Engaged Practices Innovation (EPI) Grant Program

ENGAGING CO-LEARNING THROUGH PARTICIPATORY ACTION RESEARCH (PAR)

PSS/ENVS 212 students harvest carrots with farmer Christa Alexander of Jericho Settlers Farm.

(Photo credit: Ernesto Méndez)

Submitting team:

Dr. V. Ernesto Méndez, Professor/Lead of the Agroecology & Livelihoods Collaborative (ALC)
– Plant & Soil Science Department and Environmental Program
  Dr. Karen Nordstrom, Lecturer
– Department of Nutrition & Food Sciences and Environmental Program
Dr. Joshua Faulkner, Farming & Climate Change Coordinator
  – Center for Sustainable Agriculture, UVM Extension
  Dr. Vic Izzo, Lecturer/ALC Educational Coordinator
  – Plant & Soil Science Department
Martha Caswell, MPP, ALC Research & Outreach Coordinator
  – Plant & Soil Science Department
Abstract

Recognizing that participating in real, hands-on agroecology-related research has resulted in important results for student engagement and learning. In response to requests from current farmer partners for research that is useful and relevant, this proposal seeks to expand the PSS/ENVS 212 (Advanced Agroecology) service-learning course to incorporate participatory action research (PAR) co-facilitated by student interns. Four students will be selected as “Farmer Team Captains” or FTCs, and will work closely with faculty and staff of the Agroecology & Livelihoods Collaborative, farmers and their student peers, while gaining strong leadership skills, experience in conducting and facilitating agroecological research and learning what a multi-actor PAR process requires to succeed.

1. Introduction and Background

The fall PSS/ENVS 212 course attracts upper level undergraduate and graduate students from a range of majors. The course integrates four high-impact practices: service learning, reflection, collaborative assignments and research. For the service-learning and research components, students work in teams and collect data on four partner farms. To date, the on-farm research activity has been designed for the benefit of students, not farmers. Yet, as Ahmed et al. (2017) argue, it is important for student research to be real and with a purpose, rather than just a learning exercise for student benefit. Capitalizing on existing relationships with farm partners who are enthusiastic about additional on-farm research, and recognizing an opportunity for student leadership and peer-to-peer learning exchanges, we are proposing a redesign of PSS/ENVS 212 to include on-farm agroecological research that will contribute toward an ongoing participatory action research (PAR) process. This will allow “…researchers and stakeholders (to) cooperatively (work) to address a

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1 Majors include Environmental Studies, Food Systems, Natural Resources, Community Development & Applied Economics and Ecological Agriculture.
2 The class earned the 2015 Lynne Bond Outstanding Service-Learning Faculty Award, conferred by the CUPS Office.
problem, through iterative research processes that foster reflection and shared learning.” (Bezner-Kerr, et al, 2016 p5)

2. Project Description

Scholarship on agroecology and food systems pedagogy calls for developing courses and curricula, which engage students in experiential and reflexive learning (Valley et al., 2017). Research at the agroecology program of the Norwegian University of Life Sciences also shows the importance of real-world student engagement in farms and communities, as a key component of agroecological learning (Francis et al., 2016; Francis et al., 2011).

Titled the ‘On-Farm Agroecological Investigation’, the laboratory section of PSS/ENVS 212 engages students in collaborative service learning and research on partner farms. Students spend the semester completing farm work shares, and collecting/analyzing data. Ten of the 14 lab sessions are spent on-farm, culminating in a team report and class presentation, which synthesizes social (e.g. farmer livelihood data) and biophysical (e.g. soil properties, and plant inventories) data. During off-farm lab sessions, students learn social (e.g. interviewing) and natural science (e.g. plant surveys) methods.

Converting PSS/ENVS 212 from a basic service-learning model to a Service Learning/PAR practicum requires transitioning from a recurring model (students conducting the same on-farm activities each year), to cycles of iterative research. In the proposed model students, faculty and farmers will work together to define research projects that are relevant to all partners, and which benefit from cycles of research that follow selected indicators over time (Méndez et al., 2017). We will create four student leadership internship positions to work with farm partners (The Farm Between, Jericho Settlers Farms, Digger’s Mirth Farm and Bread and Butter Farm), thereby ensuring student participation in the “…institutional and/or organizational connections that facilitate the succession of active participants without losing forward momentum.” (Méndez, et al 2017, p 4)
Farm Team Captains (FTCs) will be selected in May, receive training and participate in farm visits/research design activities over the summer, and act as the primary farm contact for student teams in the fall. Dr. Karen Nordstrom brings expertise in the pedagogy of sustainable education to the ALC team, and will oversee development of the FTC curriculum. FTCs will receive training and mentoring from the ALC team, in addition to support from their major/program advisor. Since the farm partners have a strong interest in the long-term monitoring of soil health indicators, the first PAR iteration will focus on soil health and developing a user-friendly mapping system (to be used by both farmers and students). Dr. Joshua Faulkner, who actively works on soil health management with a diversity of farmers in Vermont, will advise this activity.

Implementation plan:

- Jan-Mar 2018: Further design of initial research phase (ALC/Farms/Faulkner)
- Apr-May 2018: Recruitment of pilot cohort of FTCs (ALC)
- May-August 2018: Development of curriculum and assessment plan (ALC/Nordstrom)
- Jun-Aug 2018: Training of the FTCs, farm visits (ALC)
- Aug-Dec 2018: First iteration of PSS/ENVS 212 as Service Learning & PAR Practicum (all)

3. Impact on Student Engagement, Success and Retention

PSS/ENVS 212 evaluations have shown that on-farm service learning and research is by far the most engaging part of the course, and a way to “put a tangible perspective on materials covered in class”. According to Brownell and Swayner (2009b), service learning (SL) should be paired with other HIEPs to increase gains for students. Incorporating PAR will make the on-farm experience even more meaningful as students will directly contribute to improving agroecological farm management, while learning how to navigate collaborative research processes.

http://www.uvm.edu/newsstories/news/ernesto-mendezs-agroecological-pedagogy
Effective leadership relies upon the ability to develop relationships and an advanced capacity for emotional intelligence/awareness (Ashkanasy & Dasborough, 2003). Throughout the PAR process, FTCs will be challenged to leverage their emotional awareness as they co-facilitate farmer communications and class reflections. These activities will include soliciting farmer ideas, discussing feasibility, developing on-farm plans, supporting continuity across cohorts by maintaining consistent relationships and flow of information with farm partners, and comparing data year after year. As part of the on-farm research teams, all students will “learn by doing” as they collect biophysical data and interact with/interview farmers. Dr. Faulkner and the ALC faculty/staff will provide support and mentor students as they acquire these skills.

