

# UF/IFAS Extension

## The Journey to Sustainability Begins with Education



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# **“What’s Happening Down On the Sustainable Farm?”**

## **“An Introduction to Sustainable Agriculture: Concepts and Opportunities**

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Agent**  
**UF/IFAS - Sarasota County Extension**

# Sustainable Agriculture Presentation Outline

- **USA Agriculture**
  - **Consumption & Production Statistics**
  - **Issues**
- **Sustainable Agriculture**
  - **Concepts**
  - **History**
  - **Models**
- **Community Opportunities**
- **Summary**

# USA Agriculture



- America's Food Supply
  - described as abundant, economical and safe
- America's farmers are the world's most productive. Today, each U.S. farmer produces food and fiber for 144 people.

Source: American Farm Bureau© Federation, <http://www.fb.org/>

# Average USA Family Annual Food Consumption

- **POULTRY**  
66.2 pounds
- **FATS & OILS**  
77 pounds
- **EGGS**  
251.1
- **FRESH VEGETABLES**  
196.6 pounds
- **RED MEATS**  
117.7 pounds



- **FLOUR & CEREAL PRODUCTS**  
195.7 pounds
- **RICE**  
20.2 pounds
- **FRESH FRUITS**  
125.8 pounds
- **BEVERAGE MILK**  
22 gallons
- **CHEESE**  
29.8 pounds

Source: American Farm Bureau© Federation  
<http://www.fb.org/>

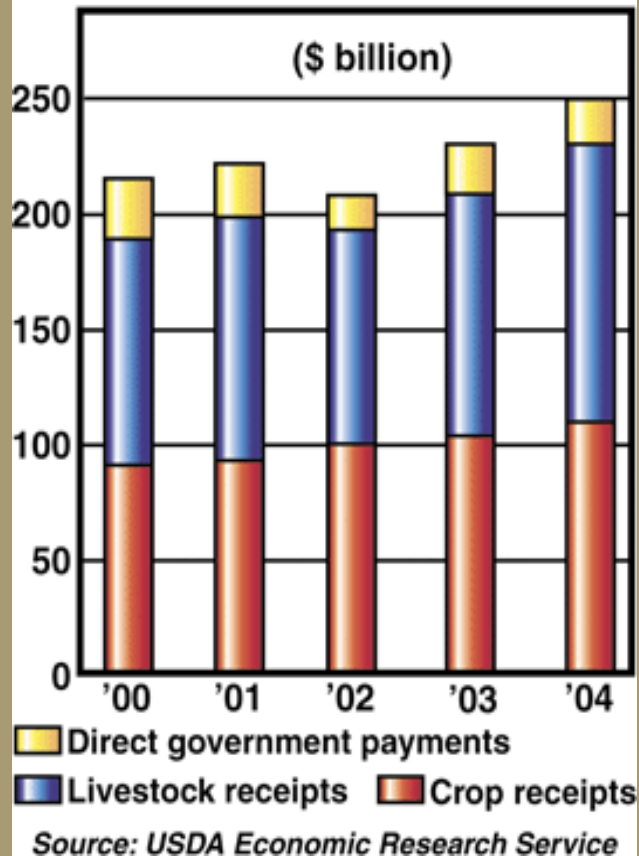
# Average US Household Spending (% of Expenditures)

|                                   |          |
|-----------------------------------|----------|
| • Average income (before taxes)   | \$82,195 |
| • Average annual expenditures     | \$62,503 |
| • Housing                         | 32%      |
| • Transportation                  | 18%      |
| • Food                            | 13%      |
| • Personal insurance and pensions | 12%      |
| • Other                           | 10%      |
| • Health care                     | 6%       |
| • Entertainment                   | 5%       |
| • Apparel and services            | 4%       |

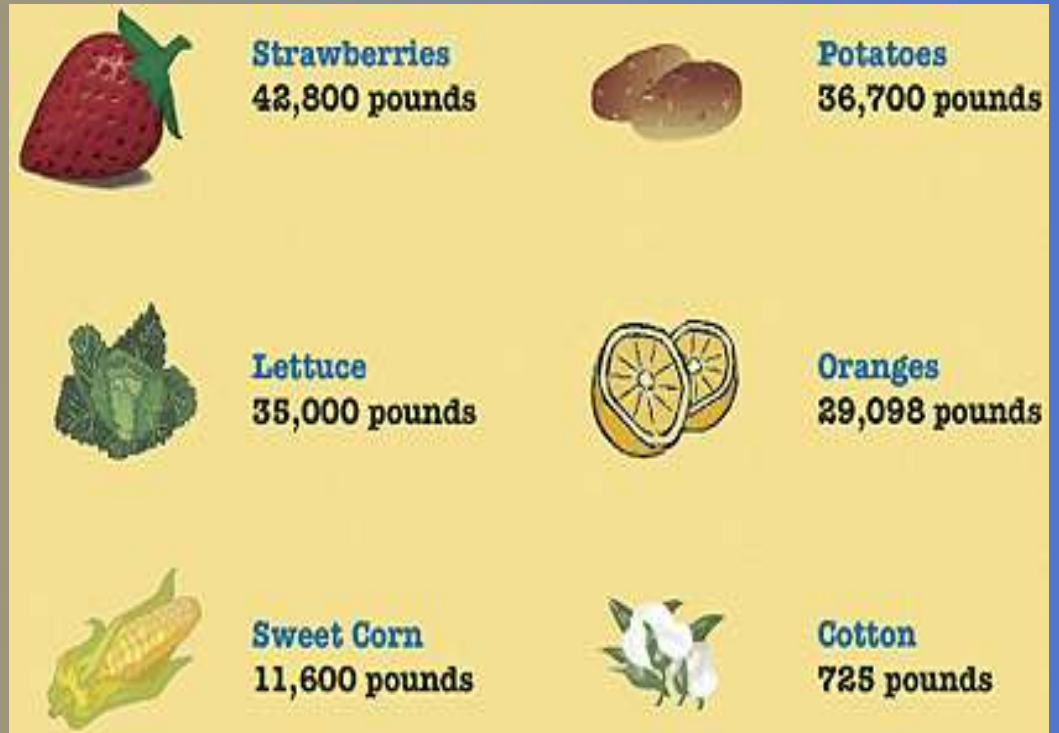
*Source: U.S. Department of Labor, Bureau of Labor Statistics'  
Consumer Expenditure Survey 2006*

