zealand or Malabar)</td>
<td></td>
</tr>
<tr>
<td>Okra</td>
<td>Peas (Southern, black-eyed)</td>
<td>Peppers (hot)</td>
<td>Pigeon Peas</td>
<td></td>
</tr>
<tr>
<td>Seminole Pumpkin</td>
<td>Sweet potato and boniato</td>
<td>Turnip Greens</td>
<td>Herbs (Rosemary &amp; Lemongrass)</td>
<td></td>
</tr>
</tbody>
</table>

*Salt Tolerant*  
Adapted from the *Florida Vegetable Gardening Guide and Growing Vegetables in South Florida*
Pigeon Pea Seed

Pigeon Pea Seedling

Pigeon Pea Fruit & Flower
Difficult Vegetables for South Florida

**Summer**

<table>
<thead>
<tr>
<th>Cucumbers</th>
<th>Melons</th>
<th>Peanuts</th>
<th>Squash</th>
</tr>
</thead>
</table>

**Fall, Winter, Spring**

<table>
<thead>
<tr>
<th>Brussels sprouts</th>
<th>Cauliflower</th>
<th>Celery</th>
<th>Corn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Garlic</td>
<td>Lettuce (head types)</td>
<td>Potato</td>
<td>Tomato (heirloom types)</td>
</tr>
</tbody>
</table>

* Salt Tolerant

Adapted from the *Florida Vegetable Gardening Guide* and *Growing Vegetables in South Florida*

Sunlight

- Vegetables that bear fruit require 8+ hours of sunlight
- Root vegetables requirements are less than fruit bearing
- Leafy vegetables can get by with even less, approx. 6 hours
- Avoid planting on north side of structure if possible
- Plant tallest plants on north side of other veggies
Keys to Success in Sustainable Vegetable Gardening

- Good Soil!
- Water (soil only) in the morning
- Select appropriate plants
- Attract beneficial insects
- Plan to accept some losses
- Diversify
- Have fun!!
# Tropical Fruit for the Home Landscape

<table>
<thead>
<tr>
<th>Species</th>
<th>Size</th>
<th>Space required</th>
<th>Cold Tolerance</th>
<th>Harvest Season</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avocado</td>
<td>Large</td>
<td>25 – 30 Feet</td>
<td>26 – 30 (°F)</td>
<td>Late June - March</td>
<td></td>
</tr>
<tr>
<td>Banana</td>
<td>Small</td>
<td>12 – 15 Feet</td>
<td>≤ / ≥ 28 (°F)</td>
<td>Year Round</td>
<td></td>
</tr>
<tr>
<td>Canistel</td>
<td>Large</td>
<td>23 – 30 Feet</td>
<td>26 – 32 (°F)</td>
<td>Nov. - March</td>
<td>Irregular harvest</td>
</tr>
<tr>
<td>Citrus</td>
<td>Small</td>
<td>12 – 15 Feet</td>
<td>Varies</td>
<td>Varies</td>
<td></td>
</tr>
<tr>
<td>Dragon Fruit</td>
<td>Small - Vine</td>
<td>5 – 10 Feet</td>
<td>≤ 32 (°F)</td>
<td>June – Nov.</td>
<td></td>
</tr>
</tbody>
</table>

Adapted from *Tropical and Subtropical Fruit for the Home Landscape: Alternatives to Citrus*
Ortanique Orange

Calamondin
<table>
<thead>
<tr>
<th>Species</th>
<th>Size</th>
<th>Space required</th>
<th>Cold Tolerance</th>
<th>Harvest Season</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jaboticaba</td>
<td>Medium</td>
<td>15 - 20 Feet</td>
<td>&lt; / = 29 (°F)</td>
<td>Year Round</td>
<td></td>
</tr>
<tr>
<td>Jackfruit</td>
<td>Large</td>
<td>23 – 30 Feet</td>
<td>&lt; / = 32 (°F)</td>
<td>Spring through fall</td>
<td>Some Year Round</td>
</tr>
<tr>
<td>Lychee</td>
<td>Large</td>
<td>23 – 30 Feet</td>
<td>28 – 32 (°F)</td>
<td>June, early July</td>
<td></td>
</tr>
<tr>
<td>Mamey Sapote</td>
<td>Large</td>
<td>23 – 30 Feet</td>
<td>28 – 32 (°F)</td>
<td>Jan. – Sept.</td>
<td>Some Year Round</td>
</tr>
<tr>
<td>Jaboticaba</td>
<td>Medium</td>
<td>15 – 20 Feet</td>
<td>&lt; / = 29 (°F)</td>
<td>Year Round</td>
<td></td>
</tr>
</tbody>
</table>

