SMALL SCALE FOOD PRODUCTION
Env Studies 166FP / Anth 166FP / Geog 171FP, 5 units, 2013 Spring, UCSB, DA Cleveland

Course website: http://www.es.ucsb.edu/faculty/cleveland/Courses/166fp/166fpintro.htm
Lecture/Discussion: Monday 12:30-1:45, HSSB 1231.
Lab and garden work: Wednesday 12:30-4:50, UCSB Greenhouse & Garden Project (SW of Los Carneros and Mesa)
Professor: David A. Cleveland. Email: cleveland@es.ucsb.edu (put “SSFP” in subject line of ALL emails). Office hours: Bren Bldg. 4023, Monday 2:00-3:50, and by appointment.
TA: Grayson Maas gmaas@umail.ucsb.edu (put “SSFP” in subject line of ALL emails), Office hours: HSSB 2030, 2:30-3:30, and by appointment.

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1. Introduction

Small-scale food production has not disappeared nor has it been entirely replaced by large-scale production, despite many predictions to the contrary, and assumptions that it is not a viable option for the future. Many theories and data suggests that small-scale, locally-based food production will continue to play an important part in increasing the sustainability of the world’s agrifood systems for the foreseeable future, despite the growth of large-scale, nationally and globally-based food production. However, there are also many theories and data that challenge this conclusion. In this class, we will critically examine hypotheses that small-scale, locally oriented alternative food production is more environmentally, socially and economically sustainable than large-scale conventional food production. We will also apply our readings and discussions in learning practical principals of small-scale food production through hands-on experience and lab exercises in the class garden plot at the UCSB Office of Student Life, Greenhouse and Garden Project (GHGP), and through field trips to local small-scale farms. Each student will cultivate a garden plot as a member of a small group, including participation in a group experiment, and keep a garden journal. Tools (excluding small hand tools) will be provided. The readings comprise Cleveland and Soleri (1991) Food From Dryland Gardens (CD provided), weekly assignment of articles (available on the class website) and the class Lab Manual (paper copy provided). A lab fee of $90 is required for registration—these funds are used to pay for class materials, lab materials, vans for field trips and honoraria for speakers and field trip hosts.

2. Requirements

This syllabus is a contract between you (each individual student) and the instructor. By taking this course you agree to the requirements and terms stated here. These requirements may be modified or supplemented later in minor ways, and you are responsible for those changes.

**QUIZZES AND EXAMS WILL NOT BE GIVEN EARLY, AND MAKE-UPS WILL BE GIVEN ONLY IN DOCUMENTED CASES OF EMERGENCY. ALL WRITTEN ASSIGNMENTS ARE DUE AT THE BEGINNING OF CLASS ON THE DAY THEY ARE DUE. ASSIGNMENTS TURNED IN AFTER THE BEGINNING OF CLASS WILL BE CONSIDERED ONE DAY LATE. ASSIGNMENTS WILL BE MARKED DOWN ONE LETTER GRADE FOR EACH DAY THEY ARE LATE.**

**SO, CHECK YOUR ACADEMIC, ATHLETIC AND SOCIAL SCHEDULES FOR THE QUARTER, AND DROP THIS COURSE NOW IF THERE IS A CONFLICT. THIS INCLUDES PLANNING YOUR CLASS SCHEDULE SO THAT YOUR FINALS DO NOT CONFLICT AND SO THAT YOU DO NOT HAVE TOO MANY FINALS ON ONE DAY.**

2.1. Computer and Internet access and competency

**Access to and frequent use of the internet for class assignments is required.** Weekly assignment and syllabus updates will be posted on the class website, along with readings and other materials, and you are responsible for everything posted on the class website. The class website has restricted access, and I will provide the username and password in class. There are computers and a printer available for student use in the Environmental Studies Conference Room.

All class materials will be posted on the class website, and therefore access to and use of the internet for this class is required. This includes **checking for updated weekly assignments, and checking your**
email daily. According to the Registrar, “U-Mail is the official student e-mail service used by instructors and University administration. All students are required to activate and maintain their U-Mail accounts for the duration of their academic career at UCSB. If you choose to forward your U-Mail to another e-mail provider you are required to check and maintain that account”.

