Food Systems for Poverty Reduction: Concepts and Themes
IARD 6040/AEM 6040
Fall 2010

When and Where: Tuesdays and Thursdays, 2:55 – 4:10, Room 260 Warren Hall

Lead Instructors: Address all general inquiries, including requests for permission to join the course, to:


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Co-Instructors:

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Karim-Aly Kassam, Department of Natural Resources, 8A Fernow Hall; (607) 255-9757; ksk28@cornell.edu. Office hours: Wednesdays 1-2 pm or by appointment.

Pete Loucks, Department of Civil and Environmental Engineering, 311 Hollister Hall; 255-4896; dpl3@cornell.edu Office hours: by appointment.

Beth Medvecky, Cornell International Institute for Food, Agriculture and Development; 31 Warren Hall; 254-6558; bam44@cornell.edu; Office hours: Wednesdays 9 am – noon or by appointment.

Kevin Morrison, Department of Government, 315 White Hall; 607-255-0726; kmm368@cornell.edu Office hours: by appointment.

Alice Pell, Department of Animal Science, 115 Day Hall; 255-7993; ap19@cornell.edu Office hours: by appointment. Please contact Linda Schmidt (lms10@cornell.edu) for an appointment.

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Alison Power, Department of Ecology & Evolutionary Biology; 331 Corson Hall; 254-2333; agp4@cornell.edu Office hours: by appointment.

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Alex Travis, Department of Reproductive Biology; 120 Baker Institute West Wing; 256-5613; ajt32@cornell.edu. Office hours: by appointment.

Course overview: This course, which is part of the Food Systems and Poverty Reduction IGERT course and seminar sequence, will introduce concepts, empirical evidence and theories and methods from
multiple disciplines. The objective in this first semester is to provide all IGERT Trainees and Associates with a common base knowledge across the whole food system, drawing on multiple disciplines. Class time will ~1/3 instructor delivery of new material, 2/3 student-led (instructor-directed) discussion of key readings and identification of key research topics sparked by readings and concepts. Cross-cutting themes will include gender issues, spatially explicit analysis, and the complementary roles of modern scientific research and development and of community-based institutions.

The course is three credits. IGERT trainees and associates must take it for a letter grade. Others can take course S/U with lead instructors’ permission.

Assignments:
Readings will be posted to the course Blackboard (Bb) site, which students should consult regularly for announcements as well.

Grades will be based on the following:

- **Class participation.** The course requires active student engagement in discussing the assigned readings in class, and in helping each other understand the theories, methods, empirical evidence and traditions of their various disciplines. This counts for 25% of the final grade.
- **A 3-6 page critical review of all the readings (both assigned and supplementary) in a module that is NOT taught by a faculty member from the student’s Ph.D. field.** This brief review should articulate the core ideas and controversies about a food systems and poverty reduction issue: what are the (perhaps competing) theories? What does the evidence tell us? This is due one week after the close of the relevant module, as noted on the syllabus. This counts for 25% of the final grade.
- **A final literature review paper that takes an explicitly interdisciplinary, food systems view on a selected problem (preferably, of potential relevance to the student’s dissertation).** This is due December 12. This counts for 50% of the final grade.

**Academic integrity statement:** Each student in this course is expected to abide by the Cornell University Code of Academic Integrity. Any work submitted by a student in this course for academic credit will be the student’s own work. See Code of Academic Integrity [http://cuinfo.cornell.edu/Academic/AIC.html](http://cuinfo.cornell.edu/Academic/AIC.html). Plagiarism will not be tolerated in this course (To avoid and recognize plagiarism visit the following website: [http://plagiarism.arts.cornell.edu/tutorial/index.cfm](http://plagiarism.arts.cornell.edu/tutorial/index.cfm)).

You are encouraged to study together and to discuss information and concepts with other students. You can give "consulting" help to or receive "consulting" help from such students. However, this permissible cooperation should never involve one student having possession of a copy of all or part of work done by someone else, in the form of an e mail, an electronic file, or a hard copy.

Should copying occur, both the student who copied work from another student and the student who gave material to be copied will both automatically receive a zero for the assignment. Penalty for violation of this Code can also be extended to include failure of the course and University disciplinary action.
Lectures and Readings Calendar

Thursday, August 25: Introduction (C. Barrett and R. Nelson)

- Objectives: To introduce course and general approach; familiarization with basics of food systems and of poverty analysis (core concepts and measures):
  o P. Pinstrup-Andersen and D. Watson (2011), “Food Policy for Developing Countries: The Role of Government in Global, National and Local Food Systems” chapter 1 in P. Pinstrup-Andersen and D. Watson, Food Policy in Developing Countries, in press.

