

Appalachian State University, Department of Interdisciplinary Studies  
**IDS 4251 Agroecology Practices, Systems and Philosophies (4).**  
Spring 2006

Class: Wednesday, 6:00- 9:00 pm, 223 LLA

Lab: Tuesday (Section 201) and Friday (Section 202), 14:00-16:30pm, SD Teaching and Research Farm and/or Agroecology Lab in Valle Crucis

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Office hours: Tuesday and Thursday, 8:30am - 12pm by appointment only

### **General outline**

People around the world have developed (and continue to develop) different systems of producing and processing food and fiber necessary to sustain them. This course will explore (1) the ethical and philosophical roots of conventional and alternative agriculture, and (2) the biological, economic and social aspects of different agricultural systems and practices developed in response to perceived shortcomings of conventional modern agriculture. Alternative practices and systems to be compared and contrasted in this course include nature farming, permaculture, biodynamic agriculture, biointensive gardening, and agroforestry (additional systems and practices may be added or substituted based on class interest and consensus).

There is a lab requirement for this course; students registering for this course also need to enroll in either IDS 4251-201 (Tuesday 2-4:30pm) or IDS 4251-202 (Friday 2-4:30pm).

### **Prerequisite**

Open to students who have completed the Principles of Agroecology course (IDS 3251) or equivalent (population, community or ecosystem ecology), or permission of the instructor.

### **Course objectives**

The objective of this course is to introduce students to a variety of different sustainable agricultural systems and practices, and their philosophical and theoretical underpinnings. Students successfully completing the course should be able to:

1. Demonstrate an understanding of the philosophical bases of various agricultural systems, and ethical behaviors necessary to make both agriculture and the society in which it is embedded more sustainable.
2. Know and demonstrate the linkages between healthy soil, healthy crops, healthy individuals, healthy communities and healthy societies.
3. Be able to demonstrate how scientific agroecological principles and information on which regenerative agricultural practices are based apply and are brought to bear in the different agricultural practices and systems studied during the course.
4. Be able to work cooperatively with others and participate effectively in class discussions and assignments.

### **Course format**

The course will use a discussion/seminar format, as well as lectures by the instructor and/or guest lecturers. In order for this to work and have fruitful discussions in class in which everyone is engaged, students should do the readings assigned for each class period. To ensure that this happens, students are required to submit one short comment, question or observation on each chapter or reading by Wednesday

noon, so I can read them and prepare for the class that evening. These will be part of your grade for this course.

Students will be assigned to present selected topics either individually or in a group, esp. later in the semester on the presentation and discussion of the various alternative philosophies/farm systems.

Attendance and *active participation* in all class activities is essential and required.

Each laboratory session will consist of instructional time to discuss techniques and tasks followed by application of techniques. Tasks may be independent or carried out in small groups.

### **Important considerations**

1. Students are expected to be aware of and follow the ASU's current "Code of Academic Integrity."
2. Incomplete grades are generally not given, and are granted solely at the instructor's discretion.
3. Papers are due at the scheduled beginning of class, and attendance is taken at that time. Tardiness will result in reduced credit; more than 5 absences will result in a failing grade for the course.
4. Students are expected to read assigned texts and other materials BEFORE class and be prepared to discuss the material.

### **Assignments**

Paper I: There is a lot of debate in various circles about the meaning of the term 'organic', especially now that the concept has been embraced by major food corporations. But what does that term really mean? Write a 300 (min) to 500 word (max.) essay on your own understanding of the meaning of 'organic'; note that the intention is NOT a research paper, but your own personal opinion/feeling. This essay is due Wednesday January 18.

Paper II: Write a 3-4 page (single spaced) essay on your personal philosophy (believes) of/for a sustainable food system, that is, a system of agriculture and food that is environmentally sound, economically viable and socially just (and/or any other term or concept relevant to the description of sustainability in your opinion). In the statement, include (1) how you arrived at this philosophy (= its foundations, who or what shaped your thinking), and (2) your thoughts and ideas of how you think this system might be realized locally, and what your contributions might be. Hint: write this paper from the heart, not the head. This paper is due Feb 8.