2.2. Readings
There are three required types of readings.

1. Food From Dryland Gardens (1991) by David A. Cleveland and Daniela Soleri. A CD copy of this text will be provided, from which you may print individual chapters. It is also available online.
2. Lab Manual for Small-Scale Food Production (paper copy provided)
3. Articles and other readings, mostly from scientific literature (most available on the class website, some will be handed out in class).

You will also be assigned to review and use selected material from World Agriculture, Food and Population, the prerequisite for this class.

2.3. Participation in class and lab

2.3.1. Seminar participation and reading
Lecture/discussions and labs will be based on the assumption that you have done the required reading by the date it is listed on the syllabus. I expect all students to participate in class/lab discussions, group garden work, lab demonstrations, and experiments. If you have not done the readings, it will be difficult for you to understand the lectures/labs and participate. The Critical Analysis Guidelines from World Ag will serve as the rubric for evaluation of all class material.

Note: on some of the readings only specified pages are assigned, and in these cases you do not have to read the whole article. Skim quickly through the reading to get the main points; then read it again more carefully, take notes, and write out answers to the relevant CAG questions.

2.3.2. Labs
The lab meets at the Greenhouse and Garden Project (GHGP) on campus. Each week there will be a lab exercise/experiment which must be completed and turned in by the end of the lab at 4:50. They will normally be graded and returned by your TA the following Monday.

N.B.: The lab is scheduled from 12:30 – 4:45. You will need to arrive on time, and stay until 4:50 – so do not schedule anything else during this time or ask to leave early.

Things to bring/wear each week:
• Work clothes including adequate foot wear, there will be times when closed shoes or boots will be required.
• Your own hand tools if you want them.
• Work gloves, hat, sunscreen, and insect repellent (citronella oil is nontoxic).
• Food and water.
• Eating utensils, plate, bowl and cup.
In addition, garden tools are available for your use at the Garden Project. The combination to the locked shed is 10-28-34. You are responsible for replacing all borrowed materials. I encourage you to continue maintaining your group plot through the summer, fall and winter, until a new class takes over next spring.

You will need to follow all the rules of GHGP. This includes not using bird netting or fencing (wire, wood, pipes, etc.), no stripping fruit trees, etc. A copy of the GHGP rules will be available.

Turn off cell phones, iPads etc. during the lab period – calls or texting, music, etc. is NOT allowed during labs (except by instructors).

2.3.3. Field Trips
There will be one required all-day field trip scheduled on Sunday May 26.

2.3.4. Garden Plot Groups and Experiment
A major part of the class is working in the class garden plot, and in your group plot at the GHGP. We will divide the class into six plot groups, and your group will be responsible for your plot for the entire quarter. We will also be conducting an experiment comparing productivity using compost versus no compost. Each group plot will have two 1m² experimental plots, one control and one treatment, and will maintain and weigh harvests, and record and analyze data.

2.3.5. Food Group
Each week we will have a break of 20-30 minutes for a snack. We’ll divide the class into 10 groups, and each group will be responsible for bringing a vegan snack one week (Weeks 1-10). Remember to bring enough for the class plus any guest speakers (~25 people) Try to get as many ingredients as possible from local, small-scale resources, including your class garden plot! Display and turn in the form listing ingredients for each dish you make, including as much information as you can obtain on where and how the ingredients were produced. When we have a long field trip we’ll eat our snack while we’re traveling between farms, so the snack group for these weeks should make sure to bring only food easily eaten with fingers. No bananas or kiwis! LET US KNOW IF YOU HAVE FOOD ALLERGIES!!

You will be graded (50 points) on these aspects of your food assignment as a group (let me know about slackers):

- **Vegan** (non-vegan food = no credit)
- **Quantity** (15 points): bring sufficient quantity to feed 25 people.
- Innovative use of local ingredients to make delicious food (15 points)
- **Labels** for each food stating ingredients, where purchased, and where grown (20 points)

2.3.6. Commons Class Plot Group
Your food group will also be your Commons Group, which will maintain the common area of the class plot for one week each (Weeks 2-9). The TA will assign your work and evaluate it. Group work includes maintaining paths and common areas, care of trees on the perimeter of our plot, and maintaining the compost pile. In addition, each student is responsible for being aware of and dealing with needs as they arise our class commons.
2.4. Written work

2.4.1. Format
All written work should be machine printed on 8.5 x 11 inch paper, single-spaced, with one inch margins on all four sides, staple in the upper left hand corner, use 12 point font such as Times New Roman, Arial or other standard font. Put your name, course number, and date in the upper right hand corner of the first page, and your last name and page number in the upper right hand corner of each subsequent page. Papers that are difficult to read because of poor printer quality will not be accepted. To conserve paper, you can print on both sides of the paper, or reuse paper that has one side previously used, as long as your assignment is clearly legible.

