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For more information on Small Farms, visit our website at: http://smallfarms.ifas.ufl.edu/ or contact your local County Extension Agent.

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“The ultimate goal of farming is not the growing of crops, but the cultivation and perfection of human beings.”

— Masanobu Fukuoka, The One-Straw Revolution
Designing for Resilience
A Regenerative Approach to Productive Landscapes

Mario Yanez  www.earth-learning.org
Global Climate Variability

- Can’t ignore the increasing nature of climate variability: more, and more intense droughts and floods, temperature spikes, damaging storms, pests and disease outbreaks, etc.
Concepts

• **Resilience**: “The ability of people, communities, systems to maintain their core purpose and integrity amid unforeseen shocks and surprises.”
  
  - Zolli & Healy, Resilience: Why Things Bounce Back

• **Ecology**: The study of how everything is connected to everything else...

• **Permaculture**: We are Nature... Working!
Resilience in Nature

- Complexity, not linear, many relationships [ex. food webs]
- Diversity, many niches [ex. Everglades wading birds]
- Multi-functional, nothing exists unto itself [ex. tree]
- Decentralization & Redundancy, few vulnerabilities [ex. cells in a body]
- Constant feedback loops, adaptive [ex. body temperature]
- Self-organizing, part of an ongoing “living” process [ex. lawn→forest]
- Self-sustaining, recycles everything [ex. soil in a forest]
Why Mimic Ecosystems?

• Earth is 4.6 billion years young
• She’s been through 5 mass extinctions
• All of her current life forms and ecosystems are a tightly resilient mosaic of interdependent relationships
• These have self-organized over the last 65 million years
• What did not work is no longer around
• Humans have only been around for the last few million years
• Industrial “culture” is maybe 150 years old
• We just figured out how to put wheels on our luggage maybe a decade ago...hmmm?
The Dance of Life: Dynamic Disequilibrium

- All living systems are in dynamic disequilibrium...constantly changing and adapting

- Example: A Human System
  - Minor disturbances: bruises, colds, aches, viruses
  - Bigger traumas: giving birth, raising young ones
  - Huge traumas: losing a limb, cancer, etc
  - Inevitable disturbances: birth, death
Disturbance

• Scale of disturbance
  – Slight disturbances happen daily
  – Larger disturbances happen less frequently

• Types of disturbances
  – Natural disturbances: fire, pests, disease, drought, storms, wind, floods
  – Human-Induced Disturbance
Disturbance & Scale
Can Human Disturbance be Natural?
Succession

The diagram illustrates ecological succession, showing the different stages of plant growth over time. It progresses from Annual Plants, Perennial Plants and Grasses, Shrubs, Softwood Trees - Pines, to Hardwood Trees. The timeline represents the passage of time, indicating the natural progression from one stage to the next in an ecosystem.
Thresholds

• There are limits to the scale and frequency of disturbance that any system can handle before it collapses

• These are complex, NEVER linear
Monocultures and Straight Lines

- Must export: Rarely for local market only
- Salad bar effect: one plague can destroy it
- Economic vulnerabilities
- Requires inputs (organic or otherwise)
- Does not build soil
- Does not use space effectively
- Won’t feed your family
- Extremely vulnerable to climate variability
- Create lots of work and waste/pollution

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Designing for Resilience

Resilience Everywhere

• Regardless of scale, we can change our farm/food production practices to create a high level of resilience in our productive landscapes...in our lives...in our communities

Unintended consequences (benefits):

• Increased yield and diversity of crops
• Increased habitat for beneficials
• Closing the loop, Less or no inputs
• Increased profitability potential
• Increased ability to feed farmer household
• Less vulnerable to price changes or crop failures

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A Regenerative Approach...

• Means that we create human systems that like living/natural systems will improve themselves over time and will have the unintended consequence of an abundance of relationships and yields

• Either/Or...Out the Door
  – Farming Vs. Conservation? Old school!
  – We can create food ecosystems that serve human communities, enhance natural systems, and create resiliency
Vital Permaculture Measures

Effort/Work
• Your intended Disturbance/Management regime
• How much work on a regular basis do we want to

Pollution
• When a system creates an overabundance of any one thing...
Vital Resilience Measure:
The Living Soil
Building Resilience with Perennials
Perennial Staple Crops are high in proteins, fats and carbohydrates not destroyed by harvest yield for multiple years and require no tilling.
Perennial Staple Crops sequester carbon stabilize slopes build soils withstand extreme weather are long lived and require little maintenance.

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Food Ecosystems at
The Farm at Verde Gardens
After Andrew...

Massive Disturbance...

Incredible Opportunity!
Successful Succession...
March 2011

Half the original budget

And 1 year to make it happen

22 Acres of invasive species

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Permaculture
(Permanent Agriculture)

We observed the land closely... the sun, wind, water movement... the soil, plants, and animals...

And we asked ourselves: How would nature farm here? How would people perfect themselves here?
Edible Ecosystems

- Grassland/Savanna
- Old Field Mosaic
- Forest Edges
- Mid-succession Forest
- Old Growth Forest
- Wetland
Permanent Culture

Why Mimic an Ecosystem?

• There is no waste in an ecosystem
• They are self-sustaining
• They are highly productive
• They are resilient
• They improve themselves over time by
  – building on relationships
  – leveraging outside resources

Example: a forest

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Food Forest, The Farm @ Verde Gardens
After Year two:
The Farm @ Verde Gardens, and its various components (farming, nursery, market, café, production kitchen, food distribution network) were evolving into a diverse, integrated working “beyond organic” farm enterprise...

Producing abundant variety of foods while restoring biodiversity, building the soil, providing meaningful work, ensuring food security, and contributing to a thriving local economy.
The Changing Face of Farming/Farmers

- **More Urban**: Food production activities are no longer confined to rural areas
- **Smaller Farms**: Communities, empty lots, roof tops, backyards
- **Demographic Shift**: More young people, More women, More immigrant communities
- **More Diverse Production**: growing dozens of species/varieties animals and plants much of it for direct/local sales

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“If enough farmers embrace soil-building, we can reduce atmospheric CO2 from current levels to near pre-industrial levels within 10 years.”

-Carbon Farmers of America
The Resiliency Collaborative

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RESILIENCE: An Operating System for the 21st Century?
Announcement

Permaculture Short Course
Aug 12 – 13 in Dade City

• Earth Learning and Big Small Farm – are proud to present Jono Neiger, one of the most experienced Permaculture teachers in the US, teaching “Introduction to Whole Farm Design”, a Permaculture short course, right here in Florida!

Florida Local Food Systems Summit February 2014

• Look out for emails on the Florida Local Food Systems Summit scheduled for early February 2014 here in Orlando

www.earth-learning.org
Thank You!

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