Hydroponics – Sustainable Agriculture for the 21st Century

Richard Tyson
University of Florida / Orange County Extension
WHERE DOES YOUR FOOD COME FROM?
LOCAL FOODS

- Food security
- Economic security
- Food safety
- Socially responsible
- Environmentally responsible
Hydroponics : Definition

- Growing plants without soil in a liquid or soilless media with a mineral nutrient solution
Hydroponics

- Greenhouse or outdoor systems
- Environmental and labor friendly
- Crop choices - environment and cost factors
- pH recommendation range from 5.5-6.5
- High tech and low tech systems
Variety of Hydroponic Systems Based on Nutrient Flow or Type of Media

- Flow Through Systems
- Re-circulating Systems
- Non-circulating Systems
- Water Only – NFT or Floating Raft
- Media Systems - Perlite, Rockwool, Pine bark, Coconut Coir
Growing Your Own Transplants
Rockwool vs Perlite vs Coconut Coir Media Systems
Nursery pots, Media mix raised beds, Upright plastic bags

- Potting mixtures of peat, perlite, vermiculite, compost, pine bark, or similar substrates...drip or overhead irrigated with no re-circulation.
Greenhouse Herbs

- Popularity increasing
- Possible organic certification
Basic Recirculating Systems
(Nutrient Flow Techniques)
FLOOD AND DRAIN TROUGH SYSTEMS
Vertical Systems
Floating Raft Hydroponic Systems
Florida Greenhouse Crop Square Footage for 1991 & 2001

![Bar chart showing crop footage by year and crop type for 1991 and 2001. Crops include cucumber, tomato, pepper, herbs, lettuce, and strawberry.](chart.png)
Postharvest Handling

- Tender leafy vegetables must be used immediately or refrigerated – herbs, lettuce, spinach, etc.

- Others must be used soon or refrigerated – cucumber, pepper, squash, broccoli, etc.

- Watermelons, butternut or acorn squash, pumpkins, and tomatoes, can be stored at room temperature but will last longer when cool...slows ripening
Small Farmer Tomato Packing
Marketing, Marketing, Marketing

- Don’t plant unless you know where you are going to sell it!
- The break even price - for tomatoes is $.50 / lb for field grown vs $1.00 / lb for hydroponic tomatoes.
- Target near retail pricing – on-farm, high end food outlets, farmers markets, etc.
Resources

- ATTRA - attra.ncat.org – Appropriate Technologies Transfer for Rural Areas
- www.cropking.com – Ohio
- Hydro-Gardens, Colorado
- Growers Supply, Lynnhaven Florida
- Small Farms Academy – Univ. of Florida
- Johnny’s Seeds, Maine