Supplementary readings:


Module 1: Poverty Reduction Pathways (C. Barrett)

Tuesday, August 31: Objective: understand the place of agriculture and food systems in poverty reduction and the importance of macro-scale phenomena to the incentives and constraints faced by the poor.

Supplementary readings:


**Thursday, September 2:** Objectives: To understand microeconomic perspectives on poverty and related food systems issues: agricultural household models, behavior under risk and uncertainty, welfare effects of price changes, technology adoption, and intrahousehold allocation.


Supplementary readings:


**Tuesday, September 7:** Objectives: To appreciate an integrated socio-cultural and ecological perspective; To apply the interdisciplinary lens of human ecology to understand human and environmental relations; To appreciate the complex interconnectivity between the ecological and the socio-cultural; To comprehend that individual actions informed by cultural systems manifest themselves in social structures that rely on ecological foundations;


**Thursday, September 9:** Objective: To illustrate the participatory and experiential basis of indigenous and local knowledge.


*Sept. 9: Module 1 critical review paper due*

**Module 3: Political Economy and Institutions (Morrison/Pinstrup-Andersen)**

**Tuesday, September 14:** Objective: To understand how institutions affect incentives for behavior in general, and at the local level in particular. Some elementary game theory will be introduced.

  - “A Theory of Groups and Organizations.”, pp. 5-52.
  - “Games.” pp. 17-32.

**Supplemental readings**

- Other chapters in Wydick book, particularly:
  - “Risk, Solidarity Networks, and Reciprocity”
  - “Understanding Agrarian Institutions”
  - “Savings, Credit, and Microfinance”
  - “Social Learning and Technology Adoption”
  - “Property Rights, Governance, and Corruption”
  - “The Political Economy of Trade and Development”

- Rest of Ostrom book.

**Thursday, September 16:** Objective: To understand how institutions at national level evolve and affect agricultural policies and policies toward the poor.

    - Chapters 5-7, pp. 81-118.

**Supplemental readings:**

- Rest of Bates book.

**Sept. 9: Module 2 critical review paper due**

**Tuesday, September 21:** Objective: To understand how international institutions affect food systems in developing countries

  - Per Pinstrup-Andersen and Derrill Watson (forthcoming). Food Policy for Developing Countries: The Role of Government in Global, National and Local Food Systems, chapter 9 “Governance and Institutions”.

**Thursday, September 23:** Objectives: To analyze a specific institutional a case study.
Module 4: Agroecology (A. Power)

**Tuesday, September 28:** Objectives: To introduce agriculture as an ecological system, with human management as a major system influence; familiarization with ecological processes that influence the productivity and environmental impacts of agricultural systems.


**Thursday, September 30:** Objectives: To introduce major groups of organisms that influence agroecosystem function, including plant communities, soil microbial and invertebrate communities, and communities of above-ground consumers (herbivores, pathogens, and natural enemies).


*Sept.30: Module 3 critical review paper due*

Module 5: Farming systems (R. Nelson/B. Medvecky)

**Tuesday, October 5:** Objective: To introduce basic concepts and frameworks for understanding African farming systems. Environmental drivers and systems evolution under human management will be considered.


Supplementary readings:

Thursday, October 7: Objective: To explore the consequences of staple crop domination and the potential (and obstacles) of leguminous crops to enhance ecosystems services in cereal-based, smallholder production systems


Supplementary readings:

Oct. 7: Module 4 critical review paper due

Tuesday, October 12: Fall Break (Enjoy!)

Thursday, October 14: Objectives: To become familiar with issues and methods related to plant breeding as related to current and past efforts to address food insecurity in the developing world; consider the biological and institutional issues surrounding improvement of staple crops. (R. Nelson)


Supplementary readings

  - Chapter 2: The Challenge
  - Chapter 4: Breeding – Between and Art and a Science
  - Chapter 5: Biotechnology: Expanded Possibilities
  - Chapter 6: Seed systems: Reaching the Poor in Numbers
  - [Chapters 8-14 deal with specific crops]
- Desclaux et al., 2008. Changes in the concept of genotype x environment interactions to fit agriculture diversification and decentralized participatory plant breeding: pluridisciplinary point of view. Euphytica 163:533-546

Tuesday, October 19: Objective: To illustrate how interaction among biophysical and socioeconomic factors can contribute to poverty and food insecurity in African cropping systems, using cassava as an example


Module 6: Livestock (A. Pell/A. Travis)

Thursday, October 21: Objectives: To introduce the important roles of livestock in rural agriculture and development. To provide overviews of the social and public health benefits, systems of production, constraints on production, and environmental tradeoffs associated with livestock. To introduce household and national-scale economic issues and policy aspects of livestock production.


