Michigan State University
Organic Farming Principles and Practices
Horticulture 251 Spring 2009
Syllabus

Course Description
Principles and practices of organic farming; farms as ecological systems; the certification process and agencies; organic matter management to support the soil food web and nutrient availability; managing biodiversity, crop rotations, plant competition, ground cover, and plant health; integrating crops and animals; organic animal husbandry practices, crop systems studies, farmer and researcher panel discussions.

Instructor
Jeremy Moghtader
Faculty Dept. of Horticulture
Student Organic Farm Steering Team Coordinator & Farm Programs Coordinator
Organic Farming Certificate Program Instructor.
A430 Plant and Soil Science Bldg. 355-5191 ext. 1411
Office Hours Monday 11:40a-12:45 pm or by appointment
moghtad1@msu.edu

Class Schedule
Monday and Wednesday 10:20a to 11:40a
A148 Plant and Soil Sciences Bldg. (PSSB)

Learning Objectives
1. Develop an understanding of the historical, biological and ecological basis for Organic farming including crop and livestock management.
2. Understand the USDA National Organic Program rules.
3. Learn the basic principles of organic matter management to feed the soil food web through the use of cover crops, compost and other organic and mineral amendments.
4. Learn the basic principles of managing biodiversity, crop rotations, non-crop competitors (weeds) and plant health for productive cropping systems with minimal off-farm resources.
5. Understand the foundation of organic animal husbandry and the integration of crops and animals on the organic farm.
6. Develop critical and creative thinking with a systems approach to agriculture using case studies as working examples of farming systems.
7. Understand the social, economic, political and environmental context for current and future organic agriculture production and sales.
8. Demonstrate ability to knowledgeable discuss principles and practices of organic agriculture.

Format: Classes will have varied format and consist of a mixture of instructor, guest speakers/panel, and student presented materials with emphasis on discussion and learning through engaged interaction.

Expectations & Philosophy: Each person is responsible for their own learning. As a class or a learning community we can greatly enhance each others learning experience and outcomes. In order to function well as a learning community, we must each do our part and come to class prepared to engage one another and the material. This means always reading and reflecting on the assigned materials and thoughtfully preparing questions and information for sharing with the group. Learning portfolio described below will help us with our learning.

Portfolios

Your learning portfolio is intended to provide a structure that will help facilitate engaged learning as well as provide evidence of your learning for evaluation. The Portfolio is a major opportunity to record, consolidate, integrate, and internalize all aspects of the course. Because of its importance in facilitating our learning the portfolio is the largest portion of your grade. *It is incumbent upon you to provide evidence of your learning in the portfolio*. It is this evidence of your learning combined with its organization and utility that will be used in your evaluation. You should prepare your journal in a way that allows you and any other reader to rapidly retrieve the various entries you will make in it. It should be clearly legible to other readers and to you at any time in the future when you might need to refer to it. A loose-leaf, 8 x 11 inch 3 ring binder divided by section indices is required. It should be a complete and organized record of the entire term's work. The syllabus, handouts, reprints, and assignments should all be housed in your portfolio. Your personal understanding of issues and the formulation of personal positions is a cumulative process and a careful, serious, portfolio is one of the most useful tools towards these ends.

Your portfolio should consist the following sections:

1. **General Course Info**: Schedule of Topics, Syllabus, Grading Rubrics etc…

2. **Reading Reactions:** For ***each days collectively assigned readings*** you must write:
   a. Brief summary (~1 paragraph) of the ideas put forth in the readings for that day
   b. Your thoughts/ideas/responses stirred or sparked by the readings.
   c. Questions or discussion points do you have for class based on this reading.

   A reading reaction is required for everyday reading is assigned and must contain sections a, b, c as stated above. Reading reactions must be organized chronologically with the date and class # of the assigned reading indicated clearly at the start of each reaction.

   We will use reading reactions as basis for our daily class discussions. Individuals will be called on to share this information in class each day as part of required participation.

3. **Class Notes**: *Notations of all pertinent facts, ideas, and information of all lectures, discussions, speakers, panels, and presentations by faculty, guests, or other students are required.* Lectures, presentations etc… like books have titles, authors, participants, and dates. Be sure to indicate these clearly at the start of each days notes. Must be organized in chorological order and labeled clearly with DATE, CLASS #, TITLE, AUTHOR. Printouts of lecture slides with no additional notes are not acceptable for this section. You must process in writing the information yourself in some way.