4. **Assessment Plan**

As part of an ongoing PAR process, students will be exposed to multiple modes of reflection and assessment. All tools introduced in the FTC training curriculum will be appropriate for use within the cohort and also with course participants and stakeholders. Possible tools include: “K-W-L” (Ogle, 1986) - to describe what they already **Know**, **Want** to know (as a way of setting personal goals), and then, as part of the final reflection, will assess what they’ve **Learned**; and “What, so what, now what?” (Rolfe, et al. 2001) to encourage critical thinking across categories and time. These will be combined with participant observation, written field notes, and semi-structured individual and group interviews with FTCs, student participants and farm partners. Course materials for review include meeting notes/memos that document course design and development; observational data, including a focus on immersion activities and reflective discussion; and student work (with particular attention to reflective essays and postings that integrated conceptual knowledge with experience). This method was successfully used to evaluate learning and impact outcomes of students in several high impact courses, including an agroecology-focused study abroad course (Nordstrom, 2015). Findings will be presented back to participant stakeholders in the form of “member checks” to ensure that results accurately reflect the ideas of the participants (Yin, 2009).
5. References


6. **Budget Justification and Budget**

Up-front investment in curriculum development for training the FTCs and PAR/FTC assessment tools will be developed in year one and represent the bulk of the cost for this EPI proposal. We are also requesting funds to purchase equipment/software that will be used in subsequent years to facilitate the iterative cycles of data collection that have been requested by our farm partners. We are confident seed funding for creating FTC materials and PAR assessment systems for future years, matched with the base support for this course from CALS/PSS (including an annual farmer stipend), will allow us to leverage this EPI investment into an ongoing Agroecology and PAR practicum with unique opportunities for leadership by undergraduate students. Farm partners are connected to the ALC through many avenues, including the nascent Certificate for Graduate Study in Agroecology (CGSA). We trust that after the initial design phase we will be able to maintain their involvement with minimal additional time requested of them, both by being able to provide them with data that is beneficial to them and the work shares that will continue as part of the service learning course component (instead of financial remuneration for their time).

We have included cost share for **dissemination of our model**, as we plan to produce a peer-reviewed publication (target journal is *Agroecology and Sustainable Food Systems*) and present results of this initiative at the annual meeting of the Sustainable Agriculture Education Association (SAEA). We also plan to share progress through our ALC website, Facebook and Twitter throughout the duration of the pilot year, but these efforts will not require significant investment of time and are free, so are not included in the attached budget request.

The total request for this EPI proposal is $14,702.63. We have cost share support from CALS/PSS in the amount of $1338 for Dr. Méndez’ time; a graduate teaching assistant for PSS/ENVS 212 and the course teaching budget/student fees for $1800; CALS/Extension of $765 for Dr. Faulkner’s time; and a pledge from the Environmental Program to support $500 in costs associated with training for the FTC cohorts.
## BUDGET

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APPENDICES
October 2, 2017

Engaged Practices Innovation (EPI) Grants Selection Committee
Office of the Provost
University of Vermont
348 Waterman Building
Burlington, VT 05405

Dear Colleagues,

This letter is to provide my support for Professor Ernesto Mendez’ EPI proposal titled 'Engaging Co-Learning through Participatory Action Research (PAR)'. Professor Mendez has a track record of service learning with his PSS/ENVS 212 Advanced Agroecology course, which serves a diversity of majors, including Ecological Agriculture, Environmental Studies, Community Development and Applied Economics, Environmental Sciences, the Rubenstein School of Environment and Natural Resources, and Food Systems. The course earned Dr. Mendez the Lynne Bond service learning award in 2015.

The proposal seeks to expand the high impact practices of this course from service learning, to also include hands-on undergraduate research and internships. Mendez is also recognized for his work in participatory action research (PAR), an approach where investigators work with civil society actors, such as farmers and non-profits, to design and implement research projects that have a direct benefit to these individuals, organizations or farms. Hence, the students will be able to gain experience in ecological and social research methods, but also be part of a larger, on-going process that directly responds to the needs of the farmer partners. In addition to the team of instructors, the participation of Dr. Joshua Faulkner, from UVM Extension adds strength to this proposal for both the research and opportunity for students to interact and learn from an extension professional.

Hence, I provide my full support for this proposal, which promises to provide a unique opportunity for students to acquire important research and community development skills.

Sincerely,

Thomas C. Vogelmann
Dean

COLLEGE OF AGRICULTURE AND LIFE SCIENCES
OFFICE OF THE DEAN
108 Morrill Hall, 146 University Place, Burlington, VT 05405-0106
(802) 656-0137 • fax: (802) 656-0290 • http://www.uvm.edu/cals/

Equal Opportunity/Affirmative Action Employer
2 October 2017

To: Engaged Practices Innovation (EPI) Grants Selection Committee

From: Dr. Deborah Neher, Professor and Chair

RE: Support letter for Ernesto Mendez’ Engaged practices proposal

This letter is to provide my support for Professor Ernesto Mendez’ EPI proposal titled ‘Engaging co-learning through participatory action research (PAR)’. Professor Mendez has a track record of service learning with his PSS/ENVS 212 Advanced Agroecology course, which serves a diversity of majors, including Ecological Agriculture, Environmental Studies, Community Development and Applied Economics, Environmental Sciences, the Rubenstein School of Environment and Natural Resources, and Food Systems. The course earned Dr. Mendez the Lynne Bond service learning award in 2015. The proposal seeks to expand the high impact practices of this course from service learning, to also include hands-on undergraduate research and internships. Mendez earned the 2015 CALS H. W. Vogelmann Award for Excellence in Research and Scholarship for his scholarly accomplishments in participatory action research (PAR). PAR is an approach where investigators work with civil society actors, such as farmers and non-profits, to design and implement research projects that have a direct benefit to these individuals, organizations or farms. In the proposed transdisciplinary course, students will be able to gain experience in ecological and social research methods, but also be part of a larger, on-going process that directly responds to the needs of the farmer partners. In addition to the team of instructors, the participation of Dr. Joshua Faulknor, from UVM Extension adds strength to this proposal for both the research and opportunity for students to interact and learn from an extension professional.

