

# UF/IFAS Extension

## The Journey to Sustainability Begins with Education



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# Organic Vegetable Gardening Introduction

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# Introduction

- Objectives of this presentation
  - Review the goals of this series of presentations
  - Present the syllabus of this series of presentations
  - Introduce the concept of the organic vegetable garden as an agroecosystem

# First, What Is Organic Gardening?

- “The science and art of gardening by incorporating the entire landscape design and environment to improve and maximize the garden soil's health, structure, texture, as well as maximize the production and health of developing plants without using synthetic commercial fertilizers, pesticides, or fungicides.”

David Knauft, Horticulture Department, Univ. of GA

[www.caes.uga.edu/extension/clarke/anr/documents/Organicgardening.pdf](http://www.caes.uga.edu/extension/clarke/anr/documents/Organicgardening.pdf)

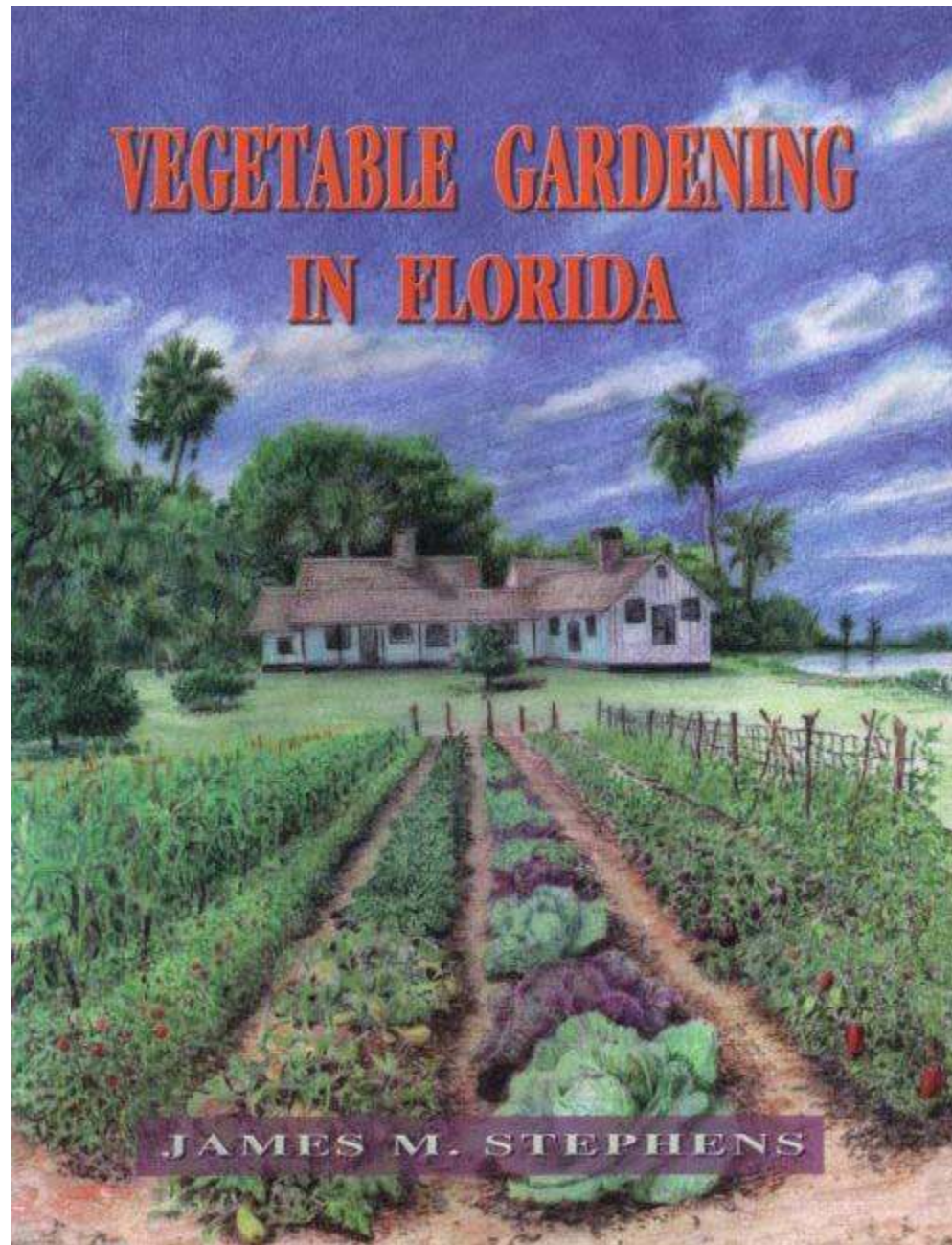
# What Is Different About Organic Gardening?

