Winter 2015  

Diverse Farming Systems: Theory and Practice  
(NRE 553)  

Note: The last lecture will be on April 8. Students are required to attend a workshop on ecological games that will take place Saturday February 21 all day.

Instructor: Ivette Perfecto, perfecto@umich.edu, 3541 Dana, 734-764-8601, Office Hours: M 2:30-4:30

Meeting time: Monday and Wednesday 1:00-2:30 in room 4153 USB

Course Description: In this interdisciplinary course, we will critically explore an intersecting literature on agroecology, biodiversity, ecosystem services, diversified farming systems, agroforestry, and farmer’s livelihoods. The first part of the course will focus on the application of ecological theory to the study of diverse farming systems including intercropping and agroforestry. The second part will emphasize biodiversity both in terms of how agricultural landscapes affect biodiversity and how biodiversity contributes to the sustainability, productivity and resilience of agroecosystems and farming communities. The third part of the course will focus on management aspects of agroforestry and diverse farming systems. Finally, the last part covers some of the most salient social issues in diverse farming systems, such as tree and land tenure and gender issues as well as the rural social movements that promote diverse farming systems and agroecology.

Class Format: most class meetings will involve lecture and discussion in addition to a whole day workshop on ecological games

Course Schedule:  

<table>
<thead>
<tr>
<th>Part I. A Theoretical Framework for Intercropping and Agroforestry</th>
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<tr>
<td>7-Jan</td>
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<td>12-Jan</td>
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<tr>
<th>Part II. Diverse Farming Systems and Biodiversity</th>
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<tr>
<td>11-Feb</td>
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<td>16-Feb</td>
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<td>18-Feb</td>
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<td>21-Feb</td>
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<td>25-Feb</td>
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<td>2-Mar</td>
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### Part III. Diverse Farming Systems around the World

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<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>9-Mar</td>
<td>Overview of Agroforestry Systems; Agroforestry for soil and water conservation</td>
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<tr>
<td>11-Mar</td>
<td>Natural systems as models for agroecosystems</td>
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<td>16-Mar</td>
<td>Temporal diversity: shifting cultivation, improved fallow, taungya, rotations</td>
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<td>18-Mar</td>
<td>Home gardens and forest gardens</td>
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<td>23-Mar</td>
<td>Integration of animals in agriculture</td>
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<tr>
<td>25-Mar</td>
<td>Climate change and resilience of diverse farming systems</td>
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<td>30-Mar</td>
<td>Exam II</td>
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### Part IV. Socio-Political Aspects of Diverse Farming Systems

<table>
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<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>1-April</td>
<td>Diverse farming systems and the new peasantry approach</td>
</tr>
<tr>
<td>6-April</td>
<td>Land and tree tenure systems</td>
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<td>8-Apr</td>
<td>Gender issues</td>
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</tbody>
</table>

*Saturday 21 February all ecological games workshop

**Required Readings:**
Vandermeer, J. 1999. *The Ecology of Intercropping*. Cambridge University Press (earlier versions are acceptable) (First few chapters will be available electronically on C-tools)
Course-pack available through course tools

**Other Recommended Readings:**

**Evaluation:**

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<tr>
<th>Component</th>
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<tr>
<td>Exam 1</td>
<td>20%</td>
<td>Feb 9</td>
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<td>Exam 2</td>
<td>20%</td>
<td>Mar 30</td>
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<tr>
<td>Paper 1 (models for agroforestry)</td>
<td>15%</td>
<td>Feb 18</td>
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<tr>
<td>Paper 2 (open topic)</td>
<td>20%</td>
<td>Apr 8</td>
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<tr>
<td>Problem Set 1 (intercrop and AF eval.)</td>
<td>5%</td>
<td>Jan 21</td>
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<tr>
<td>Problem Set 2 (competition and facilitation)</td>
<td>5%</td>
<td>Jan 28</td>
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<tr>
<td>Problem Set 3 (ecological games)</td>
<td>5%</td>
<td>Mar 4</td>
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</table>
Paper 1: For this paper you should choose some ecological theory and applied it to diverse farming systems. For example, you can take some aspects of the theory developed for intercropping and adapt it to an agroforestry system or you can choose some ecological theory not covered in class and apply it to the analysis of a particular diverse farming system. The use of equations is encouraged but not required. The paper should be 5-10 pages long (doubled spaced). On February 11 you should hand in your selected topic, a brief explanation of what you plan to do, a tentative outline of the paper, and a list of references. The paper is due on February 18.

