Introduction to Agroecology

Lecture 1

PSS 311: Introduction to Agroecology

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Structure of the Presentation

1. The ALC
2. Agricultural models
3. Agroecology: conceptual history and evolution
4. Agroecologies
5. Agroecology as transdisciplinary, participatory and action-oriented
6. Food for thought
Agroecology and Livelihoods Collaborative (ALC)

www.uvm.edu/agroecology

- **Community of practice** - mutual learning and collaborative practice among faculty, students, staff & other collaborators.
- **Research**: integrating Agroecology and Participatory Action Research (PAR) to analyze & seek solutions to key agrifood system challenges at multiple scales.
- **Teaching and training**: Undergraduate, graduate, professional/training, community and farmer.
Current Agricultural Models

- The dominant models of agriculture are very different in how they contribute and impact agricultural production (both food and non-food), food security, the environment, civil society, etc.


2. *Alternative*: ecologically, socially or culturally-driven.
Green Revolution

- Termed coined by U.S. Agency for International Development director William Gaud (March 1968), as opposing a ‘violent red revolution’

- Response to hunger and malnutrition conditions in developing countries (1943-1970’s)

- Dissemination of an industrialized approach to agriculture worldwide.

- Increasing agricultural production & markets by using and industrial model:
  - Hybrid seeds
  - Irrigation
  - Fertilizers
  - Pesticides
  - mechanization
Advantages of Industrialized Agriculture

- High agricultural production.
- Potential for high profits.
- Efficiency.
- Linked to other industrial networks that facilitate sales, transport, distribution, etc...
- Capital intensive and able to fund research & development.
- In the U.S., this model has provided cheap food.
- Political-economic influence.
Challenges of Industrialized Agriculture

- Based on technological innovation, without ecological bases.
- Focus on maximizing yields and profit, can have impacts.
- Incurs on environmental & social costs, but does not account for them.
- Has led to inequalities in the food system, with small-scale farmers on the losing end.
- Dependence on non-renewable resources.
- Low level of resilience, flexibility and adaptive capacity.
Alternative Agriculture: A Response to the Industrial Ag Model

- A response to the challenges of the green revolution & industrialized agricultural models.
- **Agroecology**, organic, ecological, traditional, low external-input, sustainable, biodynamic, permaculture, local, natural systems, etc...
- More similarities than differences among approaches.
- Social and ecological stewardship.
What is Agroecology to Me?

An inspiration and guide to developing and managing farms, landscapes and agrifood systems, in a way that is equally environmentally sound, socially just and economically viable.
Conceptual Evolution of Agroecology


Wave 1 (70s-90s): Applying Ecology to Agriculture

Wave 2 (early 2000s): Applying Ecology to Food Systems
Conceptual Evolution of Agroecology

Agroecology as a science, a movement and a practice (Wezel et al 2009)

Wave 3 (2009): Agroecology as a science, a movement and a practice

Agroecology as a transdisciplinary, participatory and action-oriented approach (Gliessman, 2015; Méndez et al 2013a,b; 2016)

Wave 4 (2015-): Agroecology as inclusive and transformative
The Evolution of Agroecology in the Scientific Literature

The Evolving Landscape of Agroecological Research

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Figure 10: The most common words in the titles of the papers belonging to the largest research fronts in the 2014 - 2018 network. Colors are as in Figure 9, plus the black text at lower right shows title words for papers that are not in the network.
Where are We Now?: Acknowledging the Different ‘Agroecologies’

Agroecology

- An approach that integrates ecological science with other scientific disciplines (e.g. social sciences).
- Values and integrates diverse knowledge systems (e.g. scientific, local, indigenous).
- Engages in research and actions towards the transformation of our current agrifood system.
Transdisciplinarity

- Integration of different academic disciplines.
- Integration of different forms of knowledge or knowledge systems
- Problem/Issue oriented.
- New and emerging knowledge from process.

Transdisciplinarity is a reflexive, integrative, method-driven scientific principle aiming at the solution or transition of societal problems and concurrently of related scientific problems by differentiating and integrating knowledge from various scientific and societal bodies of knowledge.

Participatory Action Research (PAR)

An approach where **research** and **non-research partners** engage in an iterative process of research, reflection and action.
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From: Caswell et al. (forthcoming)
Transformative

Causing or able to cause an important and lasting change in someone or something (Merriam Webster Dictionary Online).
### Legitimizing Agroecology

<table>
<thead>
<tr>
<th>Categories</th>
<th>Threads</th>
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<tbody>
<tr>
<td><strong>Scientific</strong></td>
<td>Knowledge becomes legitimate because it is generated and certified through scientific reasoning procedures (e.g., scientists using peer review to appraise a scientific claim).</td>
</tr>
<tr>
<td><strong>Policy/Politics</strong></td>
<td>Knowledge is legitimate when it meets the demands and reasoning procedures of legislative and government institutions (e.g., reaching a political agenda; policy analysts using cost-benefit analysis to make decisions).</td>
</tr>
<tr>
<td><strong>Legal</strong></td>
<td>Knowledge becomes legitimate once it has been tested according to legal standards and judicial reasoning (e.g., courts deciding that expert testimony or scientific claims can be admitted, or making a ruling).</td>
</tr>
<tr>
<td><strong>Practical</strong></td>
<td>Knowledge is made legitimate through being tested in everyday practices and experiences (e.g., farmers deciding whether a farming method is effective; farmers entrusting in the experiences of other farmers).</td>
</tr>
<tr>
<td><strong>Civic</strong></td>
<td>Knowledge becomes legitimate according to the criteria and demands of social movements, citizens, and civil societies (e.g., NGOs applying their standards to gauge the trustworthiness of science; citizens discussing scientific developments in terms of their ethical compass).</td>
</tr>
</tbody>
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Source: Montenegro & Iles 2016
International Agroecology Associations

AGROECOLOGY EUROPE

SOCLA
North America

ESA Agroecology Section

associação brasileira de agroecologia

SEAESociedad Española de Agricultura Ecológica
La Via Campesina is a global peasant organization made up of 182 organizations, from 81 countries, with an estimated 200 million farmer/peasant members.

The Brazilian landless movement is a mass social movement, formed by rural workers and by all those who want to fight for land reform and against injustice and social inequality in rural areas.
Agroecology in International Policy

Agroecology Knowledge Hub
Agroecology in U.S. National Policy
Food for Thought # 1

1. Given agroecology’s long history, why has industrialized agriculture remained dominant?
2. How is transdisciplinary different than interdisciplinary?
3. Why do you think peasant organizations, and more recently, international organizations embraced agroecology?