Hence, I provide my full support for this proposal, which promises to provide a unique opportunity for students to acquire important research and community development skills.
2 October 2017

Re: Letter of support for Engaged Practices Innovation (EPI) Grant

Dear Colleagues –

I write with enthusiasm in support of the EPI proposal entitled *Engaging co-learning through participatory action research (PAR)*. This proposal is led by Professor Ernesto Mendez and will heavily rely on collaborations with Karin Nordstrom. Dr. Mendez has successfully engaged students across a variety of majors, ranging from Ecological Agriculture, Environmental Studies, Community Development and Applied Economics, Environmental Sciences, the Rubenstein School of Environment and Natural Resources, and Food Systems in his ongoing service learning course (PSS/ENVS 212 Advanced Agroecology). The proposal he is submitting today will increase the high impact practices already exhibited in PSS/ENVS 212 to provide internships and increased access for undergraduates interested in research. Interestingly and importantly, he is not asking for funds just to have students doing independent theses and projects. Instead, the funds will provide students with experience in ecological and social research methods, and they will be a part of a larger, on-going participatory action research (PAR) project, an approach where investigators work with civil society actors, such as farmers and non-profits, to design and implement research projects that have a direct benefit to these individuals, organizations or farms.

I am excited to see how this EPI evolves, and I am equally excited to have Ernesto and Karin, as well as our many ENVS students, involved in this amazing course. Toward that end, ENVS will contribute $500 toward the project to increase student research activity. Thus, I fully support for this proposal.

Sincerely,

Nathan Sanders
Professor and Director of the Environmental Program
September 28, 2017

Dr. Ernesto Mendez  
Professor of Agroecology & Environmental Studies  
Department of Plant and Soil Science  
University of Vermont  
Burlington, VT 05405

Dear Dr. Mendez,

I am enthusiastic to collaborate with you on your proposed project for the UVM Engaged Practices Innovation Grant Program. This project, which will integrate Participatory Action Research into your advanced agroecology service learning course, is an excellent opportunity to involve private farms and practicing farmers, as well as undergraduates, into critical agricultural and environmental research. In my position as the Farming and Climate Change Program Coordinator with UVM Extension, I have worked with your participating farms in the past, and believe that this project has a high likelihood of success due to their curiosity, engaged nature, and commitment to education and discovery. These are farms that value and utilize research-based information for guiding their management practices and approaches.

As part of this project, my role will include advising students and farmers on data collection methods and analysis procedures. I will travel to farms when needed for field demonstrations, and join you in consulting with farmers on research findings and implications for management. I will maintain fluid communication with you and your project team to ensure that objectives are met in a timely and satisfactory manner.

I look forward to collaborating with you on this exciting project.

Sincerely,

Joshua Faulkner, PhD  
Farming and Climate Change Program Coordinator  
UVM Extension – Center for Sustainable Agriculture
Dear Selection Committee,

This letter is to confirm our participation and strong enthusiasm to work with professor Ernesto Mendez and other UVM collaborators on the EPI proposal titled ‘Engaging co-learning through participatory action research (PAR)’. We have been collaborating with Professor Mendez since 2008 by hosting his agroecology service learning class (PSS/ENVS 212). The students provide volunteer labor to our farms for the first four weeks of the fall semester, and we then support them doing different types of agroecological research on our farms. Though the research performed on our farm has been interesting, we agree with professor Mendez that the current course model is not fulfilling the true potential of our partnership. We are very enthusiastic to shift the research portion into one that could provide relevant information to monitor our soil health, farming practices and other aspects of our operation. We believe the expansion of the course to include this participatory research component will increase the benefits to our farms and to the students.

We hope that you will be able to support us in this exciting initiative.

Sincerely,

Hilary Martin
Diggers’ Mirth Collective Farm
OVERVIEW
This course presents and in-depth overview of research and applications in the field of agroecology, with a focus on providing the student with conceptual and analytical content. The course combines an international and domestic geographic focus, and examines case studies from the U.S. and abroad. The learning and teaching objectives of the course are as follows: 1) students become familiar with current research and applied concepts and applications of the field of agroecology; 2) through hands-on field exercises in local farming systems, students learn practical, ecological and social research and analytical skills, which are commonly used in agroecology and agrifood systems research; 3) students practice working in groups; 4) students practice their critical thinking, reflection and communication skills throughout the course by participating in discussions and preparing written and visual material.

This is a service learning course and requires students to contribute a minimum of 12 hours of service working (and learning) with our farmer partners. This is apart from the hours of field work students will dedicate to their agroecological investigations.

COURSE MATERIALS
There are no required textbooks, as all of the material we will read will be provided in electronic form. However, the recent edited textbook that I co-edited is an excellent text to have for this course.

Recommended Textbook:
To order: CRC Press Site or Amazon

COURSE ORGANIZATION
The classroom part of the course includes instructor and guest lectures, student presentations, videos and other participatory tools to foster critical discussion of the current agroecology literature. The laboratory part of the course focuses on learning and applying agroecological tools and skills on a real
farm setting. In an effort to support different learning styles and strong participation from students, we combine online teaching/learning tools with classroom activities and hands-on field exercises.

**Teams**
The class will be divided into 4 teams for both lecture and lab activities. In class, these teams will engage in student led discussions and reflective practice. In lab, these teams will be assigned to a partner farm, where they will conduct service learning and on-farm agroecological investigations.

**Labs**
Laboratory periods will be used to prepare for agroecological investigations, conduct service learning work and do research on partner farms, as well as prepare presentations and reports.

**ASSIGNMENTS**

1. **Attendance**
   Attendance to lectures and labs is mandatory, with each session worth 2 points.

2. **Discussion Board (online) (4 points per week, totaling 48 points)**
The discussion board will engage students in written discussion about the readings, reflective practice and on-farm agroecological investigations. Prompts will be provided for each week’s discussion board thread. Students will use the online, Blackboard Discussion Board to share their responses to the prompts and each other’s commentary, as follows: 1) a response to at least one of the prompts provided by the instructor [2 points]; and 2) an additional posting responding or commenting to another student’s comment [2 points]. Comments and responses need to be done in a professional and respectful manner. We will not tolerate the use of rude language or personal attacks on classmates. Students who fail to follow this rule will lose the remaining commentary and response points for the semester.