- Organic gardening differs from "conventional" gardening mainly in the areas of fertilization and pest control. The organic gardener prefers to use natural and organic materials and methods, and avoids using practices and synthetic chemicals that may be detrimental to his health or environment.

James Stephens, Horticultural Sciences Department, IFAS, Univ. of FL  
<http://edis.ifas.ufl.edu/VH019>

# Goals of Presentation Series

- Promote the practice of the guidelines in the reference “Vegetable Gardening in Florida” by James M. Stephens. 1999. Univ. of FL, IFAS
- Provide background information on the concepts, principles, and science from agroecology of some of the practices in organic vegetable gardening
- Provide additional resources available for successful organic vegetable gardening



- Available from UF/IFAS bookstore, see <http://ifasbooks.ufl.edu/merchant2/>
- Also available from your favorite book vender.

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# Syllabus of Presentation Series

- Introduction to Organic Vegetable Gardening
- Soil Management
- Crop Management
- Pest Management
- Water Management
- Cover Crop & Compost Management

# Selected Works in History of Organic Farming & Gardening

- 1990 – N. Lampkin, *Organic Farming*
- 1990 – S. Gliessman, *Agroecology: Researching the Ecological Basis for Sustainable Agriculture*
- 1984 – R. Lowrance et.al., *Agricultural Ecosystems: Unifying Concepts*
- 1983 – M. Altieri, “Agroecology”
- 1977 – O.L. Loucks, “Emergence of Research on Agroecosystems”
- 1962 – Rachel Carson, “Silent Spring”
- 1956 – G. Azzi, “Agricultural Ecology”
- 1945 - J.I Rodale, “Pay Dirt”
- 1943 - Sir Albert Howard, “An Agriculture Testament”

– Gliessman, S. 1998. *Agroecology, Ecological Processes in Sustainable Agriculture*.  
– USDA Alternative Farming Systems Information Center  
<http://www.nal.usda.gov/afsic/pubs/tracing/tracing.shtml>

# Selected Works in History of Organic Farming & Gardening

- 1943 – Lady Eve Balfour, “The Living Soil”
- 1940 - Lord Northbourne, “*Look to the Land*”
- 1939 – H. Hanson, “Ecology in Agriculture”
- 1938-70 - William Albrecht, The Albrecht Papers
- 1928 – K. Klages, “Crop ecology and ecological crop geography”
- 1924 - Rudolf Steiner, “*Agriculture Lectures*”
- 1881 - Charles Darwin “The Formation of Vegetable Mould, Through the Action of Worms, With Observations of Their Habits”
- 1855 – D.J. Browne, “The Field Book of Manures or the American Mulch Book”

- Gliessman, S. 1998. Agroecology, Ecological Processes in Sustainable Agriculture.
- USDA Alternative Farming Systems Information Center  
<http://www.nal.usda.gov/afsic/pubs/tracing/tracing.shtml>