Paper 2: The topic for this paper is wide open as long as it has to do with diverse farming systems. Choose a topic of your interest. You should have a hypothesis and use the available literature to test your hypothesis. The paper should be 10-15 pages long (doubled spaced). On March 18 you should hand in your selected topic, your hypothesis, a tentative outline of the paper, and a list of references. The paper is due on April 8.

Both papers should be written in a publishable form using the scientific format and standard format for reference.

*Discussion participation grade will be based on the level of participation, summaries of key points of assigned readings, and submitted questions for each reading.

**Late Assignment Policy:**
For the sake of fairness to all students in the course, deadlines will be strictly enforced. Unless you’ve made prior arrangements, lateness will impact your grade (10% for every day). If you have trouble completing a particular assignment, this must be discussed with me before the deadline. At the end of the semester, students with will be assigned a letter grade on the basis of the work that has been completed. “Incompletes” will be given only in extenuating circumstances under special permission.

*Academic Honesty:* All students are responsible for maintaining the highest standards of honesty and integrity in every phase of their academic career. The penalties for academic dishonesty are severe; ignorance of what constitutes dishonesty is not an acceptable defense.

**Journals of Interest:**
Acta Horticulturae
Agriculture (Open Access Journal)
Agriculture and Human Values
Agriculture Ecosystems and Environment
Agroecology and Sustainable Food Systems (Journal of Alternative Agriculture)
Agroforestry Systems
Agronomy for Sustainable Development
Ambio
Aspects of Applied Biology
Culture, Agriculture, Food and Environment
Ecology and Society (Open Access Journal)
Experimental Agriculture
Food Policy
Forest Ecology and Management
Forest Trees and People
Forest Science
Forestry Abstracts
Gastronomica – Journal of Critical Food Studies
HortScience
HortTechnology
Human Ecology
International Journal of Agricultural Sustainability
Journal of Agriculture and Environmental Ethics
Journal of Forestry
Journal of Peasant Studies
Journal of Sustainable Agriculture
Journal of the Science of Food and Agriculture
Journal of World Forest Resource Management
Land Use Planning for Sustainable Food Systems
Livestock Science
Natural Resources and Society
Plant and Soil
Renewable Agriculture and Food Systems
The Journal of Agriculture, Food Systems and Community Development
The Journal of Agricultural Sciences
Unasylva

**Databases:**

*Available at UM Library:*
AgEcon Search
AGRICOLA
AGRICOLA Articles (NAL)
BioOne Abstracts and Indexes
Biological Abstracts
Biological and Agricultural Index Plus
BIOSIS
CAB Abstracts
Ecology Abstracts
Encyclopedia of Food and Culture
FAOSTAT
Food Environment Atlas
Global Health (CABI)
International Political Science Abstracts (EBSCO)
Humanities and Social Sciences Index
Organic Agriculture Information Access
Science Citation Index (Web of Science)
Social Science Abstracts
Sociological Abstracts
UN Data

Not available at UM Library:
Agroforestry Abstracts - http://www.cabi.org/publishing-products/online-information-resources/agroforestry-abstracts/
CAB Abstracts (CABI) - http://www.cabi.org/publishing-products/online-information-resources/cab-abstracts/
Social Sciences in Forestry (SSIF) - http://www.lib.umn.edu/cgi-bin/forestry/index.cgi
p


Websites:
1st World Congress of Agroforestry - http://conference.ifas.ufl.edu/WCA/
Agri Cultures Network (Center for Learning on Sustainable Agriculture) - http://www.agriculturesnetwork.org/
Agroforestry Net - http://agroforestry.net/
Association of Temperate Agroforestry - http://www.aftaweb.org/
Bioversity International - http://www.bioversityinternational.org/
Center for Agroforestry of the University of Missouri - http://www.centerforagroforestry.org/
Center for Diversified Farming Systems - http://food.berkeley.edu/dfs/
Center for International Forestry Research (CIFOR) - http://www.cifor.org/
Farm Woodland Forum - http://www.agroforestry.ac.uk/
International Federation of Organic Agriculture Movements (IFOAM) - http://www.ifoam.org/
Land Institute - http://www.landinstitute.org/
Leopold Center for Sustainable Agriculture - http://www.leopold.iastate.edu/organic
Research Institute of Organic Agriculture (FiBL) - http://www.ifoam.org/
Rodale Institute - http://rodaleinstitute.org/
Sustainable Agriculture Research and Education - http://www.sare.org/
USDA Alternative Farming Systems Information Center (AFSIC) - http://afsic.nal.usda.gov/
USDA National Agroforestry Center - http://nac.unl.edu/