   To post, go to the Discussion Board section of blackboard, click on the forum for the appropriate week (they will be labeled by week) and:

   1) To post your responses to the reading prompts for the week click on ‘Create Thread’, write a descriptive couple of words for your posting, post your comments and click ‘Submit’.
      a. **Due date for posts on the first week:** Thursday by 5 pm.
      b. **Due date for posts for all other weeks:** Tuesday by 5 pm.

   2) To reply to one of your classmate’s postings, click on his/her thread and then click ‘Reply’, write your comments and press ‘Submit’.
      a. **Due date for replies on the first week:** Friday by 5 pm.
      b. **Due date for posts for all other weeks:** Wednesday by noon.

3. **Student-led Discussions (10 points)**
   We will devote 4 days of the semester for student teams to discuss material from lectures, readings and/or films presented on a given week. With the help of the instructor and TA, student teams will facilitate one **structured** discussion using several techniques and tools designed to foster dynamic participation of the members of a group. Learning these techniques is part of the skills content we are providing in this course. Group facilitation is very important in almost all professions. Dates and topic assignments for discussion will be randomly selected the first week of class. On their given day, student facilitators will use prompts, media, skits or any other tool or creative technique of their choice to engage their audience. Please check with the TA or instructor if what you are doing is appropriate (just in case...).
   Title and 1-2 paragraphs (maximum of half of a page) describing a carefully researched topic for your final research paper.  
   **DUE DATE:** Thu September 21 in class  

5. **Annotated Bibliography (20 points)**  
   You will create an annotated bibliography on the topic you have chosen for your research paper. This is a list of references, each followed by a thorough paragraph explaining—in your own words—what the resource is about and why it is relevant to your topic. This will help you familiarize yourself with the existing literature and start your research early enough to ensure a high-quality final product. For this assignment, you are to turn in a list of at least 10 references with associated annotation. At least 6 of these references should be peer-reviewed journal articles and books, with a maximum of two websites. Any research you do for this assignment will only benefit you when you start the writing process, so feel free to include more than ten references. An example annotated bibliography will be posted on Blackboard for guidance.  
   **DUE DATE:** Thu October 12 in class  

6. **Reflective Practice to Integrate Experiential and Academic Content (20 points)**  
   Participating in reflective practice throughout the course will help you deepen your understanding of the course content and link it to both your individual experience as well as to the experiences of other course participants. This understanding, based on prior knowledge combined with new knowledge and experience, will then be translated into a reflective essay, designed to communicate your ideas to others. Reflective practice will be one of the means by which you will provide your instructor with concrete, tangible evidence of your learning.  
   **DUE DATE:** Thu November 9 in class  

7. **Team Presentation (20 points)**  
   Organize a 20 minute presentation based on your farm investigation to share with the class. You will also get up to 10 minutes for questions and discussion. Use of Powerpoint is mandatory (if you need help using Powerpoint please see Rachel). The presentation should include at least the following:  
   1. A description of the landscape and farm, including the farm map (a scan would be nice), including background of the area where your agroecosystem was located (county, general description (e.g. rural, urban, predominantly dairy, high or low population, etc.).  
   2. A discussion of the farmer and the social/cultural characteristics of the farm.  
   3. Agroecology of the farm: crops, practices, diversity, innovations, challenges.  
   4. Present your multifunctionality assessment.  
   5. Include your interview guide, farm map, pictures and any other audiovisuals you think are adequate.  
   6. You will need to turn in your presentation as an electronic file to me, either in powerpoint or as pdf.  
   7. Groups will conduct anonymous peer reviews of each of their members to evaluate their level of participation in the farm visits and presentation.  
   **DUE DATE:** Thu Nov 30 & Tue Dec 5
8. Research Papers (50 points)
Each student will choose an area of agroecology for more in-depth research. Potential areas of research include (but are not limited to):

i. Agroecology as a tool for conservation in agricultural landscapes.
ii. Using agroecology to support farmer livelihoods in a particular region.
iii. Application of agroecological knowledge to manage a specific farm or agroecosystem.
iv. Achieving food security or food sovereignty in a particular region.
v. Influence of national and international agricultural and environmental policy on a particular agroecosystem or agricultural region.
vi. Scaling up agroecology in a particular region or country.

Papers are “literature based”, not observational or obtained through the interview with a farmer, although these observations and interview sources can also be a part of the paper. Here you bring information from published sources related to your topic of study, in order to have a deeper and more comprehensive understanding of your topic. Please follow the guidelines in Appendix 1 to write your research paper. You will be required to turn in a 1-paragraph topic proposal mid-semester.

DUE DATE: Friday December 8 at Ernesto’s Jeffords 117 mailbox or hand delivered to TA

9. On-Farm Agroecological Research and Practice Report (30 pts)
This exercise will be conducted by teams, and will require team work outside of the classroom. It is designed to replicate a participatory rural appraisal, a rural development technique developed to better understand agroecosystem management and farmer livelihoods. Each student will be required to hand in an individual report based on the agroecological research and practice exercise. As this is designed as an integrated, transdisciplinary activity, only one report is required. Please keep careful notes during all your research and practice activities, so that you can refer back to them when you write the report. See report guidelines on blackboard for tips on how to write a successful report.

DUE DATE: Friday December 8 at Ernesto’s Jeffords 117 mailbox or hand delivered to TA

EXTRA CREDIT
Extra credit is available in the form of additional farm work conducted at your partner farm. You can earn 1 point per hour of farm work, for up to 15 points, throughout the semester. You will have to use a record sheet of your hours, which will be signed by the farmer or another farm staff member every time that you work. You will be required to present your signed sheet in order to get the extra credit points. See Appendix 2 for a printable record sheet.

LATE POLICY
One point will be deducted from assignments for every day late, up to 3 days after the due date. No papers will be accepted after 3 days.