2.4.2. Introductory essay
This essay is due Week #2, Monday. It should be no longer than 500 words in length, and answer the following questions in sections numbered 1 through 7.
1. Why are you taking this course?
2. What do you think are the most interesting and important aspects of small-scale food production?
3. What is your definition of small-scale food production?
4. What is your experience with small-scale food production?
5. What is your major career interest, and how does this course relate to it?
6. What do you expect to get out of this course, and how do you hope to apply it in the future?
7. What grade do you expect to receive and what level of work do you plan on doing to receive it?

2.4.3. Lab exercises
The Lab Manual contains exercises (questions on basic principles, records of your observations, and results of demonstrations and experiments) for each of the nine weekly labs. The questions on basic principles need to be answered before the lab and will be checked at the beginning of each lab. Lab exercises must be completed and turned in by the end of the lab at 4:45. They will normally be graded and returned by your TA the following Monday.

There are also pages for weekly journal entries, one for general observations and a diagram of your plot. The purpose of keeping a journal is to help you to improve your powers of observation and reflection, and to increase your understanding of agricultural processes. Journal entries will be checked regularly. The journal should include:
   a) a diary of natural events in your group plot and in the garden as a whole (e.g. plant life cycles, insects, diseases, animals, weather),
   b) a diary of your individual, group and class activities in garden, e.g. planting, watering, weeding,
   c) notes on field trips
   d) notes on demonstrations, experiments, presentations (in addition to written lab reports),
   e) personal reflections on life in the garden,
   f) notes of weekly events in your group plot recorded on the map, and
   g) sketches to illustrate the above

2.4.4. Exams
The best way to prepare for the Quizzes and the Final Exam is by 1) taking notes on the lectures, readings, lab demonstrations and exercises, and class presentations, 2) using these notes to answer the relevant CAG questions, 3) asking questions and participating in discussions during the lectures and labs, 4) contacting the instructors outside of class if you have any remaining questions. Questions will be a mixture of multiple choice, short and long essays. Quizzes will concentrate on Mondays’ readings
and discussion. The Final will be based on the class materials for the whole quarter, and will consist of two parts: a lab practicum during the normal lab period during Week #10, and a written final exam during the scheduled final exam period Week #11, Tuesday, June 11 (12:00-3:00) in HSSB 1231.

From the Registrar about Final Exam schedule: “According to Academic Senate policy, instructors are not authorized to change these times without prior Academic Senate approval. Students can personally contact the chair of the department about any hardship they experience from a change in the final exam schedule. Contacting the Undergraduate Council is also an option. Any such appeals should be made prior to taking the exam.”

3. Student Evaluation

Evaluation will be based on your comprehension of all course material (assigned readings, films, lectures, modules and discussion), on clearly organized writing and verbal presentations, and on your ability to apply these skills to using theory and data to creatively and convincingly tests your hypotheses.

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<thead>
<tr>
<th>DESCRIPTION</th>
<th>DATE</th>
<th>POINTS</th>
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<tbody>
<tr>
<td>Introductory essay (1-2 pp.)</td>
<td>Wk #2 (Monday)</td>
<td>25</td>
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<tr>
<td>Monday seminar: written assignments and</td>
<td>Wks #2-9 (~15 points/week)</td>
<td>120</td>
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<tr>
<td>class participation, including</td>
<td></td>
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<tr>
<td>presentations</td>
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<tr>
<td>Quizzes (best 3 of 4 count)</td>
<td>Wks #3, 5, 7, 9 (85 points each)</td>
<td>255</td>
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<tr>
<td>Lab exercises</td>
<td>Wks #1-9 (15 points each)</td>
<td>135</td>
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<tr>
<td>Experiment</td>
<td>Wks #1-10</td>
<td>70</td>
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<tr>
<td>Work in group plots, experimental plot</td>
<td>Wks #1-9</td>
<td>50</td>
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<tr>
<td>Commons Group work (as assigned)</td>
<td>Wks 2-9</td>
<td>30</td>
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<tr>
<td>Food group (food &amp; written description)</td>
<td>Wk #10</td>
<td>100</td>
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<tr>
<td>Lab practicum</td>
<td>Wk #11</td>
<td>165</td>
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<tr>
<td>Final exam (Tuesday, June 11, 12-3pm)</td>
<td>Wk #11</td>
<td>1000</td>
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<td>TOTAL</td>
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Your grade will be a result of your work and improvement during the course. Grading is not on curve. All students can earn an “A,” or an “F”.
4. Getting help