# USA Agriculture Statistics

## REVENUE FROM FARM COMMODITIES



## Average Crop Yields per Acre\*



\*Dependent on local growing conditions, e.g., soil type & fertility, rainfall and sunshine

Source: American Farm Bureau© Federation, <http://www.fb.org/>

# 2002 Florida Agriculture Statistics



- **\$ 6.2 B – Market Value**



- **\$ 70.0 B – Total Output Value**



- **\$ 35.0 B – Value Added Impact**



- **726,000 Jobs; \$23 B Income Value**



- **\$2.3 B Taxes Value**



Source: 2002 Economic Impact of Ag in FL, IFAS

# Florida – USA Winter Food Basket



-  Beans
-  Blueberries
-  Broccoli
-  Cabbage
-  Celery
-  Citrus
-  Corn
-  Cotton
-  Ferns
-  Foliage plants
-  Grains
-  Grapes
-  Lettuce

-  Ornamentals
-  Palms
-  Peaches
-  Pecans
-  Peanuts
-  Peppers
-  Pine trees
-  Potatoes
-  Soybeans
-  Squash
-  Strawberries
-  Sugarcane
-  Sweet potatoes
-  Tobacco

-  Tomatoes
-  Tropical fruit
-  Tropical vegetables
-  Turfgrass
-  Watermelon

# Florida's Agriculture Sales National Rankings (2002)

- **Ranking 1<sup>st</sup>**
  - Citrus (oranges & grapefruit)
- **Ranking 2<sup>nd</sup>**
  - Vegetables, melons, potatoes & sweet potatoes
  - Fruits, tree nuts and berry
  - Nursery and sod
  - Other crops and hay
- **Ranking 4<sup>th</sup>**
  - Total value of crops
- **Ranking 9<sup>th</sup>**
  - Total value of agriculture products

# What's the Beef?

- **What are the issues with USA agriculture?**

# Example Today's News Headlines

- Rocketing food prices — some of which have more than doubled in two years — have sparked riots in numerous countries recently . . . .
- "This is a serious security issue," says Joachim von Braun, director-general of the International Food Policy Research Institute (IFPRI), in Washington. How long will the crisis last?

Source - Time Magazine, Feb 27, 2008

# Example Today's News Headlines

- The rapid rise in food prices has been a burden on the poor in developing countries, who spend roughly half of their household incomes on food.
- Policy Research Paper 4682 concludes that the most important factor was the large increase in biofuels production in the U.S. and the EU.

Source - World Bank, "A Note on Rising Food Prices", July, 2008

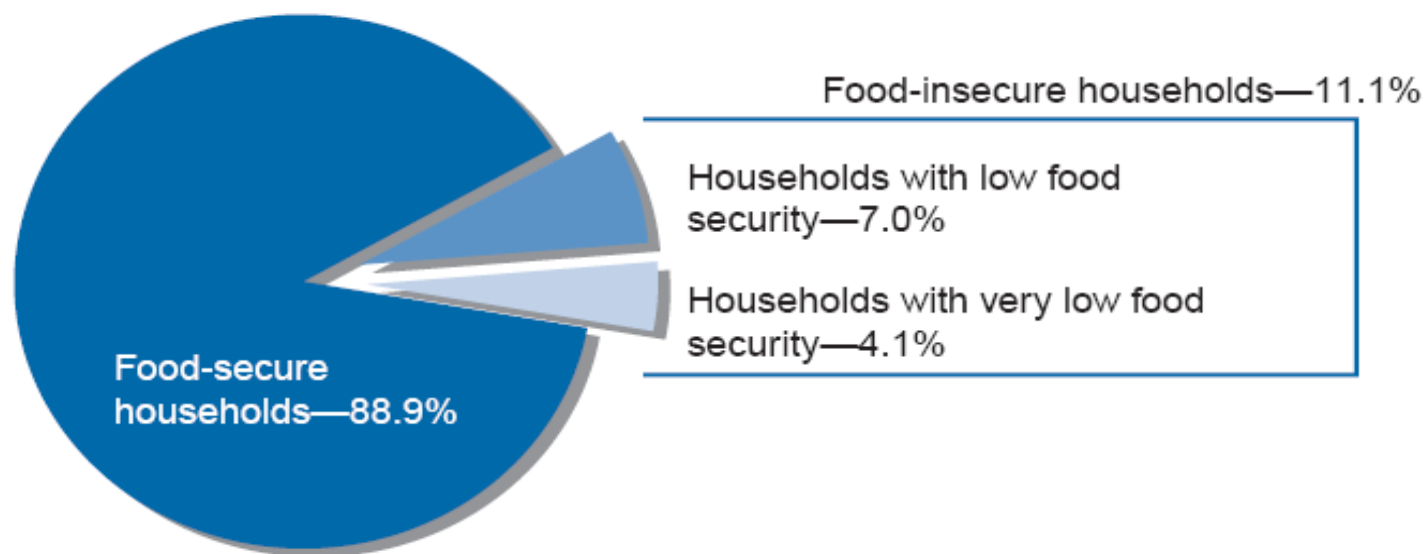
# Example Today's News Headlines

- Record gas and higher food prices drove inflation to the biggest annual jump since 1991 and fanned fears about growing pressures on consumers.
- There was pain at the grocery store for many Americans, as food prices jumped 0.8% compared to May, led by a 2.8% jump in fruits and vegetables, and a 1.6% rise in dairy and related products.
- The rise left grocery prices up 6.1% compared to a year ago, with cereals and bakery products posting one of the biggest year-over-year gains, up 10.4%.

Source - CNN Money.com, "Inflation: Price jump worst since '91 ", July 16, 2008

# US Food Security – 2007 Statistics

Figure 1  
U.S. households by food security status, 2007



Source: Calculated by ERS using data from December 2007 Current Population Survey Food Security Supplement.