COURSE LOGISTICS
Lecture Meeting Times: T/Th 10:05 to 11:20; Location: Jeffords 110

Lab Meeting Times:
- Thursday, 1:15 pm – 4:15 pm (Jeffords 101)
- Friday, 9:40 am-12:40 pm (Jeffords 101)
Instructor and TA Office Hours:
Ernesto Méndez: Monday 2:30-3:30 pm and Tuesday 1:30-2:30 pm at Jeffords 225.
Note: Office hours are by appointment only. Call or email Cathy Trivieres (ENVS Admin) for an appointment (Tel: 656-4055, email: cathleen.trivieres@uvm.edu)

Alissa White: Jeffords 207; Wed 9-11 am

COURSE EVALUATION
The course evaluation is based on a total of 304 points, separated into the following:

1. Class attendance and participation (2 pts x 2 classes/week x 15) 60
2. Discussion board post & reply (4 pts X 14 weeks) 56
3. Student led discussion (SLD) 10
4. Research paper proposal 10
5. Annotated bibliography 20
6. Lab attendance (14 x 2 points per lab) 28
7. Reflective Essay 20
8. Team presentations 20
10. Individual Research Paper 50

Total 304
<table>
<thead>
<tr>
<th>WEEK #</th>
<th>DATE</th>
<th>WEEKLY TOPIC</th>
<th>READINGS</th>
<th>ONLINE DISCUSSION</th>
<th>ASSIGNMENTS</th>
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<tr>
<td></td>
<td></td>
<td><strong>Course Introduction and Evolution of Agroecology</strong></td>
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<tr>
<td>1</td>
<td>Aug 29 &amp; 30</td>
<td>- Introductions/Logistics&lt;br&gt;- Course Content/Main Themes/Reflection Benchmark</td>
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<td>1-2</td>
<td>Post due Thu &amp; Reply due Fri</td>
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<td><strong>Foundations of Agroecology</strong></td>
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<td>2</td>
<td>Sept 5 &amp; 7</td>
<td>- Agroecology: an evolving field&lt;br&gt;- Transdisciplinary Foundations: Agrifood systems and Rural Livelihoods</td>
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<td>3-5</td>
<td>Post &amp; Reply for Week 2</td>
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<td>3</td>
<td>Sept 12 &amp; 14</td>
<td>- Ecological foundations: natural ecosystems &amp; traditional agriculture (EM travel; Guest lectures: Vic Izzo &amp; Alissa White)</td>
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<td>Post &amp; Reply for Week 3</td>
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<td><strong>Agroecology and Agricultural Production</strong></td>
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<td>4</td>
<td>Sept 19 &amp; 21</td>
<td>- Using traditional agriculture and natural ecosystems to design modern agroecosystems</td>
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<td>9,10</td>
<td>Post &amp; Reply for Week 4 Research Paper Topic Due SLD1</td>
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<td>5</td>
<td>Sept 26 &amp; 28</td>
<td>- Comparing ecologically-based systems to conventional ones</td>
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<td>11-13</td>
<td>Post &amp; Reply for Week 5 SLD2</td>
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<td><strong>Agroecology, Resilience &amp; Ecosystem Services</strong></td>
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<td>Oct 3 &amp; 5</td>
<td>- Agroecology and Resilience in the Northeast&lt;br&gt;- Ecosystem Services Rachelle Gould (Th Oct 5)</td>
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<td>14-16</td>
<td>Post &amp; Reply for Week 6</td>
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<td><strong>Participatory Action Research and Extension in Agroecology</strong></td>
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<td>7</td>
<td>Oct 10 &amp; 12</td>
<td>- Participatory Action Research in Agroecology</td>
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<td>17-18</td>
<td>Post &amp; Reply for Week 7 Annotated Bibliography Due</td>
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<td>8</td>
<td>Oct 17 &amp; 19</td>
<td>- Participatory Action Research in Agroecology (Guest lecture: Joshua Faulkner-Tue Oct 17)</td>
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<td>19-21</td>
<td>Post &amp; Reply for Week 8 SLD3</td>
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<tr>
<td>WEEK #</td>
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<td>9</td>
<td>Oct 24 &amp; 26</td>
<td>Participatory action research and extension. (EM travel; Guest lectures: ALC panel – Tue Oct 24 and Rachel Schattman – Th Oct 26)</td>
<td>22-23</td>
<td>Post &amp; Reply for Week 9</td>
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<td>WEEKLY TOPIC: Political Agroecology, Food Security/Sovereignty/Justice</td>
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<td>10</td>
<td>Oct 31 &amp; Nov 2</td>
<td>- Agroecology, Food Security, Food Sovereignty &amp; Food Justice Heather Darby (Tue Oct 31)</td>
<td>24-26</td>
<td>Post &amp; Reply for Week 10</td>
<td>SLD4</td>
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<tr>
<td>12</td>
<td>Nov 14 &amp; 16</td>
<td>- Political Agroecology and the Right to Food</td>
<td>29-31</td>
<td>Post &amp; Reply for Week 12</td>
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<tr>
<td>13</td>
<td>Nov 21 &amp; 23</td>
<td>Thanksgiving Break</td>
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<tr>
<td>14</td>
<td>Nov 28 &amp; 30</td>
<td>- Scaling up Agroecology</td>
<td>32-34</td>
<td>Post &amp; Reply for Week 14</td>
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<tr>
<td>15</td>
<td>Dec 5 &amp; 7</td>
<td>- Student Presentations</td>
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<td>No post this week</td>
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<td>- Local &amp; Cultural Food Potluck</td>
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<td>• Research paper due</td>
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<td>• Lab report due</td>
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PSS 212: Agroecology

Required Readings & Prompts for Discussion


Week 1 Prompts: Readings

- What are the advantages and disadvantages of agroecology having dimensions as science, movement and practice.
- In your own words discuss what transdisciplinarity is and why you believe it is important (or not) for agroecological approaches.


Week 2 Prompts: Readings

- Why is it important to understand the sociological bases of agroecology?
- In your own words, define what a livelihood means.
- In your own words define what an agrifood system means.
- Why is multifunctionality conducive to sustainable livelihoods?


Week 3 Prompts: Readings

- How is the use of natural ecosystems and traditional agroecosystems as models in agroecology differ from the science of agronomy?
- What are the justifications of agroecologists for using natural ecosystems and traditional agroecosystems as models?
- Based on your observations and experience with your partner farm, use Ewel’s natural systems model to describe the farm (briefly). Make sure that you let us know what farm you are in.