Assignment I: Construct a chart (or other system of organization) in which you compare and contrast the different agricultural systems and practices discussed during the semester (including the conventional agriculture system). You should work on this throughout the semester, and make notes, comments etc. from the readings and class presentations and discussions as the semester progresses. In the last column/row of your chart, make an assessment about the suitability, feasibility and viability of each system/practice (in whole or in part) as alternatives to the conventional agriculture/food system in the NW North Carolina. This paper is due April 26.

Assignment II: This is an exercise aimed at honing your observational skills and eye for details about nature and natural events in one area. Rather than just being a trespasser, I am asking you to become a participant in what is going on in one small area (albeit a transient, punctuated in time participant). It is an essential skill for farmers, one that Wendell berry refers to as "becoming native to a place."

Alone (or better yet, in a group), take several walks around area of your choosing during the course of the semester. Observe the changes that are taking place on the terrain, in the vegetation, animals, etc., and relate those to changes in weather, seasons, aspect, .... Write a short (individual or group)

report on what you observed in as much detail as you can, and its implications for agriculture in that area, and how this might influence the design and management of a farm or garden at your chosen site. You can include pictures, drawings, tables, .... to document your observations.

**Group project:** Design a garden using the philosophy, principles and practices of one of the agricultural systems presented in class for the Boone Community garden site. The plan should follow the design process and guidelines outlined in the Permaculture Design Manual (although designed for permaculture, the steps outlined are useful for the other systems as well). The final report on the project should include the following information:

- (1) how to convert the area from the present use/vegetation to a productive space;
- (2) a time line for the conversion;
- (3) plants and/or animals in your system;
- (4) crop rotation schedule (if applicable);
- (5) design/layout of your beds etc.;
- (6) a plan to manage and maintain the garden for the next 10 years according to the principles and practices of your assigned system; and
- (7) key data to observe and monitor the evolution of the garden over time to help compare and contrast your system with the other designs.

### **Grading**

<u>Lecture</u>		<i>150 points</i>
Class attendance and participation		15%
Group project		30%
Design	40%	
Management/transition plan	40%	
Presentation	20%	
Paper I		10%
Paper II		25%
Assignment I		10%
Assignment II		10%
 <u>Lab</u>		 <i>100 points</i>
Participation		40%
Lab reports/reviews		20%
Lab journal		30%
Maintenance of farm records		10%
 <i>Semester total</i>		 <i>250 points</i>

### **Requirements for written papers**

1. Written papers are graded on scholarly quality, mastery of the material, conciseness, organization, use of readings, grammar and spelling. Style will be a consideration in grading.
2. Papers must be word-processed; title pages, plastic covers etc. are not required. Diagrams, drawings, and tables may be used as appropriate; these can be done by hand if you have not (yet) mastered computer graphics.
3. The journal will be graded based on the amount of effort you have put into assembling it (i.e., number of articles gathered, organization, neatness, and diversity of sources of the contributions).
4. Any assignments turned in late will receive a lower grade. All assignments must be turned in to receive a passing grade for the course.

## **Texts**

### Required

Paul B. Thompson. 1995. *The spirit of soil: Agriculture and environmental ethics*. New York: Routledge.

Herbert H. Koepf, Bo D. Pettersson, Wolfgang Schaumann. 1976. Chapters 1, 2, 4, 5, and 10. In *Bio-dynamic Agriculture: An Introduction*. Spring Valley, NY: The Anthroposophic Press. Out of print, but available on the web at: <http://www.soilandhealth.org/01aglibrary/010114koepf/bda.html>

Masanobu Fukuoka. 1985. *One straw revolution*. Mapusa, Goa, India: Other India Press..

### Optional/recommended

John Jeavons. 1995. *How to grow more vegetables*. Berkeley, CA: Ten Speed Press.

Maria Thun. 1999. *Gardening for Life, The Biodynamic Way*. Stroud, Gloucestershire, UK: Hawthorn Press.

Bill Mollison. 1991. *Introduction to Permaculture*. Tyalgum, Australia: Tagari Publications.

