UF/IFAS Extension
The Journey to Sustainability Begins with Education

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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%

Average Crop Yields per Acre*

- Strawberries: 42,800 pounds
- Potatoes: 36,700 pounds
- Lettuce: 35,000 pounds
- Oranges: 29,098 pounds
- Sweet Corn: 11,600 pounds
- Cotton: 725 pounds

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

Source: American Farm Bureau© Federation,  [http://www.fb.org/](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
Florida’s Agriculture Sales
National Rankings (2002)

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

What’s the Beef?

• What are the issues with USA agriculture?
• 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
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.

• 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%.
US Food Security – 2007 Statistics

This percentage equals approximately 33 million people!


US Food Security – Trend Statistics

Figure 2
Percent of households


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

“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

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
(*BMI ≥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 >= gender- and weight-specific 85th percentile from the 2000 CDC Growth Charts. Source: National Health Examination Surveys II (ages 8-11) and III (ages 12-17), National Health and Nutrition Examination Surveys I, II, III and 1999-2004, NCHS, CDC.
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

http://pubs.acs.org/cgi-bin/abstract.cgi/esthag/2008/42/i10/abs/es702969f.html
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

<table>
<thead>
<tr>
<th>DEMAND – Footprint per Sarasoton</th>
<th>Global acres/capita</th>
<th>SUPPLY – Biocapacity per Sarasoton</th>
<th>Global acres/capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absorbing CO² from fuel use</td>
<td>13.2</td>
<td>Land reserved for CO²</td>
<td>0.2</td>
</tr>
<tr>
<td>Growing Crops</td>
<td>3.8 *</td>
<td>Cropland</td>
<td>0.1</td>
</tr>
<tr>
<td>Grazing Animals</td>
<td>0.5 *</td>
<td>Grazing Land</td>
<td>0.2</td>
</tr>
<tr>
<td>Harvesting Timber</td>
<td>3.0 *</td>
<td>Forest Area</td>
<td>0.5</td>
</tr>
<tr>
<td>Accommodating Roads, Houses &amp; Infrastructure</td>
<td>1.1</td>
<td>Built-up Area</td>
<td>1.1</td>
</tr>
<tr>
<td>Fisheries</td>
<td>0.6 *</td>
<td>Fishing Area</td>
<td>0.1</td>
</tr>
<tr>
<td>TOTAL – biocapacity used</td>
<td>22.2</td>
<td>TOTAL – existing biocapacity</td>
<td>2.1</td>
</tr>
</tbody>
</table>

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

2. However, the region’s farmers spent $947 million raising this food. This is $80 million more than they earned by selling their products!

3. Even more troubling, Southeast Minnesota farm families spend about $400 million per year purchasing inputs and credit from distant suppliers. Very little of this money builds wealth for local families.

4. Meanwhile, the 303,256 residents of Southeast Minnesota spend $506 million buying food, almost all from producers outside of the state.

This means as much as $800 million each year flows out of our agricultural region as local families grow and buy food. Almost none of this money builds wealth in our neighborhoods. Creating our own regional food system is one way to reduce these losses.
### 2002 Sarasota Agriculture Economic Value and Potential

<table>
<thead>
<tr>
<th>Category</th>
<th>Value ($ Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Consumed Food Total Value</strong></td>
<td>815.8</td>
</tr>
<tr>
<td><strong>Categories:</strong></td>
<td></td>
</tr>
<tr>
<td>Home consumed food</td>
<td>458.7</td>
</tr>
<tr>
<td>Away from home consumed food</td>
<td>351.5</td>
</tr>
<tr>
<td>Out of town consumed food</td>
<td>5.6</td>
</tr>
<tr>
<td><strong>Agriculture Total Market Value</strong></td>
<td>17.8</td>
</tr>
<tr>
<td><strong>Categories:</strong></td>
<td></td>
</tr>
<tr>
<td>Floriculture</td>
<td>8.3</td>
</tr>
<tr>
<td>Fruits</td>
<td>4.9</td>
</tr>
<tr>
<td>Cattle/calves</td>
<td>3.6</td>
</tr>
<tr>
<td>Misc small livestock</td>
<td>1.0</td>
</tr>
<tr>
<td>Vegetables</td>
<td>N/R</td>
</tr>
</tbody>
</table>

- 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

Sustainable Food Production
Integrated into Community

Compost and other products

Local Food Distribution Channels

Food Preparation and Consumption
(Nutritious and Healthy)
• 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
Organic Farm Example

Direct Marketing

Multiple Cropping

http://www.maplespringgardens.com/

Appropriate Technologies
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)
• 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/
• 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
• 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

- 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
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://fwcrcd.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