**Week 4 Prompts:** *On-farm experience.*

- What areas of agroecology that you have learned so far resonate in your farm experience? Which ones seem to be absent?
- What ecological processes, as viewed through an agroecological lens, that are occurring at your partner farm most capture your attention? Why?
- What livelihood factors, as defined by Amekawa (2011) & Pimbert et al (2001), which are occurring at your partner farm most capture your attention? Why?


**Week 5 Prompts:** *Readings*

- Many scientists and policy makers propose that we need to choose the type of agriculture that will be able to ‘feed the world’. Reflect on this notion, especially on when throughout human history has this been achieved, and why it continues to be brought up on debates about the implementation of organic and other alternative agricultural approaches.
- In your opinion, what would happen if we provide the necessary resources to transition all of U.S. agriculture to organic or agroecological management? Why?
- What are the main limitations for organic or agroecological agriculture to become the prevalent model of agriculture today?
- What are the differences, if any, between agroecology and organic agriculture?


**Week 6 Prompts:** *On-farm experience*

- How did the mapping exercise help you better understand the farm? Was it more of an ecological understanding? Social? Both?
- Have your perceived that climate change is impacting your partner farm? Explain why or why not?
- Could an agroecological approach support your partner farm be more resilient? How?
• Define in your own words what are ecosystem services. Give some examples of ecosystem services that your farm partner provides.


Week 7 Prompts: Readings
• What is participatory action research?
• How does it compare to your ideas of what research is?
• What are some of the opportunities and challenges of PAR when compared to other types of research?


Week 8 Prompts: Readings
• In your own words define engaged research or scholarship?
• What are some of the challenges of using PAR approaches to support farmers and promote agroecology?
• Why are some farmers reluctant to participate in PAR processes?


Week 9 Prompts: Integration of Readings and On-farm experience
• How do participatory action research and extension overlap?
• What are some of the opportunities and challenges of developing learning networks for agroecology?
• Do you think your partner farm could benefit from a PAR process, as defined by your readings? Why or why not?


**Week 10 Prompts:** Readings
- What is food sovereignty?
- Is food sovereignty different than food security? If yes, how?
- What is your perception of food sovereignty in the U.S.?


**Week 11 Prompts:** Integration of Readings and On-farm experience
- Do you believe that the concepts of food security and sovereignty, are of relevance to your partner farm? Why or why not?
- Can you see your partner farm being involved with a peasant or farmer organization? Why or why not?
- Could a connection with a farmer organization or movement benefit your partner farm?


**Week 12 Prompts:** Readings and Farm Experience
- How does the politics of food relate to your farmer partner?
- Is something like the right to food in the radar of the farmers you interacted with?
- Do you think it should?


**Week 14 Prompts:** Readings
- Do you think scaling up agroecology is possible?
- With limited resources, and tensions with powerful actors, what areas do you consider need the most attention in order to accomplish scale-up?

### Agroecology Laboratory Schedule 2016

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Location</th>
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<tbody>
<tr>
<td>1</td>
<td>Aug 31 &amp; Sept 1</td>
<td>• Service learning: farmwork with partners</td>
<td>Farms</td>
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<tr>
<td>2</td>
<td>Sept 7 &amp; 8</td>
<td>• Service learning: farmwork with partners</td>
<td>Farms</td>
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<tr>
<td>3</td>
<td>Sept 14 &amp; 15</td>
<td>• Service learning: farmwork with partners</td>
<td>Farms</td>
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<tr>
<td>4</td>
<td>Sept 21 &amp; 22</td>
<td>• Service learning: farmwork with partners</td>
<td>Farms</td>
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<tr>
<td>5</td>
<td>Sept 28 &amp; 29</td>
<td>• Agroecological field methods overview</td>
<td>Lab Room</td>
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<tr>
<td>6</td>
<td>Oct 5 &amp; 6</td>
<td>• Farm participatory mapping</td>
<td>Farms</td>
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<td>• Ask farmer where soil samples would be useful</td>
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<td>• Soil sampling</td>
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<td>7</td>
<td>Oct 12 &amp; 13</td>
<td>• Preparation to measuring and analyzing ecological variables in agroecosystems:</td>
<td>Lab Room</td>
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<td>o Plot setup &amp; location</td>
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<td>o Plant biodiversity</td>
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<td>o Soil samples</td>
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<td>8</td>
<td>Oct 19 &amp; 20</td>
<td>• Measuring and analyzing ecological variables in agroecosystems:</td>
<td>Farms</td>
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<td>o Plot setup</td>
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<td>o Soil samples</td>
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<td>9</td>
<td>Oct 26 &amp; 27</td>
<td>• Collecting regional data</td>
<td>Farms, Towns, Organiza-</td>
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<td>• Prepare interviews</td>
<td>tions</td>
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<td>10</td>
<td>Nov 2 &amp; 3</td>
<td>• Farmer interviews</td>
<td>Farms</td>
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<tr>
<td>11</td>
<td>Nov 9 &amp; 10</td>
<td>• Interview processing</td>
<td>Lab rooms</td>
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<tr>
<td>12</td>
<td>Nov 16 &amp; 17</td>
<td>• Collect missing data or lab processing</td>
<td>Farms</td>
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<tr>
<td>13</td>
<td>Nov 23 &amp; 24</td>
<td>Thanksgiving</td>
<td></td>
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<tr>
<td>14</td>
<td>Nov 30 &amp; Dec 1</td>
<td>• Collect missing data or lab processing</td>
<td></td>
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<tr>
<td>15</td>
<td>Dec 7 &amp; 8</td>
<td>• Time to prepare your lab reports and research papers.</td>
<td>Lab rooms</td>
</tr>
</tbody>
</table>
Appendix 1: Individual Research Paper Guidelines

The research paper should present a critical review of the literature on your topic. Your paper should include at least:

1. A description of your topic;
2. A critical discussion of the existing literature on the topic;
3. Key questions/issues/problems related to this topic;
4. Future directions based on your literature review. For example, is what you found insufficient? Is there a lot of literature, but incomplete? Is more research necessary? If so, in what areas?
5. Relevance of your topic to agroecology;
6. How this topic applies to your farm. For example, if your topic is an agroecological characteristic of your agroecosystem such as, say, crop rotations, what are the potential benefits according to the literature of the crop rotations used on your farm? Or, if your topic is on an economic characteristic such as, say, CSAs, how does the literature address the benefits and challenges of CSAs mentioned by the farmer? (These are just examples.)