### **Additional readings (\* library reserve /on-line; # books available on reserve readings)**

#### On reserve in the library

Bill Mollison. 1988. *Permaculture Designer's Manual*. Tyalgum, Australia: Tagari Publications.

Louise Buck et al. 1999. *Agroforestry in Sustainable Agricultural Systems*. Boca Raton FL: CRC Press.

Patrick Whitefield. 1996. *How to make a forest garden*. East Meon, Hampshire, UK: Permanent Publications. SB439.6 .W591 1998

Patrick Whitefield. 2000. *Permaculture in a nutshell*. Hampshire, UK: Permanent Publications and White River Junction, VT: Chelsea Green Publishing. S494.5.P47 W51 2000

Robert Hart. 1996. *Forest Gardening. Cultivating an Edible Landscape*. White River Junction, VT: Chelsea Green Publishing Co. S494.5.A45 H37 1996

### ***Agroecology philosophy and theory***

#### For Feb 8 class:

\* Miguel Altieri. 2002. *Agroecology: The science of natural resource management for poor farmers in marginal environments*. *Agriculture, Ecosystems and Environment* 93: 1-24.

\* George Kuepper. 2000. *An overview of organic crop production*.

<http://attra.ncat.org/attra-pub/PDF/organiccrop.pdf>

#### For Feb 15 class:

\* Jan Douwe van der Ploeg. 1994. "Styles of Farming: An introductory note on concepts and methodology." In Jan Douwe van der Ploeg and Ann Long, eds., *Born from within: Practices and perspectives of endogenous rural development*, pp. 7-30. Assen, Netherlands: van Gorcum.

#### For April 19 class:

\* Daniel Charles. 2002. 'Epilogue: The Story.' In: *Lords of the Harvest*, pp. 303-314. Cambridge, MA: Perseus Publishing.

**General organic crop production information:**

<http://www.agroecology.org>

[Resource guide to organic & sustainable vegetable production](#) (Contains sections with references on nature farming, biodynamics, biointensive etc.)

**Nature farming**

<http://www.moa.or.jp/english/philosophy/philo-contents.html>

<http://www.moa.or.jp/english/naturefarm/nf-contents.html>

<http://www.spiritwheel.com/thnfarm.htm>

<http://www.johrefellowship.com/philosophy.html>

<http://www.shumei.org/agriculture/principles.html>

[Fukuoka Farming method](#)

**Biodynamics**

Willy Schilthuis. 1994. *Biodynamic Agriculture. Rudolf Steiner's Ideas in Practice*. Hudson, NY: Anthroposophic Press.

Hugh Lovel. 2000. *A Biodynamic Farm*. Austin, TX: Acres USA.

Biodynamics (journal, available in the ASU library)

<http://www.biodynamics.com/biodynamics.html>

<http://www.biodynamics.com/steiner.html>

<http://www.biodynamics.com/articles/>

<http://www.attra.org/attra-pub/biodynamicap1.html>

<http://www.elib.com/Steiner/Lectures/Dates>

[Biodynamic calendar](#)

**Biointensive**

# John Jeavons. 1995. "A perspective for the future", "Biointensive made simple", "A general preface", "An historical introduction", "History and philosophy", and "Sustainability." In: *How to grow more vegetables*, pp. viii-xxiv, 2-5 and 21-29. Berkeley, CA: Ten Speed Press.

<http://www.growbiointensive.org/biointensive/InContext.html>

**Permaculture**

# Bill Mollison. 1988. Chapters 1 through 4. In *Permaculture: A designers' manual*. Tyalgum, Australia: Tagari Publications.

Patrick Whitefield. 2000. *Permaculture in a nutshell*. Hampshire, Eng.: Permanent Publications.