This percentage equals approximately 33 million people!

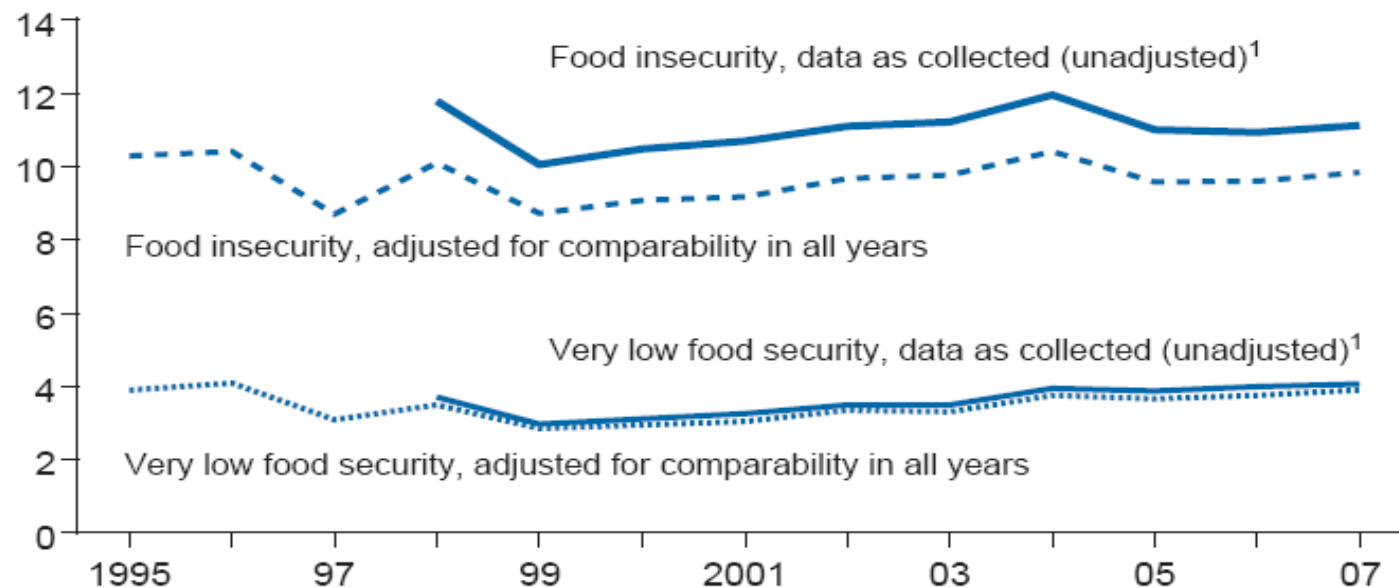
Source - [www.ers.usda.gov/publications/err66/err66.pdf](http://www.ers.usda.gov/publications/err66/err66.pdf)

# US Food Security – Trend Statistics

Figure 2

## Trends in the prevalence of food insecurity in U.S. households, 1995-2007

Percent of households



<sup>1</sup>Data as collected in 1995-97 are not directly comparable with data collected in 1998-2007.

Source: Calculated by ERS based on Current Population Survey Food Security Supplement data.

- This trend is not a recent phenomenon.
- Considering today's economic problems, how will it change?

Source - [www.ers.usda.gov/publications/err66/err66.pdf](http://www.ers.usda.gov/publications/err66/err66.pdf)

# Example Today's News Headlines

- **“Largest Recall of Ground Beef Is Ordered”**
  - Feb, 2008 at Westland/Hallmark Meat Company, based in Chino, CA
  - 2 year meat recall of 143 million pounds
  - some of which was used in school lunch programs
  - animal abuse scandal exposed by Humane Society of America
  - raises doubts of USDA's capacity to monitor

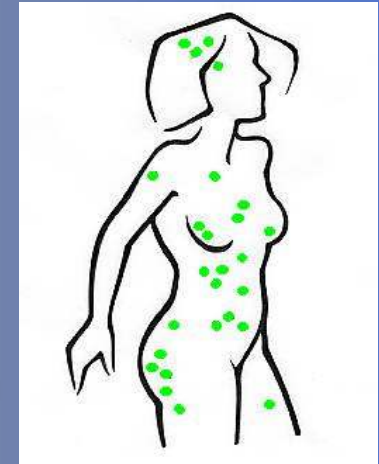
Source - <http://www.nytimes.com/2008/02/18/business/18recall.html>

# More Food Safety Issues

- Pesticide residues & contamination
  - Chemical body burden
  - Around 700 types of contaminants identified in fatty tissues of average person. Many are used in agriculture.
  - Pregnant & nursing women pass them to children.