4. **Assignments**: Assignments are listed in the right column of the "schedule of topics, readings and assignments". They include activates that are designed to further engage you with the materials either through reflection, connection to your organic farming system project, or preparation for case studies. Assignments are intended to help you synthesize course material

with your own thoughts and ideas. This helps anchor the content in a way that makes it more relevant, useful, and easier to remember by connecting information with your existing cognitive pathways or mental hooks (things you already know, think or care about). Each assignment has suggested page lengths and should be written thoughtfully addressing ideas in complete sentences with proper framing and context. Assignments will be collected on day they are due and returned for inclusion in your portfolio.

5. **Organic Farming System Group Project:** In this section you will include information relative to your group project and a final copy of the project report.

Miscellaneous Portfolio Requirements:
-Use 8.5x 11 inch paper.
-Write legibly. If you have sloppy writing, use a computer.
-Refrain from unrelated doodlings, etc…
-*This journal is a representation of your academic learning. Treat it as a professional document.*

Organic Farming System Group Project

This major semester long project will allow you to integrate and apply the knowledge from the course in the creation of an organic farming system of your choosing. It is the goal of this project to anchor course concepts into real world scenarios in which you are personally interested. Some of the foundational work on the project will be individual and occur in the context of the assignments given on the schedule of topics, readings and assignments. But groups will be formed early class #4 (Jan. 26th) to allow group sharing, discussion, creation and work toward the group graded final project paper and presentation due Wed. April 22nd. More detailed description of project requirements can be found in the project/assignment description.

Required Texts

Books
- New Organic Grower – Eliot Coleman
- Soul of Soil – Gershuny & Smillie

Course Pack

Extension Bulletins
- E2983 - Ecologically Based Farming Systems
- E2646 - Michigan Field Crop Ecology
- E2704 - Michigan Field Crop Pest Ecology

Optional Texts

Books
- Organic Farming – Nicholas Lampkin

Extension Bulletins
- CD05 - Integrated Weed Management - One Year's Seeding...
- E2759 - Fruit Crop Ecology and Management

Evaluation

- Participation 10%:
  Attendance is the necessary starting point forming the maximum level you can achieve i.e. if you only attend 90% of classes your participation grade will be determined as a percentage of 90%. Good participation includes regularly contributing to class and group discussions, asking questions, sharing reading responses when asked.

- Short Written Assignments 20%
  There are 11 of these due in class throughout the semester. Each will be graded out of 10 and averaged together to determine your over all grade on the short written assignments.

- Portfolios 30%: (10% 1st collection, 20% Final Collection)

- Organic Farming System Group Project 23%

- Final Comprehensive Oral Exam: 17%

Late Policy: Late items will drop 1/2 grade for each day they are late. Items not turned in when requested during class will count as 1 day late.

Grading Scale
91-l00% = 4.0
85-90 = 3.5
80-84 = 3.0
75-79 = 2.5
70-74 = 2.0
65-69 = l.5
60-64 = 1.0
< 60 = 0

HRT 251 Schedule of Topics, Readings and Assignments
Organic Farming Principles and Practices
Spring 2009