Adapted from *Tropical and Subtropical Fruit for the Home Landscape: Alternatives to Citrus*
# Tropical Fruit for the Home Landscape

<table>
<thead>
<tr>
<th>Species</th>
<th>Size</th>
<th>Space required</th>
<th>Cold Tolerance</th>
<th>Harvest Season</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Papaya</td>
<td>Small</td>
<td>6 – 15 Feet</td>
<td>&lt; / = 30 (°F)</td>
<td>Year Round</td>
<td></td>
</tr>
<tr>
<td>Star Apple</td>
<td>Large</td>
<td>23 – 30 Feet</td>
<td>29 – 31 (°F)</td>
<td>Feb. – June</td>
<td></td>
</tr>
<tr>
<td>Tamarind</td>
<td>Large</td>
<td>25 – 30 Feet</td>
<td>28 – 32 (°F)</td>
<td>April - June</td>
<td></td>
</tr>
</tbody>
</table>

Not recommended: Guava and Sapodillo

Adapted from *Tropical and Subtropical Fruit for the Home Landscape: Alternatives to Citrus*
Annona - Soursop

RESOURCES
Enfermedades Excesivas De Los Citricos (PP286)
Este documento es una hoja de datos pequeñas ilustradas para el diagnóstico de las enfermedades excesivas de los citricos. El conjunto de esta hoja de datos fue escrito por M. M. Deaney, J. O. Burner, R. M. Rogers, y T. M. Sporn, y publicado por el UF Department of Plant Pathology, August 2012. http://edis.ifas.ufl.edu/pp286

What is EDIS?
EDIS is the Electronic Data Information Source of UF/IFAS Extension, a collection of information on topics relevant to you. More...

Living with Diabetes (FS8776/FY334)
Diabetes is a disease that affects more than 26 million Americans. Although there is no cure for type 1 or type 2 diabetes, diabetes can be managed with the proper care. We can only treat the complications that come with diabetes. If you have diabetes, the best way to treat this is to learn about the disease and work with your doctor to develop a healthy living plan that is right for you. This 4-page fact sheet was written by Nancy J. Oal and Linda R. Stover, and published by the UF Department of Family Youth and Community Sciences in 2002. http://edis.ifas.ufl.edu/fs8776

Enfermedades fungícas foliares de los citricos para los patios y zonas residenciales (PP287)

Additional IFAS Sites
College of Agriculture

Mailing Address (please print)
Name ___________________________ Phone ___________________________
Address ___________________________ City ___________________________
FL ___________________________ Zip ___________________________
Date ___________________________ E-Mail ___________________________

In order to expedite reporting of results; please provide an e-mail address if possible.

NOTE: Consult an expert to determine if plant growth problems require soil testing.
9. Commercial producers should use the Producers Soil Test Information Sheet. GL-335.

Direct any questions regarding this test or the interpretation of the results to your county Extension Agent.
Resources

- UF / IFAS Palm Beach County Extension: pbcgov.com/coextension
- EDIS: edis.ifas.ufl.edu
- Florida Vegetable Gardening Guide: http://edis.ifas.ufl.edu/vh021
- Tropical and Subtropical Fruit Crops for the Home Landscape: Alternatives to Citrus: https://edis.ifas.ufl.edu/mg373
- Producing Garden Vegetables with Organic Soil Amendments: http://edis.ifas.ufl.edu/mg323
- Natural Products for Insect Pest Management: http://edis.ifas.ufl.edu/in197
- Tomatoes in the Florida Garden: http://edis.ifas.ufl.edu/vh028
- Minigardening (Growing Vegetables in Containers): http://edis.ifas.ufl.edu/vh032
Thank you!

Dr. Laura A. Sanagorski
Environmental Horticulture Extension Faculty

UF / IFAS
Palm Beach County Cooperative Extension
lsanagorski@pbcgov.org
561.233.1748