Source: Chemical Body Burden.org  
<http://www.chemicalbodyburden.org/>

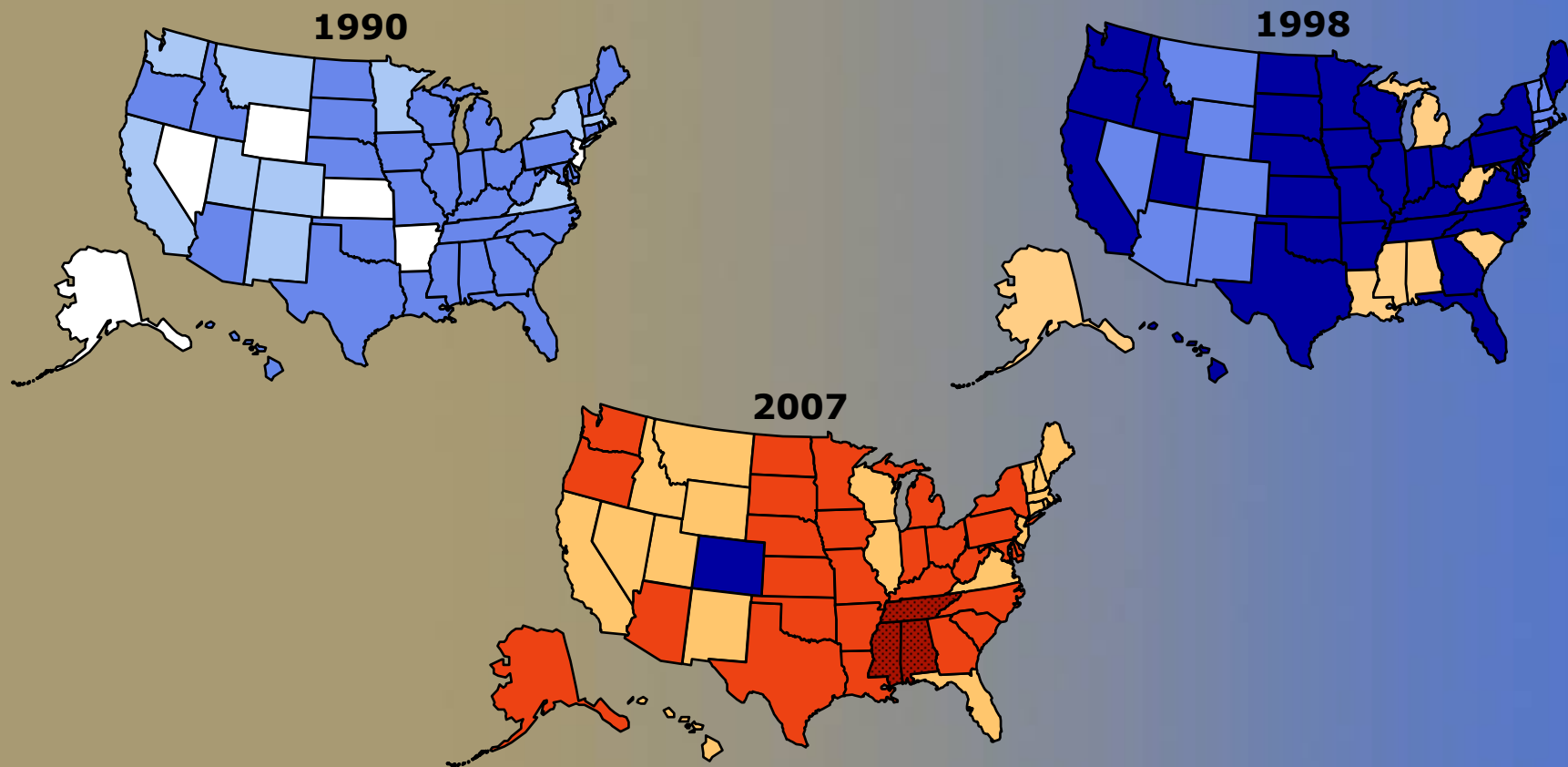
- Environmental pollution impacts
  - Farmer and family level
  - Farmworkers level
  - Biodiversity level
  - Ecosystems level



# Obesity Trends\* Among U.S. Adults

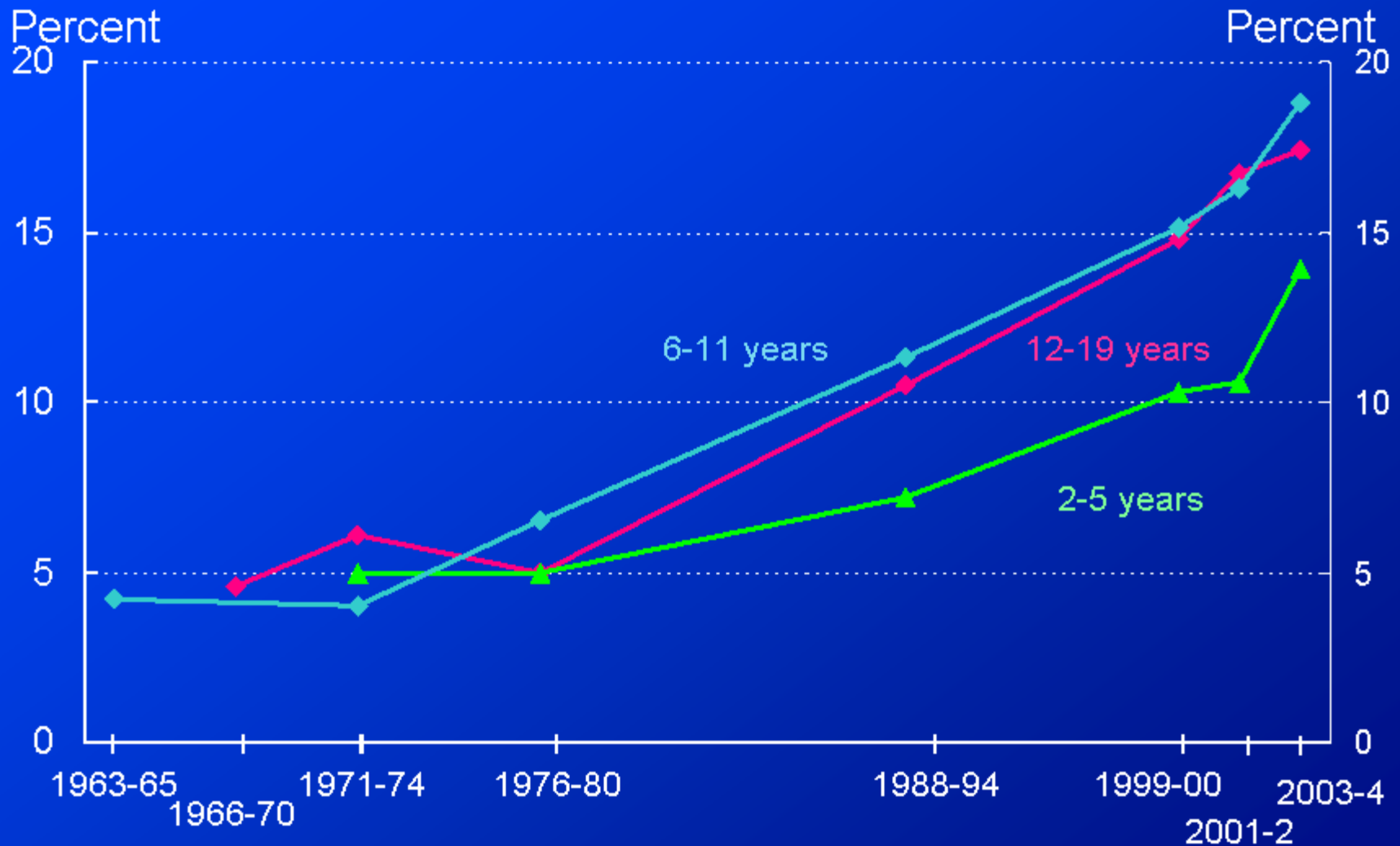
## BRFSS, 1990, 1998, 2007

(\*BMI  $\geq 30$ , or about 30 lbs. overweight for 5'4" person)