Class	Day	Date	Topic	Reading	Assignment
1	M	1/12	Introductions, Go over syllabus, course format and expectations. **What is a farm? What is an Organic farm? What is organic certification?** USDA, IRS def. & beyond	**To be completed before class that day** **Source Key** **EBFS**= Ecologically Based Farming Systems **SS**= Soul of Soil ; **CP**=Course Pack ; **NOG** = New Organic Grower **MFCCE**= MI Field Crop Ecology ; **MFCPE**= MI Field Crop Pest Ecology **(Optional/Recommended)** **OF=**Organic Farming; **IWM**= Integrated Weed Management;	**To be completed before class on that day and turned in during class.**
2	W	1/14	**Why Organic?** Organic farming historical perspectives, organizations Certifications, social-political-environmental-economic back drops Knowledge/ecology vs synthetic inputs based.	**CP: 1.** Letter to Farmer in Chief **EBFS**: pp3-12; **SS**: p1-6, **CP: 2.** Organic Overview p1-8, 24; **CP: 3.** Certification and NOP; **CP: 4.** Organic in America & Organic Certification www.attra.org UDSA NOP http://www.ams.usda.gov/nop (**OF**: pp1-10, 574-585)	
	M	1/19	**MLK Day Observance – No Classes**		
3	W	1/21	**Farm as Ecological System, Healthy Soil as Foundation to Organic Production** Introduce Organic Farming System Group Project (OFSGP)	**EBFS**: pp12-31; **SS**: pp7-8; **NOG**: pp1-4; **CP: 5.** Ecological Agriculture principles practices and constraints (**OF**: pp13-17, 52-56)	Reflection: Ecology & Systems basis for agriculture – your thoughts, ideas, and visions. ~2pgs
4	M	1/26	**Soil Properties and Processes 1: Biological: How do plants grow? – Soil Plant Interactions-** Living Soil, Soil Food Web, Biological N fixation, Mycorryhza, Role of Soil Organic Matter (SOM) Form group project teams	**MFCE** pp17-27, 28-43; **MFCPE** pp26-31; **SS**: pp8-15, 36-51	Write up an overview of the type of organic farming system you want to create for your group project. Scale, markets, crops, livestock, location, focus, for-profit, not-for-profit/educational, rural/urban etc…? ~1pg Will be shared/used to form groups in class
5	W	1/28	**Soil Properties and Processes 2: Physical & Chemical** : How do plants grow? Soil structure and type, nutrient and water capacity and availability, Role of SOM	**SS**: pp16-35, 52-67; (**OF**: pp21-28, 56-58, 62-84)	
6	M	2/2	**Disease Suppression & Soil Biology** – Stuart Grandy Guest		

7	W	2/4	**Soil Properties and Processes 3:Building SOM** – Cover Crops, Compost, Animal Manure, Mulch & more	**MFCE** pp44-53; **SS:** pp85-91, 103-119 **CP: 6** USDA - Managing Cover crops profitably pp9-53	Find rest of "managing Cover Crops Profitably"@ http://www.sare.org/publications/covercrops/covercrops.pdf quickly browse p54-201 Choose some promising cover crops for your organic farming system project and indicate why and how you will use them in a brief write up ~2pg
8	M	2/9	**Soil Properties and Processes 4: Compost**	**SS**: pp91-103; **NOG**: pp.111-118 (**OF**: pp 86-97, 98-111)	
9	W	2/11	**Soil Properties and Processes 5: Management & Evaluation:** Soil quality, Tilth, Crop Rotations ,Tillage, Soil Testing & Observations, Plant health as indicator	**SS**: pp67-79, 80-85, 119-138; **CP: 2**. Organic Overview pp8-25; **NOG**:pp.50-68, 82-93 (**OF**: pp28-48, 32-48, 128-135)	Develop and write up a soil management program for your organic farm system including types of tillage, crop rotations, soil health/fertility mgnt, soil testing/evaluation etc… ~2pgs
10	M	2/16	**Local and Organic Food Systems in Michigan** Jim Bingham and Mike Hamm	**Portfolio Collection #1** **CP: 9**. Direct Marketing p1-24; **CP: 10.** Beyond Cash Cropping; **CP: 11**. CSA; **NOG** pp. 29-32, 196-203	**Portfolio Collection #1**
11	W	2/18	**Organic Herbivore, Decomposer, & Non-crop Producer Management 1**: Ecological and Systems Approach to Plant Health and the Plant, Pest, Natural Enemies Complex	**MFCPE** pp14-24, 32-34, 35-50; **NOG**: pp172-183, 185-189 (**IWM** pp15-19, 21-28)	
12	M	2/23	**Organic Herbivore, Decomposer, & Non-crop Producer Management 2:** Organic IPM Principles Marketing & Economic Injury Threshold Impact of pesticides on pest mgnt, Where did pesticides come from?	http://paipm.cas.psu.edu/whatisIPM.html ; **CP: 7**. Bio-Intensive IPM; **MFCPE** pp51-68, 69-83, 84-94 (**IWM** pp29-32; **OF**: pp161-187, 214-229)	
13	W	2/25	**Organic Herbivore, Decomposer, & Non-crop Producer Management 3:** Foundational Management practices: Healthy Plants, Variety Selection, Crop Rotation, Biological Control, Cover Crops, Mulching, Fallow & Residue Mgnt, Farm-scaping/habitat mgnt, Water Mgnt, Inter-cropping, Exclusion Remedial Management practices: In-season population reduction - Physical, mechanical, chemical (OMRI materials), Biological (compost tea, NE release, weeder geese ect..)interventions and their impacts,	**MFCPE** pp95-99; **NOG**: pp.158-171 (**IWM** pp41-44, 71-74; **OF**:187-210, 229-266)	Develop and write up a non-crop producer (weed) management plan for your OFS include both general techniques and specific techniques for different crops as necessary ~2pgs
14	M	3/2	**Conservation and Enhancement of Biological Control** : Doug Landis	**CP: 8.** Farmscaping to Enhance Biological Control	

