Agroecology

Fall 2022, Middlebury College

Tuesday 1:30-4:15 – Wright Seminar Room
Thursday 1:30-2:45 Discussion Section

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Office Hours: Wednesday 1:45-3 and by appointment; 202 Robert A. Jones '59 House

Are you concerned by the extent of environmental, social, health, and cultural damage that the modern industrialized food system that dominates the United States and most other industrialized countries entails? Do you want to find out what kind of agriculture could replace that food system? Do you want to know how such a farming system could be implemented? If so, this course is where you'll find the answers!

In the simplest terms, agroecology is the application of ecological principles in agriculture — that is, farming with nature instead of by trying to "conquer" nature and thereby undercutting essential services that nature provides such as pollination, nutrient cycling and breaking down organic wastes. Agroecology is considered to be a set of agricultural practices but also a science and a movement. It is the preferred form of agriculture for millions of peasants and small-scale farmers who are advocating for food sovereignty. Yet most people in the United States know very little about it or its potential, and the US government invests almost nothing in research and education on agroecology and actively opposes it in international fora.

Organic farming, one agroecological system, is a familiar term. But agroecological systems also include *agroforestry* (growing trees and crops together), *agropastoralism* (raising livestock in forests or with crops), *seed-saving, making and using compost and soil amendments to make crops produce more efficiently, and pesticides from natural products*. It includes consideration of the landscape within which the *agroecosystem* exists, and how different components can provide synergies that allow producers to minimize external inputs while maintaining yields, good nutrition, and decent livelihoods. Beyond practices, it entails integrating knowledge from multiple sources, respect for women's roles, participatory research, democratizing decision-making on farms, and solidarity with farmers in other countries.

In this course, we will read some of the exciting new material that is emerging about agroecology, develop our own indicators of key features of agroecology, and visit a variety of farms to find out how people in Vermont are applying agroecological principles. We will be looking at agroecology as it has developed and as it is being promoted in other countries and regions: many of the general principles hold true regardless of where it is being practiced, and the US has much to learn from people who have been using agroecology for decades or more. We will explore resistance to agroecology: if it has so many advantages, why aren't farmers everywhere practicing it? At the end of the semester, students will present what they have learned about topics they select to research further. Class will meet for lectures, discussion and field trips on Tuesday afternoons. We will meet on Thursday afternoons to debrief after field trips and for occasional lectures.

The primary learning objective of this class is to understand the scientific basis of agroecology: environmental sustainability, crop and dietary diversity, resilience. Additional goals are understanding how more sustainable practices can be implemented on farms in Vermont and around the world, and farmers' perspectives of and motivations for using such practices.

Texts:

- Anderson, Colin R., Janneke Bruil, M. Jahi Chappell, Csilla Kiss, and Michael Patrick Pimbert. Agroecology Now! Transformations toward More Just and Sustainable Food Systems. Palgrave. (On Canvas)
- Rosset, Peter M. and Miguel A. Altieri. 2017. Agroecology: Science & Politics. Fernwood Publishing. (On Canvas)
- Additional readings on the Internet or from instructor

Evaluation:

15%	Participation in class discussions and field trips
5%	Draft indicators
15%	Short reports on films and webinars (5@3 pts each)
10%	Summary report on farms
15%	Mid-term exam
15%	Final exam
25%	Initial abstract, final report and presentation on self-selected topic

Class Expectations:

I expect you to be completely present during every class and field trip. Please turn off cell phones and use your computers only for taking notes. Complete intellectual honesty is expected in all academic work.

Excellent class participation means:

- You have read assigned material thoroughly and critically and completed any other assignments before class (or the day and time they are due).
- You are on time to every class and field trip.
- You ask questions in class that build on other students' contributions in a respectful and collegial way.
- You are engaged during field trips and interact with our hosts.
- If for any reason you can't be in class, you let me know in advance. Assignments will still be due before class, unless you are sick.

You can expect from me that I will do my best to prepare materials before class that comprehensively introduce you to the topics we are exploring that day. In addition, I will be available to talk over any issues that arise for you. If you have to turn in an assignment late, I will be very forgiving the first time but less tolerant if it becomes a pattern.

Prerequisites:

Either an introductory biology or chemistry class OR ES 112 is desirable but not required. If you have experience with farming, you will probably be fine, perhaps with some extra reading to catch up.

Accommodations for Accessibility:

Students in this class who have Letters of Accommodation are encouraged to contact me as early in the semester as possible to ensure that such accommodations are implemented in a timely fashion. For those without Letters of Accommodation, assistance is available to eligible students through the Disability Resource Center. Please contact ADA Coordinators Jodi Litchfield and Peter Ploegman in the DRC at ada@middlebury.edu for more information. All discussions will remain confidential.