Source: <http://www.cdc.gov/nccdphp/dnpa/obesity/trend/maps/>

# Trends in Child and Adolescent Overweight

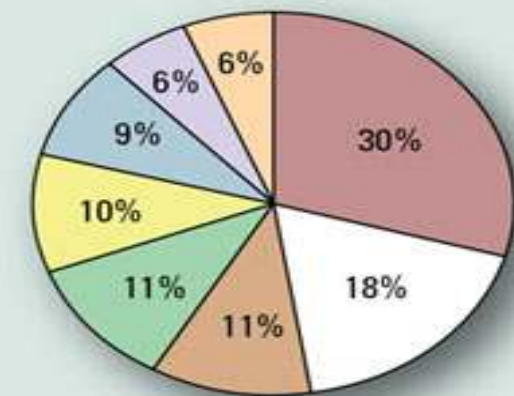


Note: Overweight is defined as BMI  $\geq$  gender- and weight-specific 95th percentile from the 2000 CDC Growth Charts.  
Source: National Health Examination Surveys II (ages 6-11) and III (ages 12-17), National Health and Nutrition Examination Surveys I, II, III and 1999-2004, NCHS, CDC.

# Statistics of Average U.S. Food Carbon Footprint Per Household

- **Amount**
  - 8.1 metric tons of greenhouse gases annually from food consumption choices
- **Sources**
  - Food industry
    - ✓ transportation - **11%**
    - ✓ conventional production & harvesting - **83%**
    - ✓ final delivery from producer to retail – **4%**
  - Food types are different – see chart

**Greenhouse Gases from Food**



Weber, C. and H. Matthews. 2008. Food-Miles and the Relative Climate Impacts of Food Choices in the United States *Environ. Sci. Technol.*, 42 (10): 3508–3513  
<http://pubs.acs.org/cgi-bin/abstract.cgi/esthag/2008/42/i10/abs/es702969f.html>

# Statistics of Average U.S. Food Carbon Footprint Per Household

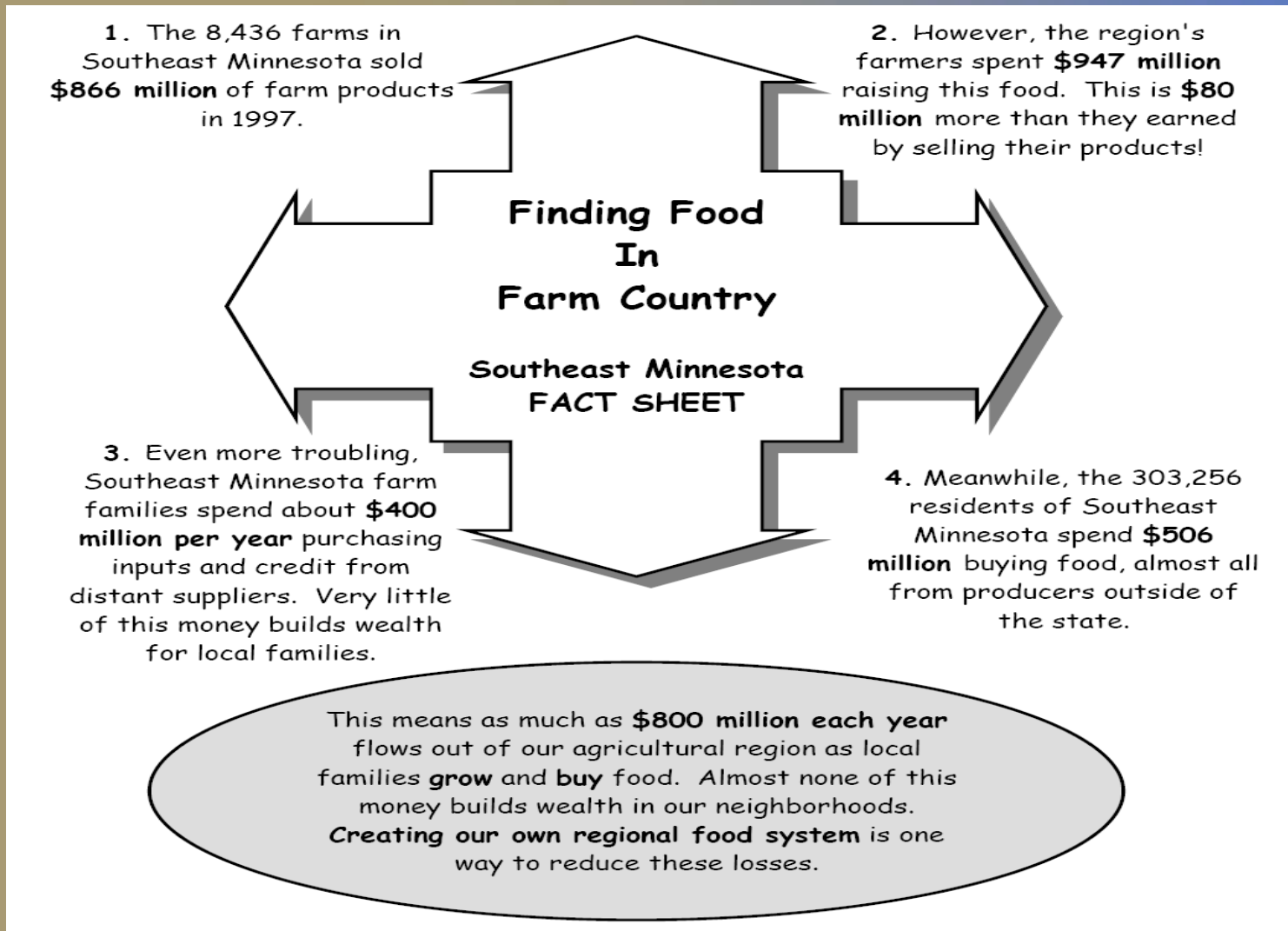
- What are the conclusions of the food carbon footprint facts from this report?
  - Are food miles the greatest factor?
    - No!
    - Purchasing local foods is only a partial solution.
  - What is the greatest factor?
    - How the food is produced!
- What's the best solution?
  - Purchase local foods that are produced using sustainable agriculture practices
  - Choose food categories with reduced total carbon footprints.

