

PRINCIPLES AND PRACTICES OF SUSTAINABLE AGRICULTURE

PSE 105, 3 Credits

Fall 2005 Tuesday & Thursday, 9:30-10:45

Deering Hall, 113

Instructor: Eric Gallandt

Office: 205 Roger Clapp Greenhouse; office hours Tu & Th, 11:00-11:30; by appt.

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Objectives

Principles and Practices of Sustainable Agriculture will provide students with an overview of important world cropping systems, identifying critical features within these systems that lead to questions regarding their ability to sustain the local or regional environments and communities they affect. Students will then be introduced to the principles and practices common to systems that operate with greater reliance on ecological processes than on purchased inputs. Lastly, students will explore the challenges, constraints, and successes in the operation and transition to sustainable production practices.

Required Text

None.

Reserve Readings

Assigned readings are available as pdf files in the FirstClass course folder.

Recommended Reading

The introductory text by Gliessman, the source of several of your assigned readings, is a very good reference: *Agroecology, Ecological Processes in Sustainable Agriculture* (1998) Gliessman, S.R., Ann Arbor Press, Chelsea, MI (ISBN: 1-57504-043-3).

Syllabus (subject to minor revision)

	Date	Reading
1	9/6	Introduction o 1. Reganold et al. (1990). Sustainable agriculture
2	9/8	A Brief History of Agriculture o 2. Evenson & Gollin (2003). Assessing the impact of the green revolution, 1960 to 2000.
3	9/13	The Industrial Model of Agriculture o 3. Avery (2000). Saving the planet with pesticides and plastic. o 4. Lappe' (1998). World hunger: 12 myths. o 5. Pollan (2005). King corn.
4	9/15	Equipment in Modern Crop Production o 6. Grubinger (1999). Tillage equipment and field preparation. >> Rogers Farm

If you have a disability for which you may be requesting an accommodation, please contact either your instructor or Ann Smith, Coordinator of Services for Students with Disabilities (Onward Building, 581- 2319), as early as possible in the term.

5	9/20	Animal Production Systems >>Whitter Farm	<ul style="list-style-type: none"> ○ 7. Pollan (2002). Power Steer. ○ 8. Keeling (2005). Healthy and happy: animal welfare as an integral part of sustainable agriculture.
6	9/22	The Need for a Sustainable Approach to Agriculture	<ul style="list-style-type: none"> ○ 9. Gliessman (1998). The need for sustainable food production systems.
7	9/27	"My Father's Garden" (video)	<ul style="list-style-type: none"> ○ 10. Pimentel (2005). Environmental and economic costs of the application of pesticides.
8	9/29	Designing Sustainable Agricultural Systems	<ul style="list-style-type: none"> ○ 11. King (1911). Farmers of Forty Centuries. ○ 12. Robertson et al. (2004). Rethinking the vision for environmental research in US agriculture.
9	10/4	<u>Principle 1: Maintain/Improve Soil Quality</u> — Soils, Soil Quality & Fertility	<ul style="list-style-type: none"> ○ 13. Gliessman (1998). Soil. ○ 14. Tilman (1998). The greening of the revolution
10	10/6	— Cover Cropping & Green Manuring	<ul style="list-style-type: none"> ○ 15. Sarrantonio and Gallandt (2003). The role of cover crops in North American cropping systems.
	10/11	Fall Break—no class	
11	10/13	— Conservation Tillage Systems	<ul style="list-style-type: none"> ○ 16. Sullivan (2003). Conservation Tillage.
12	10/18	Exam 1	
13	10/20	<u>Principle 2: Diversification in Time & Space</u> — Intercropping & Agroforestry	<ul style="list-style-type: none"> ○ 17. Sullivan (2003). Intercropping Principles and Production Practices.
14	10/25	— Crop Rotation	<ul style="list-style-type: none"> ○ 18. Grubinger (1999). Crop Rotation.
15	10/27	— Genetic Diversity of Crops & Livestock	<ul style="list-style-type: none"> ○ 19. Salick & Merrick (1990). Use and maintenance of genetic resources: Crops and their wild relatives.
16	11/1	— Enterprise Diversification— Potato/Dairy; Tim Griffin, USDA-ARS	
17	11/3	<u>Principle 3: Ecologically-Based Pest Management</u> — Weeds	<ul style="list-style-type: none"> ○ 20. Alteri & Nicholls (2003). Ecologically based pest management; a key pathway to achieving agroecosystem health.
18	11/8	— Diseases; Bob Larkin, USDA-ARS	
19	11/10	— Insect Pests	<ul style="list-style-type: none"> ○ 21. Lewis et al. (1997). A total system approach to sustainable pest management.
20	11/15	Biotechnology & GMO's in Agricultural Systems	<ul style="list-style-type: none"> ○ 22. Marvier (2001). "Ecology of transgenic crops."
21	11/17	Harvest of Fear (video)	<ul style="list-style-type: none"> ○ 23. Anonymous (1999). Seeds of change.

22	11/22	Exam 2	
	11/24	Thanksgiving Break—no class	

23	11/29	<u>Case Studies of Alternative Farming Systems</u>	
		Organic Production Systems	<ul style="list-style-type: none"> ○ 24. Pimentel et al. (2005). Environmental, energetic, and economic comparisons of organic and conventional farming systems. ○ 25. Trewavas (2001). "Urban myths of organic farming."
24	12/1	Biodynamic Production Systems	<ul style="list-style-type: none"> ○ 26. Reganold (1995). "Soil quality and profitability of biodynamic and conventional farming systems: a review."

25	12/6	Rotational Grazing; Rick Kersbergen, UMCE, Waldo County	<ul style="list-style-type: none"> ○ 27. Berton (2001). Hayes and Jones case studies from "The New American Farmer"
26	12/8	The Kutztown Farm	<ul style="list-style-type: none"> ○ 28. N.R.C. (1989). Case Study 4: A mixed crop and livestock farm in Pennsylvania: The Kutztown Farm.

27	12/13	Cuba	<ul style="list-style-type: none"> ○ 29. Funes et al. (2002). Sustainable Agriculture and Resistance: Transforming food production in Cuba
28	12/15	"Elements of Sustainable Agriculture" Making the Transition	<ul style="list-style-type: none"> ○ 30. Smith (1993). "Sustainable agriculture and public policy." ○ 31. Boody et al. (2005). Multifunctional agriculture in the United States.

Final Exam

Grading

Exams (3 @ 100 points)	300 points
Homework Papers (4 @ 25 points)	100 points

Exams will consist of questions derived from both lecture material and assigned readings. Questions may include definitions of terms, short answers (noted as Key Words on handouts), and brief essays. Essay questions will be distributed on most lecture dates; a subset of these will appear on the exams.

Homework Papers must:

- be typed, double spaced, with 12pt font and 1 inch margins;
- be clearly written and concise—not exceeding two pages per question;
- provide detailed examples to support your points; and
- not plagiarize your sources of information and therefore include proper citation of your references.
- papers must be submitted either during the lecture period or dropped off outside Eric's office (205 Greenhouse)

Final Grades

A	95-100	B+	87-89	C+	77-79	D+	66-69
A-	90-95	B	83-86	C	73-76	D	60-65
		B-	80-82	C-	70-72		