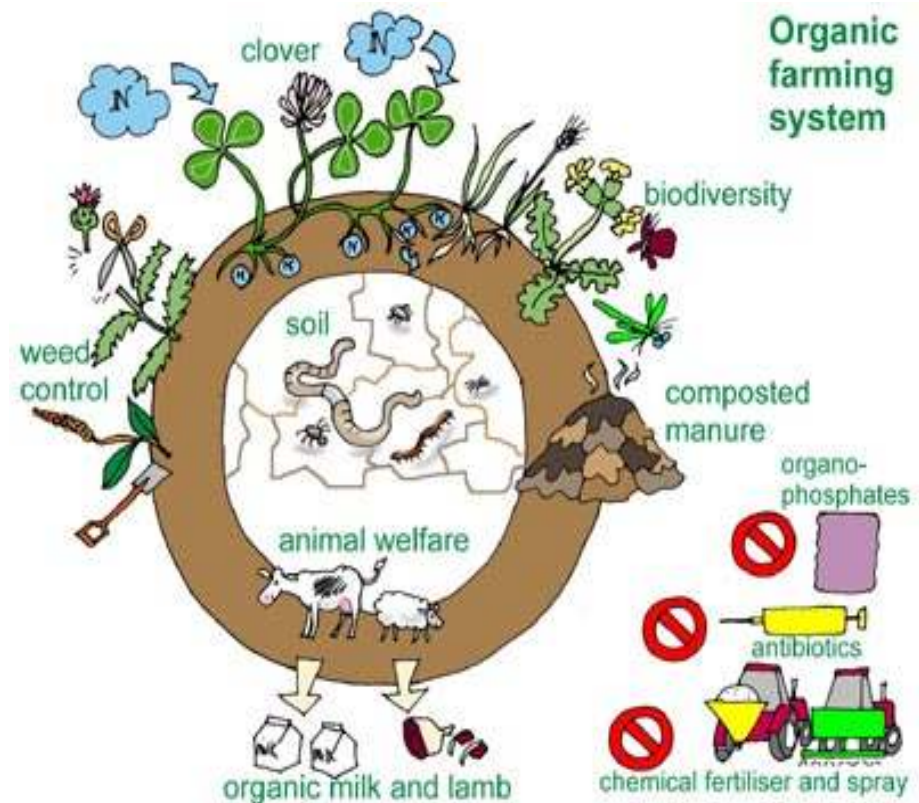
# U. S. Organic Crop Production



USDA/National Organic Program (USDA/NOP) was established as part of the Organic Foods Production Act (1990 Farm Bill).

# 1990 Farm Bill Definition

- **Organic agriculture is an ecological production management system**
- **that promotes and enhances biodiversity, biological cycles and soil biological activity.**