# 2004 Sarasota Co. Ecological Footprint: -Demand Versus Supply Analysis-

| <b>DEMAND – Footprint per Sarasotan</b>      | <b>Global acres /capita</b> | <b>SUPPLY – Biocapacity per Sarasotan</b> | <b>Global acres /capita</b> |
|--|-----------------------------|---|-----------------------------|
| Absorbing CO <sup>2</sup> from fuel use      | 13.2                        | Land reserved for CO <sup>2</sup>         | 0.2                         |
| Growing Crops                                | 3.8 *                       | Cropland                                  | 0.1                         |
| Grazing Animals                              | 0.5 *                       | Grazing Land                              | 0.2                         |
| Harvesting Timber                            | 3.0 *                       | Forest Area                               | 0.5                         |
| Accommodating Roads, Houses & Infrastructure | 1.1                         | Built-up Area                             | 1.1                         |
| Fisheries                                    | 0.6 *                       | Fishing Area                              | 0.1                         |
| <b>TOTAL – biocapacity used</b>              | <b>22.2</b>                 | <b>TOTAL – existing biocapacity</b>       | <b>2.1</b>                  |

- Demand is much greater than supply!
- 36% of demand is agriculture-based (\*)

# Example Foodshed Economic Analysis



Data compiled by K.Meter, Crossroads Resource Center, and J.Rosales, Institute for Social, Economic and Environmental Sustainability, University of Minnesota, 2001.

# 2002 Sarasota Agriculture Economic Value and Potential

|                                  | <b>\$ Millions</b> |
|----------------------------------|--------------------|
| <b>Consumed Food Total Value</b> | <b>815.8</b>       |
| <b>Categories:</b>               |                    |
| Home consumed food               | 458.7              |
| Away from home consumed food     | 351.5              |
| Out of town consumed food        | 5.6                |

|                                       |             |
|---------------------------------------|-------------|
| <b>Agriculture Total Market Value</b> | <b>17.8</b> |
| <b>Categories:</b>                    |             |
| Floriculture                          | 8.3         |
| Fruits                                | 4.9         |
| Cattle/calves                         | 3.6         |
| Misc small livestock                  | 1.0         |
| Vegetables                            | N/R         |

- Large potential for local food-based agriculture economic development

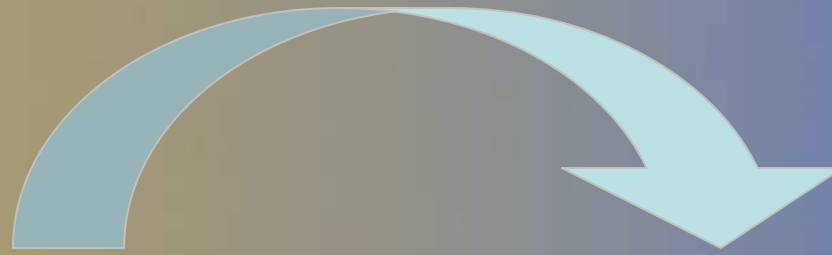
Data provided by Ken Meter of Crossroads Resource Center; & by FL Farm Bureau

# Current Agribusiness System

“Agricultural  
Supplies”



Food production  
(largely technological and  
removed from society)



Global Food Distribution  
(nonrenewable energy)