The research paper will be 5-7 pages in length, double spaced, and 12 pt font, not including the Literature Cited section.

The paper will have a minimum of 15 references, and at least 8 of these will be peer-reviewed research articles. Please cite references as follows:

Journal Articles:

Books:

Edited Books:

Chapters in Edited Books:

Electronic sources:
**Appendix 2: Log Sheet for Extra Credit Farm Work Hours.** Please keep this sheet throughout the semester and turn in to Ernesto or Sarah when you are done with your extra credit hours.

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<thead>
<tr>
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<th>Hours Worked</th>
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**Total Hours:**
V. Ernesto Méndez
Department of Plant & Soil Science/Environmental Program
225 Jeffords Hall, 63 Carrigan Dr.
The University of Vermont, Burlington, VT 05405, USA
(802) 656-2539 & (802) 656-2924; Fax: (802) 656-8015
email: emendez@uvm.edu web: http://www.uvm.edu/~agroecol/
Date: October 2, 2017

EDUCATION

Ph.D. (Environmental Studies-Agroecology) 2004
Department of Environmental Studies, University of California, Santa Cruz (UCSC)

M.Sc. (Agroforestry) Tropical Agriculture Research & Education Center (CATIE), 1996
Turrialba, Costa Rica

B.Sc. (Crop Science) California Polytechnic State University (Cal Poly), San Luis Obispo, CA, U.S.A. 1994

PROFESSIONAL EXPERIENCE

Professor of Agroecology & Environmental Studies Jul 2017- present
Environmental Program (www.uvm.edu/~envprog/) & Department of Plant and Soil Science (www.uvm.edu/~pss/), University of Vermont (UVM).

Associate Professor of Agroecology & Environmental Studies Jun 2011- Jun 2017
Environmental Program (www.uvm.edu/~envprog/) & Department of Plant and Soil Science (www.uvm.edu/~pss/), University of Vermont (UVM).

Visiting Professor of Agroecology Aug 2013- Aug 2014
Postgraduate School, Tropical Agriculture Research and Higher Education Center (CATIE-
http://posgrado.catie.ac.cr/), Turrialba, Costa Rica

Acting Chair & Associate Professor, Plant and Soil Science Dept. Aug 2012 – May 2013
Environmental Program (www.uvm.edu/~envprog/) & Department of Plant and Soil Science (www.uvm.edu/~pss/), University of Vermont (UVM).

Assistant Professor of Agroecology & Environmental Studies Sep 2006 – May 2011
Environmental Program (www.uvm.edu/~envprog/) & Department of Plant and Soil Science (www.uvm.edu/~pss/), University of Vermont (UVM).

Post-doctoral Research Associate & Lecturer Sep 2005 – Aug 2006
Agroecology, Environmental Studies and Participatory Action Research (PAR) Department of Environmental Studies & Community Agroecology Network (CAN), University of California, Santa Cruz (www.agroecology.org & www.communityagroecology.net).

Senior Researcher (1/2 time) May 2001-Dec 2004
Agriculture, environment and rural development
**Consulting Scientist**
Inquiry-based training in ecology to elementary school teachers and students.
Life Lab Science Project, Santa Cruz, CA U.S.A. ([www.lifelab.org](http://www.lifelab.org)).

**Agroforestry Specialist**
Participatory agroforestry extension and training in Central America
CATIE/GTZ Agroforestry Project, Turrialba, Costa Rica ([www.catie.ac.cr](http://www.catie.ac.cr)).

**Research Assistant**
Crop Science Department/USDA, Cal Poly State University.

**Farm Manager**
Student Experimental Farm, Crop Science Dept., Cal Poly State University.

---

**TEACHING AND TRAINING EXPERIENCE**

Courses Taught at the University of Vermont
Advanced Agroecology (senior/graduate); Coffee Ecologies and Livelihoods (undergraduate);
International Environmental Studies (undergraduate); Conservation in Agricultural Rural Landscapes (graduate); Café (en) Tacuba: Ecologies and Livelihoods in a shade coffee landscape of El Salvador (Study abroad course-2 weeks). For more information and course syllabi, please go to:

Academic Advising at the University of Vermont (Fall 2016)
Current PhD students: 2; Current MS students: 1; Graduated advisees: 6 Ph.D., 4 MS.
Current Environmental Studies advisees: 50; Senior capstone advisees: 0

International Shortcourses in Agroecology,
USA (Santa Cruz) and Latin America (México, Costa Rica, Nicaragua, Brazil) ([www.agroecology.org/shortcourse.htm](http://www.agroecology.org/shortcourse.htm))
Instructor- International training courses for professionals working in the areas of ecology, agriculture, conservation and rural development. Coordinated courses at the University of Vermont in 2009 and 2013, and Costa Rica in 2002.

Graduate Program in Agroecology and Sustainable Rural Development,
International University of Andalucía, University of Cordoba & University Pablo Olavide Adjunct Professor - Annual instruction of a one week module on different aspects of Agroecology and Rural Development as part of the Master’s and Doctoral Curriculum.

Tropical Agriculture Research and Higher Education Center (CATIE)
Visiting Professor of Agroecology- 3.5 day workshop on Agroecology Concepts & Practice; 3 Guest Lectures for MS program in Agroforestry & Sustainable Agriculture.

Department of Environmental Studies
University of California, Santa Cruz
Lecturer- Tropical Ecology and Conservation, an upper division undergraduate course (Winter 2006)

Master’s Program in Sustainable Tropical Agriculture, 2001-2004
University of El Salvador, San Salvador
Adjunct Professor - Development & instruction of the Tropical Agroforestry course & Co-instructor in a Sustainable Production Systems course.
Yale School of Forestry & Environmental Studies, USA
Instructor - Workshop on Participatory Research in Environment and Rural Development. Apr 2003

Dept. of Environmental Studies, University of California, Santa Cruz, CA U.S.A
Teaching Assistant - Environment and Society (Winter 1999); Integrated Pest Management (Spring 1999); Agroecology (Fall 1999); Ethnobotany (Spring 2000).

CATIE/GTZ Agroforestry Project, Turrialba, Costa Rica
Teaching Assistant - Graduate course in Environmental Sociology. Coordinated the field rural appraisal component of the course.

