Design for Resilience in Smallholder Farming Systems

Agroecology: Principles and Practice

Steve Gliessman
Professor Emeritus of Agroecology
University of California, Santa Cruz
Agroecology and Small Holder Farming Systems

- IAASTD (2007) Ag at the Crossroad and agroecological solutions
- UN Rapporteur Right to Food (2011), small holder systems, and agroecology.
Agroecology

The application of ecological principles and concepts to the design and management of sustainable agroecosystems.

1. Principles and concepts of ecology
2. Design
3. Management
4. Agroecosystems
5. Sustainability
Ecological Concepts and Principles

The Ecosystem – a system of interactions between the living and non-living components of the environment

The Agroecosystem – an ecosystem with a purpose
A General Principle

The greater the structural and functional similarity of an agroecosystem to the natural ecosystems in its biogeographic region, the greater the likelihood that the agroecosystem will be sustainable.
“Cultural Agroecology”
Linking Culture and Ecology

- Resistance vs. resilience
- Complexity vs. simplicity
- Isolation vs. interaction
- Competition vs. mutualism
- Native vs. non-native
- Open vs. closed systems
- Dependency vs. autonomy
Using Agroecology in the Transition Process to Sustainable Agriculture.
AGROECOLOGY
Ecological Processes in Sustainable Agriculture

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- **Level 1:** Increase input use efficiency, reducing the use of costly, scarce, or environmentally damaging inputs.

- **Level 2:** Substitution of conventional inputs and practices with alternatives.

- **Level 3:** Redesign the agroecosystem so that it functions on the basis of a new set of ecological processes that provide system resistance.
Indicators of Sustainability

• Soil resources
• Hydrological resources
• Biotic resources
• Ecosystem-level resources
• Economic resources
• Social resources
• Cultural resources
Agroecology and the transformation of food systems

• **Level 4:** Reconnecting the two most important parts of the food system - consumers and producers, through the development of alternative food networks.

  direct markets
  relocalization movement
  food hubs
  urban and periurban agriculture
The Food System is a global system, that is interconnected and interactive.

The ecological, holistic foundation of agroecology gives us an action-oriented approach for simultaneously developing alternative food systems while transforming our current industrial model, in order to move from a primary focus on production and profit, to food security, food sovereignty, nutrition & health, and sustainability.
Agroecology
The Ecology of Sustainable Food Systems

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• Level 5: On the foundation created by the sustainable farm-scale agroecosystems of Level 3 and the sustainable food relationships of Level 4, build a new global food system, based on resilience, participation, localness, fairness, and justice, that is not only sustainable but also helps restore and protect Earth’s life-support systems.

• The future of food is more than ending hunger.
• The future of food is more than increasing production
• The future of food is in our hands…
Working for a global economy
Where people, healthy food systems, and the environment come first.
Community Agroecology Network

canunite.org
16th Annual International Agroecology Shortcourse

July 12 - July 25, 2015
Santa Cruz, CA

Agroecology, a Global Movement: Tracing Our Roots and Looking Forward

www.canunite.org
“You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete.”

—Buckminster Fuller
Agroecology

Participatory action and change that brings sustainability, security, and resilience to all parts of the food system: ecological, economic, and social.

- Agroecology as science
- Agroecology as practice
- Agroecology as social change

It needs to be all three!
FFP/USAID is in a unique position, and must assume the responsibility, for helping build this global agroecological network. You have in your hands, and in the communities you work with, everything you need to make this transformation happen.

It just needs action, vision, and commitment...
Figure 1. The levels of transition and the integration of the three components of Agroecology needed for the transformation to a sustainable world food system.

<table>
<thead>
<tr>
<th>Level</th>
<th>Scale</th>
<th>Role of Agroecology’s Three Aspects</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Ecological Research</td>
</tr>
<tr>
<td>1 Increase efficiency of industrial practices</td>
<td>Farm</td>
<td><em>Primary</em></td>
</tr>
<tr>
<td>2 Substitute alternative practices and inputs</td>
<td>Farm</td>
<td><em>Primary</em></td>
</tr>
<tr>
<td>3 Redesign whole agroecosystems</td>
<td>Farm, region</td>
<td><em>Primary</em> Develops indicators of sustainability</td>
</tr>
<tr>
<td>4 Re-establish connection between growers and eaters, develop alternative food networks</td>
<td>Local, regional, national</td>
<td><em>Supportive</em> Interdisciplinary research provides evidence for need for change and viability of alternatives</td>
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<tr>
<td>5 Rebuild the global food system so that it is sustainable and equitable for all</td>
<td>World</td>
<td><em>Supportive</em> Trans-disciplinary research promotes the change process and monitors sustainability</td>
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Source: adapted from Gliessman 2015a.
It is a bit freaky with this wireless technology