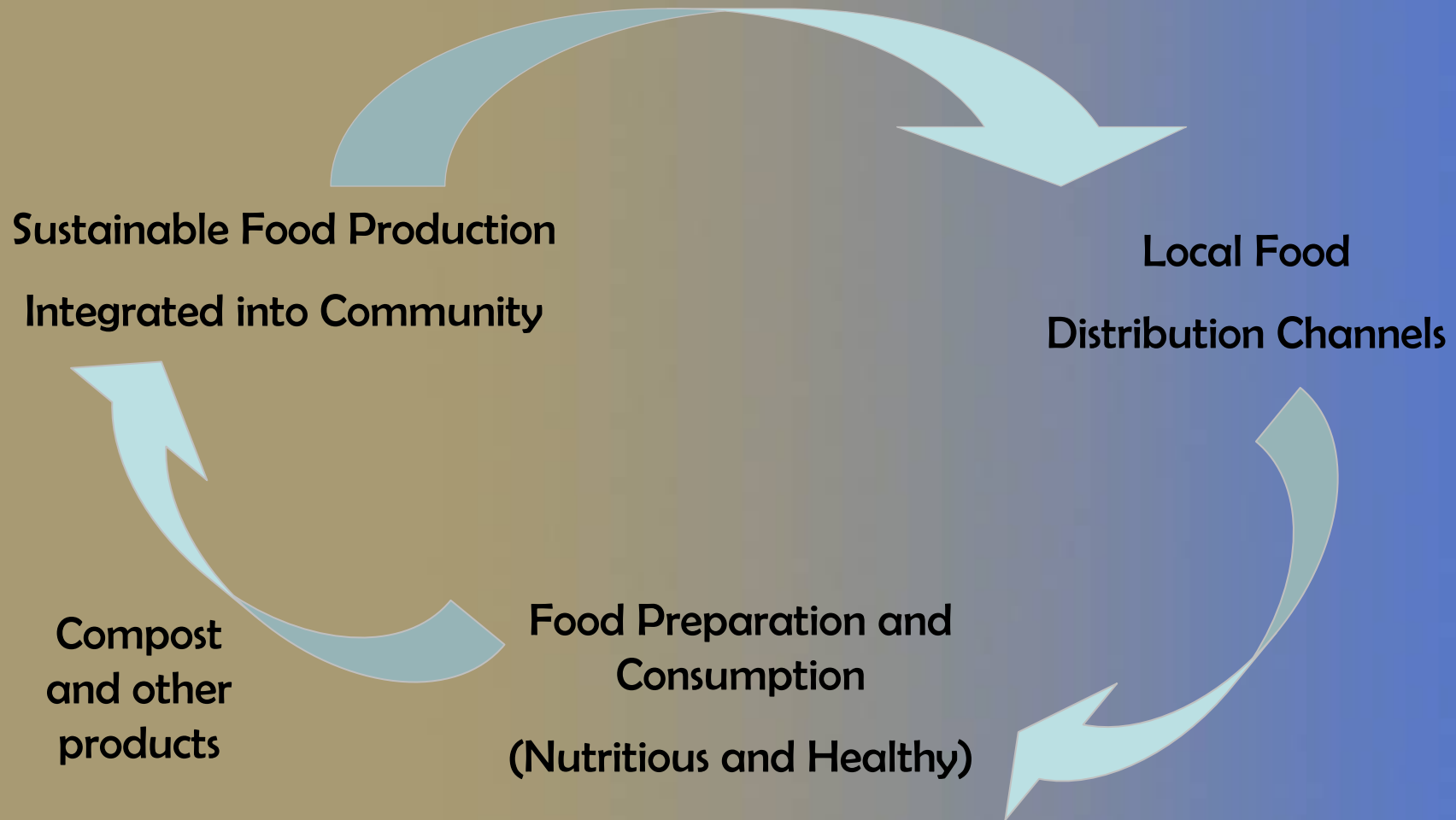
Food Preparation and  
Consumption  
(fast and cheap)



“waste  
products”



# Sustainable Agriculture System



- What is Sustainable Agriculture ?
- How is it different than conventional agriculture ?

# **Sustainable Agriculture**

## **1990 Farm Bill Definition**

- **Satisfy human food and fiber needs**
- **Enhance environmental quality and the natural resource base**
- **Efficient use of nonrenewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls**
- **Sustain the economic viability of farm operations**
- **Enhance the quality of life for farmers and society as a whole."**

# Sustainable Agriculture

- **Response to Conventional Agriculture Issues**
- **Response to Farmland Losses**
- **Response Initially from Small Farmers, Rural Communities, Environmentalists, and Agricultural Ecology Scientists.**

# Conventional Agriculture Issues

- **Industrial Approach**
- **Monoculture Specialization**
- **High External Inputs & Exports**
- **Environmental & Health Costs**
- **Market Centralization**
- **Loss of Family Farms and Rural Communities**
- **Corporate Farming**

# What is Sustainable Agriculture?

- **Recognition of the whole systems nature of food, feed, & fiber production**
- **Balancing concerns of**
  - environmental soundness
  - social equity
  - economic viability
- **Functional interactions between agroecological & social/economic systems**

# Sustainable Agriculture

## Example Economic Goals

- **Reduce Production Costs**
- **Diversify Farming Enterprises**
- **Strengthen Local Economy**

# Sustainable Agriculture

## Example Environmental Goals

- **Conserve Natural Resources**
- **Prevent Pollution**
- **Preserve Biodiversity**
- **Manage functional agricultural ecosystems**

# Sustainable Agriculture

## Example Social Goals

- **Preserve Family Farms and Agricultural Heritage**
- **Improve Farm Laborer Conditions**
- **Strengthen Community Food Systems**
- **Produce Wholesome Foods**

# Sustainable Agriculture

## Example Concepts

- **Stewardship of Both Natural and Human Resources**
- **Systems Perspective**
- **Interdisciplinary Efforts in Research and Education**
- **Making the Transition to Sustainable Agriculture Is a Process**
- **Achieving the Goals of Sustainable Agriculture Goal Are the Responsibility of All Participants in the Local Food System**

# Sustainable Agriculture

## Steps to Achievement of Goals

- **Develop Local Markets & Food Systems**
- **Protect Your Profits; Value-Added Products**
- **Build a Healthy Soil**
- **Protect Water Quality On and Beyond the Farm**
- **Manage Pest Ecologically; Use Minimal Pesticides**
- **Maximize Biodiversity on the Farm**
- **Protect Farmland**

# Sustainable Agriculture Example Models

- **Edible Landscaping & Gardening**
- **Community & School Gardens**
- **Small Rural & Urban Agriculture**
- **Community Supported Farms (CSA)**
- **Ecological-based and/or Organic Farms**

# Sustainable Agriculture

## Urban CSA Farm Example



Direct Marketing



School Fieldtrips



Urban Setting



Biodiversity



Diversified, Organic Production



<http://www.fairviewgardens.org/>

# Sustainable Agriculture Organic Farm Example



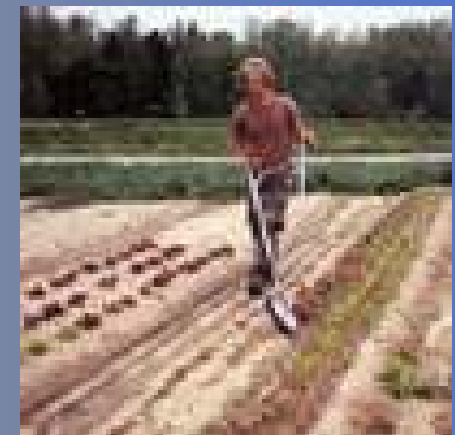
Direct Marketing



Appropriate  
Technologies



Multiple Cropping



<http://www.maplespringgardens.com/>

# Sustainable Agriculture Integrated Farm Example



Agro-ecotourism



Winery



Ecological Vineyard Management

<http://www.fiorelliwinery.com/>

# Video Time!

“Future of Food” (excerpts)