If you experience difficulty with understanding the material in this course, please discuss this immediately with one of the instructors. In addition, a wide range of services is available at UCSB to support you in your efforts to meet the course requirements.

- Campus Learning Assistance Service: 893-3269. CLAS helps students increase their mastery of course material through course-specific tutoring and academic skills development. Check out the tutorial groups and drop-in tutoring schedules posted on the website: www.clas.ucsb.edu. Sign up for services at the CLAS main office, Building 477 9:00am-5:00pm daily.
- Counseling & Career Services: 893-4411, www.counseling.ucsb.edu) offers counseling for personal & career concerns, self-help information and connections to off-campus mental health resources.
- Disabled Students Program: 893-2668; www.sa.ucsb.edu/dsp DSP provides academic support services to eligible students with temporary and permanent disabilities. Please let us know if you require special classroom accommodations due to a disability. You must register with DSP prior to receiving these accommodations.

5. Schedule

**N.B. This schedule is provisional, CHECK CLASS WEBSITE EACH WEEK FOR REVISED SCHEDULE

Week 1. Introduction to the class; beginning our garden plot.

Monday, April 01. Small-scale food production—past, present and future.
**READINGS**

Class Syllabus.
Critical Analysis Guidelines

**Wednesday, April 03. Setting up class plot and 6 group plots.**

**READINGS**

Whitman, W. 1856. “This compost”.
*FFDG*. Chapter 6 (re. seeds, sections 6.4, 6.5), Chapter 8 (re. plant management, sections 8.1-8.5), Chapter 9 (re. organic matter and composting, section 9.6).

**LAB EXERCISES DUE AT BEGINNING OF LAB**

1.2.1, 1.4.2, 1.4.3

**LAB & GARDEN WORK**

12:30-1:00: Introduction to UCSB Greenhouse & and Garden Project by Seth Petersen, Director, GHGP (ghgpucsb@gmail.com).
1:00-1:15: Analyze compost pile from last year, set criteria for new compost pile.
1:15-2:30: Clear weeds, level class plot, layout group plots and experimental plots, start new compost pile.
2:30-3:00: **Vegan snack break. Presented by food group #6**: David Cleveland and Grayson Maas.
3:00-3:45: Haul manure and compost, mix and apply to experimental treatment plot.
3:45-4:40: Plant seeds in experimental plots. If there is time, plant seeds, transplants in main part of plots (continue for homework).
4:40-4:50: Observe characteristics of different seeds; set up germination experiment; continue for homework.
4:15-4:45: Complete and turn in Lab #1, including Journal.

**Week 2. Biogeochemical cycles and the agrifood system; Soil-water-plants, part 1.**

**Monday, April 8. Food production options for SSFP.**

**READINGS**


Wednesday, April 10. Soil genesis and biophysical properties: implications for management; growing plants from seeds.

**READINGS**

Lab Manual. Lab #2.

FFDG. Chapter 6 (Growing plants from seeds): read sections 6.1, 6.3-6.7; Chapter 9 (Soils in the garden): Read all.

**LAB & GARDEN WORK**

12:30-1:00: Diagnose seed planting problems (Lab Manual 2.1); distribute seed germination experiment

1:00-1:30: Soil texture, soil water and plant growth (Lab Manual 2.2, 2.3.4)

1:30-2:00: Vegan snack break, presented by food group #2.

2:00-4:30: Soil pit exercise, identify soil horizons and characteristics; describe soil genesis in area of garden.