15	W	3/4	**Organic Herbivore, Decomposer, & Non-crop Producer Management 3: continued**	**Resource Guild for Organic Pest and Disease Management:** Found @ http://www.nysaes.cornell.edu/pp/resourceguide/ **(IWM** pp33-39, *45-54 highly recommended*, 65-70)	Select a pest or disease challenge for a crop or crop family you will have in your OFS and outline a good organic system management plan to address it. Use the" Resource guild for organic pest and disease mgnt" as well as other materials from class or that you locate as the basis for your system. ~2pgs
	M	3/9	Spring Break **Michigan Organic Agriculture Conference on 3/7 @MSU;**		
	W	3/11	Spring Break **Michigan Organic Agriculture Conference on 3/7 @MSU;**		

16	M	3/16	**Systems Case Study 1: Cucurbits** Plus Report / Sharing from conference	**CP: 12**. Cucumber Beetle Organic IPM	Research Cucurbit mgnt, **Write out** thoughtful questions based on your research that you wish to ask in class. Include research materials/references you found in what you turn in.
17	W	3/18	**Organic Fruit Production** Prepare for panel: Learning Objectives and Questions	**CP: 13**. Organic Tree Fruit Production **EBFS**: 75-100	Research Organic Apple Production **Write out** thoughtful questions for discussion in class and for the panel. Include research materials/references you found in what you turn in.
18	M	3/23	**Model Systems Case Study 2: Organic Apple Production**		
19	W	3/25	**Organic Livestock: Philosophy and NOP rules and regulations**	**CP: 14**. Organic Livestock workbook p. 7-10, 36-56 (**OF**:pp270-340)	
20	M	3/30	**Organic Livestock: Management** - shelter, water, food, reproduction, production, death Integration of Vegetable, Fruit, Field Crop, and Livestock: An Agro-ecological approach to farming	**CP: 16.** Animals in Agroecosystems – Agroecology chpt 19 **EBFS**: 102-119, 135-138, (**OF**:pp347-376)	
21	W	4/1	**Organic Livestock: Case Study: Organic Sheep** – Matt Shane MSUE & Lamb Farm		Research Organic Livestock Production; **Write out** thoughtful questions based on your research that you wish to ask the speaker(s). Include research materials/references you found in what you turn in.
22	M	4/6	**Organic Farmer Panel**	**CP:25**. Agroforestry Overview **Introduction to Permaculture** found @ http://attra.ncat.org/attra-pub/perma.html (**OF**: pp415-443)	
23	W	4/8	**Systems Case Study 3: Field Crops**		Research materials on organic field crop production **Write out** thoughtful questions for the panel. Include research materials/references you found in what you turn in..
24	M	4/13	**Organic food in the corporate market place:** Who owns Organic? Phil Howard Guest	**CP: 17**. Who Owns Organic?; **CP: 18**. Small Farms Big Markets, **CP: 19**. Who is paying for your food?; **CP: 20**. Top 10 reasons to buy local	
25	W	4/15	**Systems Case Study 4: SOF – diversified small farm**, history, concept, productivity, markets, benefits and tradeoffs, labor, capital/overhead, benefits of diversity, SOF crop plan, rotations, transplant production, irrigation, soil, crop, pest mgnt, season extension	**CP: 15**. Market Gardening Start-up Guild **NOG:** pp. 19-23 Scale & Capital Johnny's Seed Catalog,	
26	M	4/20	**Presentations of Student Farm System Design Project**		
27	W	4/22	**Presentations of Student Farm System Design Project** continued		
28	M	4/27		**CP: 21**. Organic Ag & Global Food Supply; **CP: 22**. Balancing Food,	Reflect on the diversity of ideas presented in the organic farming systems group projects


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