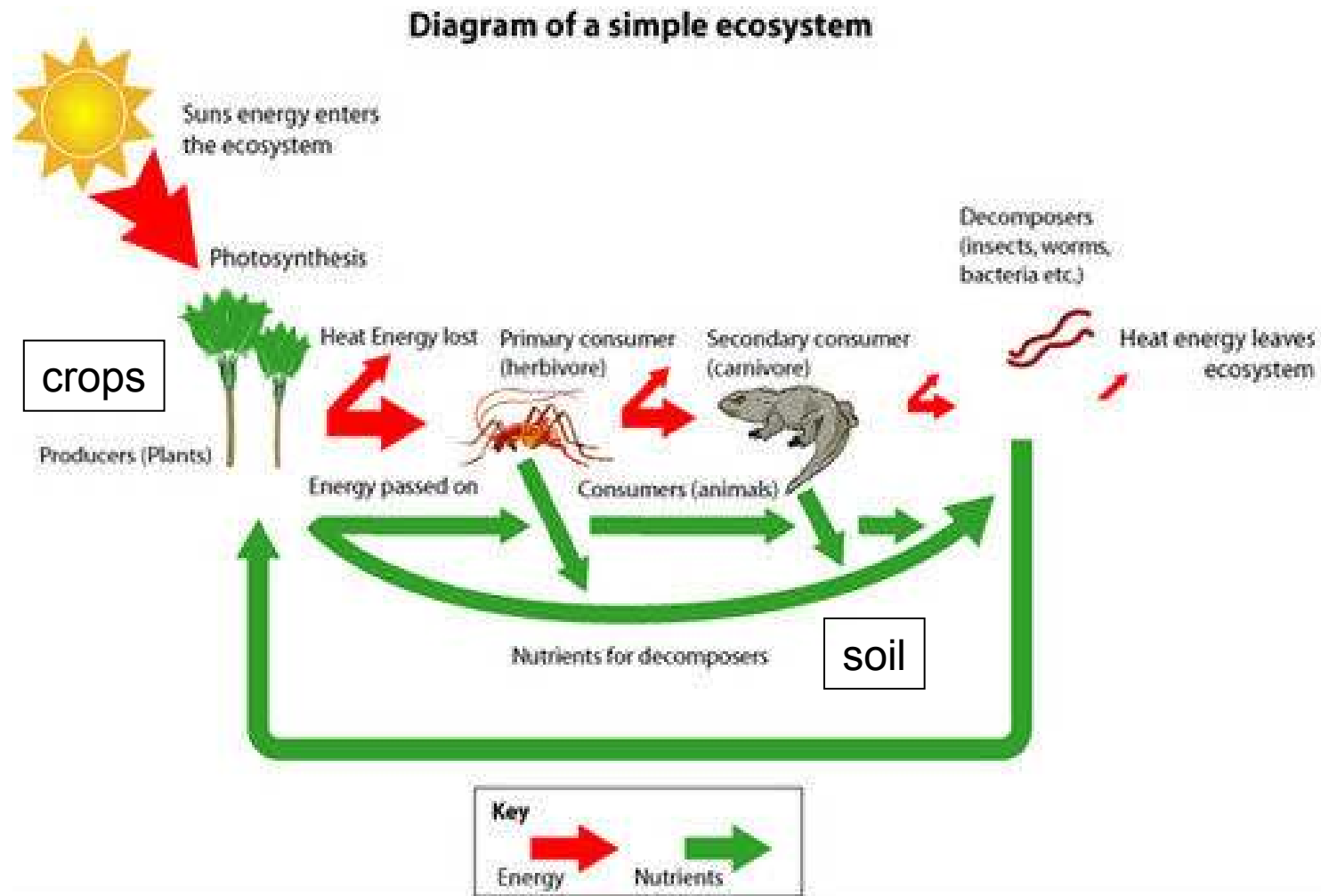


# 1990 Farm Bill Definition (cont.)

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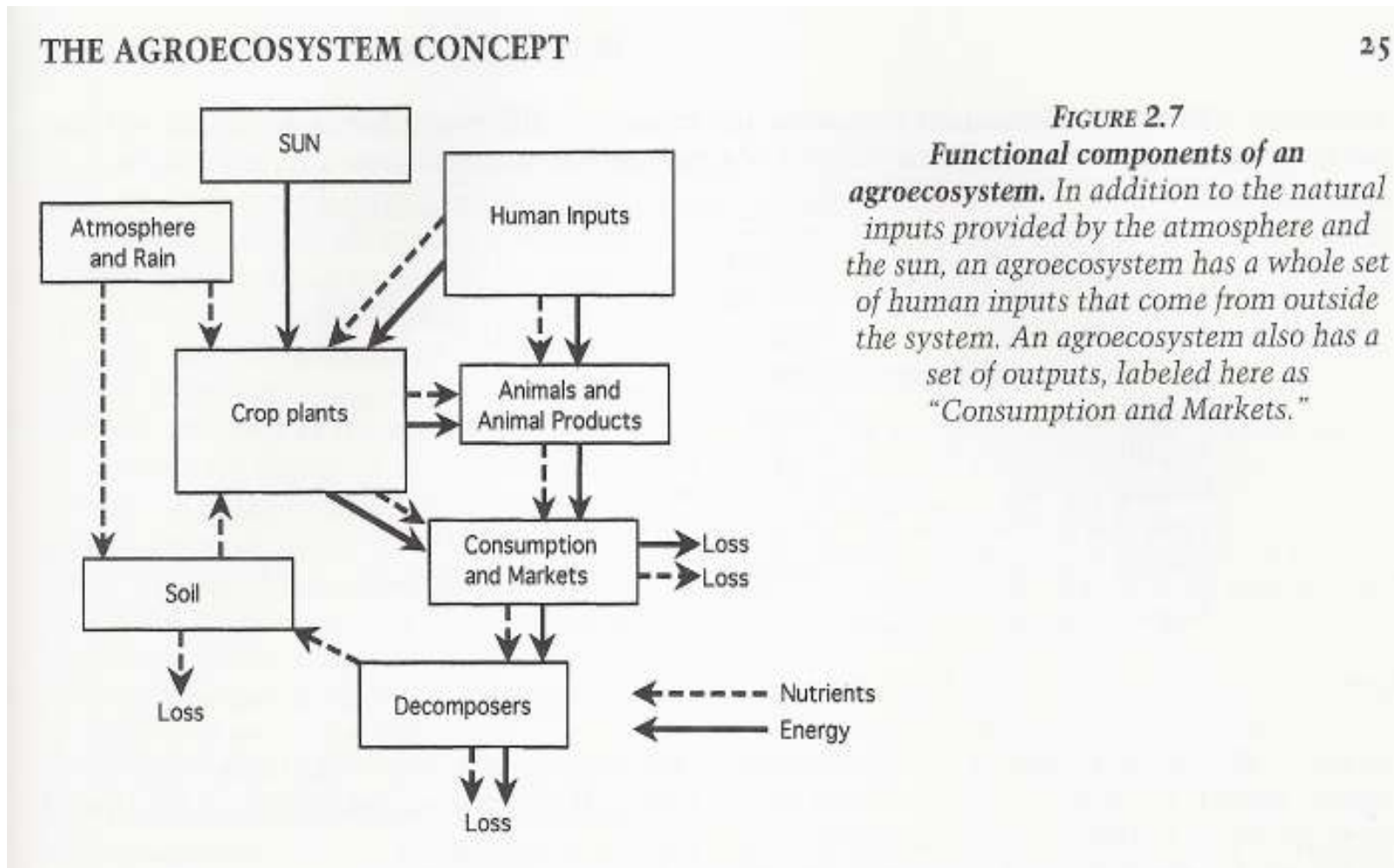
- **Organic agriculture is based on minimal use of off-farm inputs and on management practices that restore, maintain and enhance ecological harmony;**
- **and methods to minimize residues from outside pollution from air, soil and water.**