COURSE SCHEDULE & ESSENTIAL READING

Canvas Website: https://middlebury.instructure.com/courses/11068

***WEEK 1: Sept 13/15*. Introduction + principles of agroecology**

Tuesday class: Introduction in classroom; visit The Knoll

Assignment:

- Watch FAO's short films about international agroecological case studies and Andhra Pradesh and write a one-page report on them. Respond to these prompts: Do the films reference certain principles consistently? Are certain practices being used frequently? Is there a conflict in viewing agroecology as science, practice and movement? ***(Due Sunday)***

No Thursday class

***WEEK 2: Sept 20/22.* History, *s*cientific basis, indicators**

Tuesday class:

Readings:

- Anderson et al. 2021. Chapter 2 of Agroecology Now! pp. 11-28. (Canvas)
- Rosset, Peter and Altieri, Miguel. 2021. Introduction and Chapter 1 of Agroecology: Science and Politics. pp. 1-40 (Canvas)

Thursday class – Drafting indicators workshop

- Nicholls, C.I., M.A. Altieri, M. Kobayashi, N. Tamura, S. McGreevy and K. Hitaka. 2020. Assessing the agroecological status of a farm: a principle-based assessment tool for farmers. *Agro Sur* 48(2): 29-41. (Canvas)

Assignment:

- Turn in a bulleted list of the indicators that seem most important to you, and how you would assess them ***(Due Sunday)***

***WEEK 3: Sept 27/29.* Agroecological systems: Indigenous, organic, permaculture**

Tuesday class:

Readings:

- Rosset and Altieri. 2021. Chapter 2, pp. 41-67.
- Wiseman, Fred. 2018. Wabanaki gardens: Lessons in agricultural engineering. Chapter 6 In: Frederick Wiseman with Rosemary Tayler (Ed.) Seven Sisters: Ancient Seeds and Food Systems of the Wabanaki People and the Chesapeake Bay Region. Earth Haven Learning Center, Inc. Thornsburg, Ontario, Canada. (Canvas)
- Reganold, John P. and Jonathan M. Wachter. 2016. Organic agriculture in the 21st century. *Nature Plants* 2: 1-8. (Canvas)

- The Deep Dish. January 2022. What is the future of organic? (Canvas)
- Krebs, Julius and Sonja Bach. 2018. Permaculture—Scientific evidence of principles for the agroecological design of farming systems. *Sustainability* 10, 3218.
- **SCAN:** Mie, Axel, Helle Raun Andersen, Stefan Gunnarsson, Johannes Kahl, Emmanuelle Kesse-Guyot, Ewa Rembiałkowska, Gianluca Quaglio and Philippe Grandjean. 2017. Human health implications of organic food and organic agriculture: a comprehensive review. *Environmental Health* (2017) 16:111.

No Thursday class

Assignment:

- Watch: *Dissecting Competing Philosophies in Vermont Agriculture* https://www.youtube.com/watch?v=6TA46GgJGhg&feature=youtu.be (Presentations go through 1:24; Q&A is optional) and write short review. Which of these systems seem most compelling to you and why? What questions do you have about the various systems presented? (***Due Sunday)***

WEEK 4: October 4/6. **Farm visit and scaling up**

Tuesday class: Visit Valley Clayplain Forest Farm

Readings:

- Savanna Institute: 5 Infographics on agroforestry (Canvas)
- Brooks, Christopher. May 20, 2021. Agroforesty blossoming in New Haven

Thursday class: Discussion of farm visit, Scaling up

Readings:

- Mier y Terán Giménez Cacho, Mateo, Omar Felipe Giraldo, Miriam Aldasoro, Helda Morales, Bruce G. Ferguson, Peter Rosset, Ashlesha Khadse, and Carmen Campos. 2018. Bringing agroecology to scale: key drivers and emblematic cases. *Agroecology and Sustainable Food Systems.* (Canvas)
- Anderson et al. Chapter 3 pp. 29-46

WEEK 5: October 11/13. **Farm visit and mid-term exam**

Tuesday class: Visit Wild Roots Farm

Readings:

- Blakely, Valerie. 2020. Wild Roots: On a Vermont farm, renewal for a man and his land. Yale 360

No Thursday class

Assignment:

- Submit mid-term exam directly to Molly's e-mail address. (***Due Sunday)***

WEEK 6: October 18/20 **Farm visit and co-optation/resistance**

Tuesday class: Meeting Place Pastures

Thursday class: Discussion of farm visit; co-optation and resistance

Readings:

- Mugwanya, Nassib. 2019. Why agroecology is a dead end for Africa. *Outlook on Agriculture* 48(2) 113–116.
- Na Haby, Stella Faye. 2021. How CAS Fellows are discrediting agroecology… and failing at it. Community Alliance for Global Justice.
- Chandrasekaran, Kirtana, Nele Marian, Isaac Rojas, Sara Shaw. 2021. A Wolf in Sheep's Clothing. Friends of the Earth International Position Paper. **REPLACE WITH NARRATIVES BRIEF?**
- Alonso-Fradejas, Alberto, Lyda Fernanda Forero, Delphine Ortega-Espès, Martín Drago and Kirtana Chandrasekaran. 2020. Junk Agroecology. The corporate capture of agroecology for an ecological transition without social justice. Friends of the Earth International, Transnational Institute and Crocevia Institute.