Supplementary reading:

- As the Fences Come Down: Emerging Concerns in Transfrontier Conservation Areas, AHEAD-TGLTFCA Working Group document, Wildlife Conservation Society

**Tuesday, October 26:**

Objectives: To describe and contrast pastoral and integrated cattle production systems.


**Supplementary reading:**

- deLeeuw, J. et al., Distribution and diversity of wildlife in northern Kenya in relation to livestock and permanent water points, Biological Conservation 100: 297-306 (2001)

**Oct 26: Module 5 critical review paper due**

**Thursday, October 28:** Objectives: To present an overview of the production, constraints on production, and environmental tradeoffs associated with other livestock species, including chickens, goats, and fish.

- Harrison, J. L. and Alder, R. G. As assessment of chicken husbandry including NewCastledisease control in rural areas of Chibuto, Mozambique, Trop Anim Health Prod 42;729-736 (2010)

**Supplementary reading:**
Module 7: Soil and Water (J. Lehmann)

Tuesday, November 2: Objectives: To convey key concepts regarding soils and soil productivity. To identify constraints to soil nutrient fertility in tropical soil with focus on eastern Africa. To provide an overview of current approaches to address constraints: mineral fertilizers; agroforestry.


Supplementary readings:

- Schroth G 1999 Tree root characteristics as criteria for species selection and systems design in agroforestry. Agroforestry System 30, pp. 125-143

Thursday, November 4: Objectives: To understand the potential and limitations of conservation agriculture.


Supplementary readings:


Nov 4: Module 6 critical review paper due

Tuesday, November 9: (T. Steenhuis/P. Loucks) Objectives: Become familiar with various forms of water (green, blue, grey and virtual) and how this is linked with food production, public health and hence economic well-being. In addition, an overview will be given of the movement of water in the landscape with a focus on the Ethiopian highlands, underscoring that steep slopes are not necessarily the source of all surface runoff.

Thursday, November 11: (T. Steenhuis) Objectives: Critical review of soil and water conservation practices in the developing world. Discussion of the success and failures of different management approaches to conserve soil and water.

- Bayabil HK, Tilahun SA, Collick AS, Yitaferu BF and Steenhuis T.S. 2010. Are Runoff Processes Ecologically or Topographically Driven in the (Sub) Humid 2 Ethiopian Highlands? The Case of the Maybar Watershed. Ecohydrology (under revision)


Please read the following sections: Section 1.4 p 24-25; sections 2.4 and 2.5, p39-50; section 9.1 p 164.165; sections 9.4 -9.6 p 173-179; sections 10.1 and 10.2, p181-191.

Tuesday, November 16: (P. Loucks) Objectives: To learn about models for identifying economic shadow prices of available resources for food production as well as models for evaluating alternative crop and animal production plans and for setting targets.


Thursday, November 18: (R. Howarth) Objectives: To provide an overview of nitrogen and phosphorus pollution at the landscape scale (generally, not just Africa); Consequences of water quality – eutrophication and fisheries; Lake Victoria as a case study; Nitrate contamination and human health (blue-baby syndrome; cancer; developmental issues); Nutrient pollution and other aspects of human health – schistosomiasis and malaria as examples


Ecology of agricultural landscapes (A. Power)

Tuesday, November 23: Objectives: To explore interactions between biodiversity, ecosystem services, and agroecosystems in agricultural landscapes


### Supplemental readings:


**Thursday, November 25:** Happy Thanksgiving!

### Linking subsystems (C. Barrett)

**Tuesday, November 30:** Objective: To expose students to ways of integrating poverty and biophysical analysis, with an emphasis on natural resources management issues in agriculture, especially concerning soil fertility.


### Supplementary readings:


**Nov 30: Module 7 critical review paper due**

**Thursday, December 2:** Objective: To expose students to ways of integrating poverty and biophysical analysis, with an emphasis on health and nutrition issues.


**Supplementary readings:**