<http://www.thefutureoffood.com/>

(available from Sarasota County library system)



# Video Time!

# Sustainable Agriculture

- Where Are Science-Based Sources of Information & Resources?
  - **USDA**
  - **University of Florida/IFAS**
  - **Florida A&M University**
  - **Florida Atlantic University**

# USDA



- Sustainable Agriculture Research and Education Program (SARE)
  - Regional and State Offices
  - Sustainable Ag Network of Experts
  - Publications
  - Grants
  - National Continuing Education Program in Sustainable Agriculture
  - Website <http://www.sare.org/>

# USDA



National Sustainable Agriculture  
Information Service

- Alternative Technology Transfer to Rural Areas (ATTRA)
  - Publications
  - Free expert information service
  - Education
  - Website <http://www.attra.org/>

# Short History of USDA Programs in Sustainable Agriculture

- 1991 –USDA/SARE Program created (originally called the Agriculture In Concert with Environment (ACE) Program
- 1990 – Farm Bill
  - Sustainable agriculture definition formalized
  - USDA/National Organic Program (NOP) authorized
- 1989 – “Alternative Agriculture” Report Released, National Research Council, National Academy of Sciences

# Short History of USDA Programs in Sustainable Agriculture

- 1988 – USDA/Low-Input Sustainable Agriculture (LISA) Program initiated
- 1987 – USDA/National Sustainable Agriculture Information Service (ATTRA) begun
- 1985 – USDA/Alternative Farming Systems Information Center, National Agriculture Library, formed
- 1980 – USDA “Report and Recommendations on Organic Farming” released

# Sustainable Agriculture

- What's the relationship between sustainable and organic agriculture?
  - Sustainable agriculture guidelines are administered by USDA/SARE – i.e., a research & education focus
  - Organic agriculture guidelines are administered by USDA/Marketing Service – i.e., one market label for sustainable agriculture

# University of Florida



- Center for Organic Agriculture
  - Research, teaching, extension
- Horticultural Sciences Department
  - Organic Farming Degree Program
- Small Farm & Alternative Enterprise Program
- School of Natural Resources & Education
  - McArthur Agro-Ecology Program at Buck Island

# Example Additional FL Programs in Sustainable Agriculture

- Florida A&M University
  - Marketing & Small Farmer Outreach Program
    - Extension, research, teaching



- Florida Atlantic University
  - Agroecology Program
    - Multi-disciplinary & agency research projects



# How Does a Community Support Sustainable Agriculture?

- Food and Agriculture Policy Council Approach
- Community Food System Assessment Approach
- Public/Private Initiatives Approach

# Food and Agriculture Policy Council Approach

- Public/private collaboration of diverse food system stakeholders and state government agencies
- Democratic process of policy development and implementation
- Scale neutral, e.g., municipality to state level
- Initiated by government commission and/or grassroots groups

Community Food Security Coalition's North American Food Policy Council  
<http://www.foodsecurity.org/FPC/>

# Sarasota Ag Policy Council

- Formed in 2005 to represent the diversity of the community food system of Sarasota County
- Provided recommendations for new agriculture policies in Comprehensive Plan of Sarasota County (see <http://sarasota.extension.ufl.edu/AG/agpolicy.shtml>)
- Development of implementation recommendations is currently underway
  - Incentives need to be identified, such as market-driven, profitable approaches (e.g., food purchase policy; property tax rebates, etc.)
  - Using expanded public participation and outreach

# Sarasota Agriculture Policy Council Vision Statement

- Small and large-scale agriculture are important components of the distinctive character of Sarasota County's natural settings and heritage, and their roles are acknowledged in the Apoxsee.
- The residents of Sarasota County foresee a sustainable agriculture that is capable of meeting the needs of the current generation of farmers while leaving equal or better opportunities for their future generations and for new farmers.

# Sarasota Agriculture Policy Council Vision Statement

- Sustainable agriculture provides economically profitable, environmentally sound and socially responsible opportunities that will reduce the ecological footprint of Sarasota County.
- To this end, agricultural policies are to be enacted to support sustainable agriculture and community food system development, and for farmland protection.

# Community Food System Assessment Approach

## What's Cooking in Your Food System?

A GUIDE TO COMMUNITY FOOD ASSESSMENT

WRITTEN BY RAMI POTRUSUCHI, HUGH JOSEPH, HANNAH BURTON, AND ANDY FISHER

EDITED BY RAE SIEDENBERG AND RAMI POTRUSUCHI

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- Examines a broad range of food issues and links to community goals
- Designed to inform and build support for practical action
- Planned & systematic process
- It's an assets-based approach
- Focuses on a geographically defined place
- Involves collaboration of a diverse group of community members
- **One of new agriculture policies of Sarasota Co.**

Source: [www.foodsecurity.org/CFAGuide-whatscookin.pdf](http://www.foodsecurity.org/CFAGuide-whatscookin.pdf)

# Public Initiative Example

- **Geraldson Community Farm (CSA), Bradenton, FL**
  - Project of West Coast Florida RC&D
    - partnership with Manatee County
    - response to community assessment of local ag preservation and foods needs
  - Based on promoting
    - sustainable & organic agriculture
    - entrepreneurial local agriculture economic development
    - agriculture heritage preservation



<http://fwcrd.org/projects/geraldson.html>



# Private Initiative Example

- **Localecopia Project, Palm Beach County, FL**
  - Project of Breakers Hotel, West Palm Beach
    - corporate policy for local foods purchasing
    - committee structure, including local farmers
    - UF/IFAS Extension partnership
  - Based on promoting
    - local agriculture economic development
    - sustainability and conservation
    - renewable energy applications



<http://www.localecopia.org/>

# Summary

- **Sustainable Agriculture**
  - Response to Agriculture Issues
  - Goals
    - Economic
    - Environmental
    - Social
- **Sustainable Agriculture Programs**
  - USDA/SARE and ATTRA
  - UF/IFAS
- **Community Opportunities**
  - Sarasota Ag Policy Council
  - Community Food System Assessment
  - Private/public initiatives