Permaculture Activist (journal, available in the ASU library)

<http://attra.ncat.org/attra-pub/perma.html>

<http://www.nor.com.au/environment/perma/>

<http://www.permaculture.co.uk/>

**Agroforestry**

\* R.K. Olson, M. Schoeneberger and S. Aschmann. 2000. "An ecological foundation for temperate agroforestry." In G.E. Garrett, W.J. Rietveld and R.F. Dick, eds., *North American Agroforestry: An*

integrated science and practice, pp. 31-62. Madison: American Society for Agronomy, Inc.  
 \* M.A. Gold, W.J. Rietveld, H.E. Garrett and R. F Fisher. 2000. "Agroforestry nomenclature, concepts, and practices for the USA." In G.E. Garrett, W.J. Rietveld and R.F. Dick, eds., North American Agroforestry: An integrated science and practice, pp. 63-78. Madison: American Society for Agronomy, Inc.

# Patrick Whitefield. 1996. Chapters 1 and 2. In: How to make a forest garden, pp. 1-44. East Meon, Hampshire, UK: Permanent Publications.

Robert Hart. 1996. Forest Gardening. Cultivating an Edible Landscape. White River Junction, VT: Chelsea Green Publishing Co.

[Association for Temperate Agroforestry](#)  
[U Missouri-Columbia Center for Agroforestry](#)

### Course schedule

Date	Topic	Readings
Jan 11	Course introduction and overview  Video: Strong Roots, Fragile Farms	
Jan 18	Ethics of soil Environmental critics of agriculture	Thompson, Chapters 1 & 2  <i>Paper I due.</i>
Jan 25	The "who, what and why" of the Boone Community Garden  Video: Alive and well (VC11181)	
Feb 1	The productionist paradigm Stewardship and good farming	Thompson, Chapters 3 & 4  <i>Potluck: Bring a dish to share</i>
Feb 8	The true costs of food  A quick and dirty overview of alternative farming practices.  Discuss group project and divide into groups.	Thompson, Chapter 5 Altieri (library reserve)  Kuepper (ATTRA website)  <i>Paper II due</i>
Feb 15	Holistic alternatives Styles of farming	Thompson, Chapter 6 v.d. Ploeg,(library reserve)

Feb 22	Group presentation: Natural Agriculture philosophy & practice  Nature farming: Video The Close to nature garden (VC 11243)	Fukuoka, One Straw Revolution Read as much as you like (it's hard to put down once you start reading this), but at least read Chapters 1-5.
March 1	Group presentation: Permaculture philosophy & practice  Video: Global Gardener	Mollison (Intro to permaculture): Chapters 1 + 3  <i>Potluck: Bring a dish to share</i>
Mar 8	Group presentation: Biodynamic agriculture philosophy & practice  Video: Biodynamic Gardening: A how-to guide The other side of the fence	Koepf, Chapters 1 + 2 (sections 1, 2, 3, 4 until p.70, 7) + 4
Mar 15	Spring break	
Mar 22	The design process: Concepts, themes and methods	Mollison (Intro to Permaculture) Chapter 2 Also consult Mollison's Designer's Manual (lib. reserve) Chapters 2 + 3
Mar 25	<i>Organic Growers School &amp; Seed Exchange (extra credit)</i>	
Mar 29	Group presentation: Agroforestry & Forest Gardening  Video: Temperate Agroforestry practices	Olson et al., Gold et al., Whitefield, Chapters 1 + 2.  <i>Potluck: Bring a dish to share</i>
April 5	Group presentations: Biointensive gardening  Video: Garden Song & Circle of Plenty  Each group will report on the progress made on their garden design project, the approach taken etc.; graduate students to report on the farm management plan	Jeavons, pp. viii-xxiv, 2-5 and 21-29.
April 12	Sustainable agriculture  Video The Greening of Cuba (VC 11483)  Open discussion about alternative agricultural systems.	Thompson, Chapter 7
April 19	Biotechnology in agriculture: A solution for world hunger and agricultural sustainability, or a disaster waiting to happen?  Video: Harvest of Fear Part I.	Daniel Charles, Epilogue: The Story

April 26	Presentation and discussion of grad students term papers;  Course evaluation.	<i>Final paper due.</i>
May 3	FINAL EXAM, 6-8:30pm  Course wrap-up; if the weather is good, we will do a potluck picnic by campfire on the farm.	Groups will present their garden design/management plans at this time.  <i>Reports &amp; designs are due</i>  <i>Potluck: Bring a dish to share</i>