WEEK 7: October 25/27 **Farm visit, diets and feminism**

Tuesday class: Visit Boundbrook Farm

Thursday class: Discussion of farm visit; Diets and feminism

Readings:

- Pimbert, Michel and Stephanie Lemke. 2018. Using agroecology to enhance dietary diversity. *Food Environments* (UNSCN News) 43: 33-42. (Canvas)
- Rachel Bezner Kerr, Sidney Madsen, Moritz Stüber, Jeffrey Liebert, Stephanie Enloe, No´elie Borghino, Phoebe Parros, Daniel Munyao Mutyambai, Marie Prudhon, Alexander Wezel. 2021. Can agroecology improve food security and nutrition? A review. *Global Food Security* 29: 100540. (Canvas)
- Milgroom, Jessica. 2021. Linking food and feminisms: learning from decolonial movements. *Agroecology in Motion* (Canvas).
- *Farming Matters*. 2020. Agroecology and feminism: Transforming our economy and society. (**Read 1st 2 articles**).

WEEK 8: November 1/3 **– Farm visit, commons**

Tuesday class: Visit Metta Earth

Thursday class: Discussion of farm visit; commons

Readings:

- Anderson, Molly D. 2021. How food in the commons can help to address inequity in US food and land access. One Earth 4: 165-167. (Canvas)
- Kuljay, Atun, Jean-Marc Louvin · Molly Anderson,· Naseegh Jaffer · Tomaso Ferrando. 2021. From Food as Commodity to Food as Liberation. Development 64: 245-251. (Canvas)

WEEK 9: November 8/10 Domains of transition 1

Tuesday class:

Readings:

- Anderson et al. 2021. Chapter 4-6, pp. 49-102.
- DW. 2021. Seed monopolies: Who controls the world's food supply?
- Peschard, Karine and Shalini Randeria. 2020. 'Keeping seeds in our hands': the rise of seed activism, *The Journal of Peasant Studies* 47(4): 613-647 (Canvas)
- **Optional**: Watnem, Tamara. 2016. Seed laws, certification and standardization: outlawing informal seed systems in the Global South. *Journal of Peasant Studies* 43(4): 850-867 (Canvas)

No Thursday class

Assignment:

- Watch Seed: The Untold Story and submit a short report ***(Film is no longer free but it can be rented for $3.99; Due Sunday)***

WEEK 10: November 15/17 Regenerative Agriculture and Sequestering C in soil

Tuesday class:

Readings:

- Johnson, Nathanael. 2019. 'Regenerative agriculture': World-saving idea or food marketing ploy? Grist.
- Giller, Ken E., Renske Hijbeek, Jens A. Andersson and James Sumberg. 2021. Regenerative Agriculture: An agronomic perspective. *Outlook on Agriculture* 50(1) 13–25.
- Ranganathan, Janet, Richard Waite, Tim Searchinger and Jessica Zionts. 2020. Regenerative Agriculture: Good for Soil Health, but Limited Potential to Mitigate Climate Change.
- Paustian, Keith Claire Chenu, Rich Conant, Francesca Cotrufo, Rattan Lal, Pete Smith, Jean-Francois Soussana. 2020. Climate mitigation potential of regenerative agriculture is significant!
- Fassler, Joe. 2021. Regenerative agriculture needs a reckoning. *The Counter*.

No Thursday class

Assignment:

- Turn in review of *To Which We Belong* (***Due Sunday***)

THANKSGIVING BREAK - No class November 22 or 24

WEEK 11: November 29/December 1. **Domains of transition 2**

Tuesday class

- Anderson et al. 2021. 7-9. Pp. 103-149.
- Montenegro, Maya de Wit and Alastair Isles. 2016. Toward thick legitimacy: Creating a web of legitimacy for agroecology. *Elementa Science Policy Bridge*.
- Meek, David. 2014. Agroecology and radical grassroots movements' evolving moral economies. *Environment and Society: Advances in Research* 5 (2014): 47–65.

No Thursday class

Assignment:

- Watch launch webinar and submit review of *The Politics of Knowledge: Evidence for Agroecology* from the Global Alliance for the Future of Food (2021). (***Due Sunday*****)**

WEEK 12: December 6/8 **– Presentations of reports**

Tuesday class

Assignment:

- Be ready to give a 5-minute presentation about your research project in class

No Thursday class

Final Exams will be posted at the end of Week 12 and due the last day of the finals period (December 19). Your final papers will be due on December 19 also.