SELECTED CONSULTING EXPERIENCE

Food and Agriculture Organization of the United Nations (FAO), San Salvador, El Salvador
Elaboration of a review document on the socioeconomic and environmental situation and perspectives of the coffee sector in El Salvador and Central America. Elaboration of two project profiles for coffee regions as part of a Food Security program. Dec 2004 – Apr 2005

IUCN BASIM Project, El Salvador
Social & ecological characterization of coffee farms in “Barra de Santiago-El Imposible” watershed. Participatory research and consultation with coffee farmers to evaluate alternatives to avoid land use changes, in the midst of the coffee crisis. Jul-Oct 2004

Colorado State University-USA/DESAL, A.C.-México
El Salvador Case Study, Research project on the potential of fair trade coffee to alleviate rural poverty, as part of a larger project funded by Ford Foundation. Mar-Sep 2002

IICA-Embrapa, Pelotas, State of Rio Grande do Sul, Brazil

CAPACITIES AND AWARDS

Languages: Bilingually educated in English & Spanish since elementary school (reading, writing & conversation).

Hubert W. Vogelmann Award for Excellence in Research and Scholarship (2015). College of Agriculture and Life Sciences, University of Vermont

Lynne Bond Outstanding Faculty Service Learning Award (2015). Community and University Partnerships Office (CUPS), University of Vermont.

Outstanding Teaching Assistant Award (1999-2000). Environmental Studies Department, University of California, Santa Cruz.
FUNDING

Fellowships & Scholarships Received (Career Total: $111,000)

Rainer-Arnhold Fellowship ($17,000) Systematic design and up-scaling of participatory action-research model on rural livelihoods and biodiversity conservation in Central American coffee landscapes. 2005-2007

Center for Tropical Ecology, Agriculture and Development-University of California, Santa Cruz ($1,000) Dissertation improvement fellowship. 2004

Vavilov-Frankel Fellowship, Biodiversity International ($18,000) To conduct Ph.D. dissertation research. 2001-2002

WWF/BMZ Mesoamerican Biological Corridor Fund Research fellowship ($5,000) For the first two years of Ph.D. studies at the University of California, Santa Cruz. 1998-1999

United States Graduate Studies Fellowship, Interamerican Foundation (IAF) ($40,000) To conduct M.S. studies at CATIE. 1995-1996

Grants & Contracts Received (Career total: $2,874,687) *Denotes peer review

Méndez, V.E. (PI) & M. Caswell (Co-PI) Elementa Journal and Food & Agriculture Organization of the United Nations (FAO) ($37,000) Leading the editorial of a special forum on Agroecology Elements in the journal Elementa and creating an Agroecology Knowledge Collection at UVM. 2017-18


Méndez, V.E. (PI) Mercy Corps ($22,000) Integrating agroecology and resilient food systems into Mercy Corps agriculture and rural development programs. 2013.


Méndez, V.E. (PI). Pro-Poor Mitigation Theme of the Climate Change, Agriculture and Food Security Challenge Program (CCAFS) ($12,430) Climate Mitigation and Smallholder Livelihoods in Coffee Landscapes: Synergies and Tradeoffs. 2010.
UNIVERSITY AND PROFESSIONAL SERVICE

Plant and Soil Science Department, UVM

- Acting Department Chair (Aug 2012- May 2013)
- Faculty Search (2007-2008) Agroecology of Specialty Crops
- Seminar Committee (2007-2008; 2015-): Scheduled and invited speakers for PSS weekly seminar.
- Tabling for PSS dissemination at the UVM Harvest Festival 2010.

Environmental Program, UVM

- Co-Chair of Cluster Hire Search (2014-2015) 3 faculty positions for ENVS, including Program Director.
- Faculty Search (2011-2012) Political Ecology position, joint between ENVS and Geography.
- Senior thesis options and curriculum committee (2007-2008): meetings and presentations of progress to ENVS faculty.

University of Vermont

- President’s Advisory Council (2012-2015)
- Envisioning Environment Working Group Member (2012-2013)
- UVM Food Systems Initiative Steering Committee (2010- present)
- Fellow, Gund Institute for Ecological Economics (2007-present).
- Fellow, Center for Sustainable Agriculture (2011-2013).
- Steering committee member of the Community Participatory Action Research Network (2008-2012).
- Faculty Search (2010-2011) Rural geography position for the UVM Geography Department.

Peer Review

- Editorial Board Member: Agroecology & Sustainable Food Systems (formerly Journal of Sustainable Agriculture, 2010- present).

MEMBERSHIP IN PROFESSIONAL ASSOCIATIONS

Ecological Society of America (ESA); Sociedad Científica Latinoamericana de Agroecología (SOCLA);
Association of American Geographers (AAG); Association for Environmental Studies and Sciences (AESS).
Most of these can be accessed at http://www.uvm.edu/~agroecol/?Page=Publications.html. *=Graduate student advisee;

Peer Reviewed Journal Articles

IF=Impact Factor, if available, from the Thompson Reuters’ Journal Citation Reports latest year; R=Rank, if available, from Thompson Reuters’ Journal Citation Reports latest year; TC=Times Cited from Google Scholar Citations

In preparation, submitted or in review

Accepted, in press or published


24. Erickson, D.*, S.T. Lovell and V.E. Méndez (2011) Landowner willingness to embed production agriculture and other land use options in residential areas of Chittenden county, VT, USA. Landscape and Urban Planning 103(2):174-184 (IF: 2.004; R: 15 of 77 in Environmental Studies; TC: 1).


Peer Reviewed Chapters in Edited Books (accepted, forthcoming, in press or published)


**Peer Reviewed Books and Journal Guest Editorials**


4. Méndez, V.E., C.M. Bacon and R. Cohen (Guest Editors) (2013) Agroecology and the transformation of agro-food systems: Transdisciplinary and participatory perspectives. Invited Special Inaugural Issue of Agroecology and Sustainable Food Systems 37(1) (formerly Journal of Sustainable Agriculture; IF: 0.673; R: 23 of 57 in Agriculture, Multidisciplinary)

**Other Books and Manuals**


**Edited Research Series, Policy, Technical or Extension Publications**


Edited Conference Proceedings


Book Reviews


Selected Presentations in Conferences and Seminars (Last 5 Years) * Denotes peer review