### **Description**

This hands-on laboratory course has two main activities:

1. This lab will involve a lot of preparatory work for the main growing season during the summer (which will focus on additional planting, maintenance and harvesting). Activities include soil preparation and feeding the soil, composting, seedling preparation, direct seeding and transplanting, weeding, some harvesting (of early crops such as lettuces, radishes, and mustard greens), and farm record keeping.
2. To learn about, and gather basic biophysical, ecological data of Dutch Creek farm, and the social characteristics of farming in Watauga County, and use this information to plan and operate a garden based on sustainable principles. As needed and working in small groups, students will collect and analyze data on the vegetation, soils, hydrology, fauna (insects, birds, mammals both in and above the soil), climate, and the socioeconomic and cultural aspects of farming in the area. Each student will keep a detailed record of activities and observations.

**Attendance and active participation in all lab activities is essential and required!**

### **Objectives**

At the end of the semester, students should be able to:

1. Demonstrate basic knowledge and principles of crop production, and ecological and social inventory and data collection methods for planning agricultural activities, and be able to apply this information to determine which crops to grow where and when, and how.
2. Demonstrate basic knowledge of gardening techniques and practices, including soil and seedling preparation; direct seeding; fertilization; pest, disease and weed control; composting; harvesting and post-harvest handling, etc. The specific practices and techniques to be learned will depend on the time of year, crops to be grown, and crop requirements and needs.
3. Be able to work cooperatively with others and participate effectively in class discussions and assignments

### **Important considerations**

1. Students are expected to be aware of and follow the ASU's current "Code of Academic Integrity."
2. Incomplete grades are generally not given, and are granted solely at the instructor's discretion.
3. Papers are due at the scheduled beginning of class, and attendance is taken at that time. Tardiness will result in reduced credit; more than 5 absences will result in a failing grade for the course.
4. Students are expected to read assigned texts and other materials BEFORE class and be prepared to discuss the material.
5. The lab will consist almost entirely of hands-on field work, and will take place rain, snow or shine. Wear sturdy work boots, bring gloves, wear work clothes or ones you don't mind getting muddy or torn, and be prepared for inclement weather (wear layers), etc.
6. Given the time to travel to and from Valle Crucis, students are expected to be punctual. A van will leave a 2 PM sharp to take students to the field site; we usually leave at 4:30 from the site, to be back at ASU at 5 pm.

### **Texts**

#### Required

Laboratory course packet available from SOS Printing; this packet includes information of various exercises related to soils; pruning and grafting; insect and disease scouting and controls; and crop

requirements (rotations, companion planting, nutrient needs, ...).

Recommended

Jeff Ball et al., 1995, Rodale's Garden Problem Solver: Vegetables, Fruits and Herbs. Emmaus, PA: Rodale Press.

Barbara Pleasant et al., 1996, The Gardener's Weed Book: Earth-Safe Controls. Pownal, VT: Storey Publishing.

Additional hand-outs and relevant articles, tbd.

**Assignments**

1. Students are required to keep a lab journal in which they write their own observations and interpretations of what they have seen, done and learned.
2. Selected lab topics/sections (e.g., soils, vegetation, nutrient cycling) will have their own data collection sheets, information on data analysis and questions to answer in the lab manual. *These will need to be completed and turned in at the beginning of the following week's lab.* Only one report need to be turned in for the group you worked with that week (but list the name of all group members).
3. Students are required to register all observations, equipment breakdowns, notes about the various vegetables (yields by date and variety; diseases, pests, etc.; amounts eaten and/or donated to Hospitality House/Hunger Coalition) in a farm notebook that will be provided and left on the farm.
4. Periodically, instructor(s) will provide relevant articles; each student should read and turn in a one page (max) summary of the article the following lab period.
5. Participate in one (or more) events relevant to the course and lab, such as the High Country Organic Growers School in late March, monthly Farmer Field Schools, or events organized by the ASU Solar Club or other organizations that are relevant to food and agriculture.