# Organic Vegetable Garden Ecology



- Our model is a natural ecosystem w/ functional emergent properties & subsystems (e.g., nutrient cycling, etc)

# Agroecosystem Concept



- **Successful organic vegetable gardening also benefits from an agroecosystem analysis**

# Agroecosystem Analysis

- An whole farm planning process based on the concept of the agroecosystem that can be applied to gardening
- Ecosystem definition
  - a functional system of complementary relations between living organisms and their environment,
  - delimited by arbitrarily chosen boundaries,
  - which in space and time appears to maintain a steady yet dynamic equilibrium.
- Agroecosystem definition
  - human manipulation and alteration of an ecosystem for the purpose of establishing agricultural production

Gliessman, S. 2004. Chapter 2, Agroecology and agroecosystems. *In* D. Rickerl and C. Francis, (ed.) *Agroecosystems Analysis*. American Society of Agronomy, Madison , WI

# What is Agroecosystem Analysis?

- 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

Gliessman, S. 1998, Agroecology: Ecological Processes in Sustainable Agriculture

# What is Agroecosystem Analysis?

- Analyze both the immediate and future impacts of agroecosystem design and management so that we can identify the indicators in each system on which to focus the search for alternatives or solutions to problems
- **Indicators of agroecosystem sustainability**
  - Energy flow
  - **Nutrient cycling**
  - Population regulation mechanisms
  - **Dynamic equilibrium**

Gliessman, S. 1998, Agroecology: Ecological Processes in Sustainable Agriculture

# Agroecosystem “Health”

- This concept is used to assess the sustainability of agroecosystems over time.
- It was developed to address the failures & side-effects of agroecosystems that have focused on the well-being of separate subsystems rather than on their aggregated whole.
- The concept is analogous to human health as an indicator of the functional integration of the complex of systems in a human body.

E.O. Nielsen, (ed). 1994. Agroecosystem Health. Univ. of Guelph

# Summary

- This series of presentations will provide background information of the concepts, principles and science from agroecology for some of the practices of organic vegetable gardening
- Goal is to provide an enhanced level of understanding and resources that will promote successful production and problem solving by organic vegetable gardeners