4:30-4:45: Journals

Lab exercise sheets due at end of lab today!

Week 3. Hydrological and nutrient cycles and food production; Soil-water-plants, Part 2.

Monday, April 15.

**READINGS**


Wednesday, April 17. Soil-Water-plant relationships in food production.

**READINGS**

- Lab Manual, Lab #3.
- FFDG: Chapter 10 (Water, Soils and Plants); Chapter 11 (Sources of Water for the Garden): read pp. 207-220; Chapter 12 (Irrigation and Water-Lifting): read pp. 227-236.

**LAB & GARDEN WORK**

**QUIZ #1 at end beginning of lab** (12:30-1:00). Covers all material through Week#3.

- 1:00-1:30. Garden rounds; Seedling establishment (Lab Manual 3.5); Check Lab Manual 3.1, 3.3;
- 1:00-1:30: Diagnose seed planting problems (Lab Manual 2.1); check seed germination experiment.
- 1:30-2:30: Watering your plot (Lab Manual 3.3); making vertical mulch in your plot.
- 2:30-3:00. **Vegan snack break, presented by food group #3.**
- 3:00-4:00. Demonstration of soil effects on water infiltration & movement (Lab Manual 3.2)
- 4:00-4:45. Finish lab exercises.

**Lab #3 due at end of lab today**

Week 4. Intercropping; Animals, plants and microorganisms, good and bad.

Monday, April 22. Intercropping. [Earth Day]

**READINGS**


Wednesday, April 24. Managing animals and microorganisms in small-scale food production.
**READINGS**


**LAB & GARDEN WORK**

12:30-1:00: Arthropod identification (Lab 4.3.2)

1:00-1:45: Garden rounds: Diagnosing plant problems (Lab 4.2) + Demonstrate using a safe insecticide (Lab 4.4)

1:45-2:15: **Vegan snack break, presented by food group #4.**

2:15-2:30: Travel to SB gardens.

2:30-4:15: Garden tours.

4:15-4:40: Return to GHGP

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**Week 5. Plant growth and reproduction, and crop ecology.**

**Monday, April 29.**

****QUIZ #2 at end of class** (1:15-1:45). Covers all material through Week#5, Monday

**READINGS**


**Wednesday, May 01. Plant physiology, anatomy and reproduction**

**READINGS**

Lab Manual. Lab #5.

*FFDG*: Chapter 5 (How plants live and grow), Chapter 6 (Growing plants from seeds): read section 6.2.

**LAB & GARDEN WORK**

12:30-1:30. Plant anatomy & physiology.

1:30-2:00 Group plot rounds.

2:00-2:30: **Vegan snack break, presented by food group #5.**

2:30-4:00: Native and non-native edible plants.

4:00-4:45: Journal, finish lab.

Lab exercise #5 DUE at end of lab.

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**Week 6. Small-scale agrifood systems, Part 1.**

**Monday, May 06. Small-scale food production and agrifood system localization.**

**READINGS**

*FFDG* Chap. 2, Gardens and nutrition, Section 2.11 (pp. 28-29); Chap. 3, Gardens, economics and marketing, Section 3.3 (pp. 36-39).


Williamson Act (http://www.csac.counties.org/legislation/williamson_act/wa_fact_sheet.pdf) [READ PP. 1-3]


Review from World ag (Week #10): Demeter Association Inc. 2009. Read biodynamic program, Requirements for achieving a Demeter certification, and Biodynamic preparations.


Wednesday, May 08. Field trip.
12:30: Depart from traffic circle north of Campbell Hall.
12:45-1:15: Introduction to Ellwood Canyon Farm by Jack Madder.
1:15-2:30. Work in the field.
2:30-3:00: Vegan snack break, presented by food group #6.
3:00-3:15. Travel to Fairview Gardens.
3:15-4:30: Tour of FG
4:30-4:45. Return to UCSB.

Week 7. Plant reproduction, selection and propagation.

**QUIZ #3 at end of class** (1:15-1:45). Covers all material through Week#7, Monday.

READINGS

**Wednesday, May 15. Grafting.**

**READINGS**
- FFDG: Chapter 7 (Vegetative Propagation); Chapter 8, Section 8.7 (Pruning)
- Review: FFDG: Chapter 13 (Pest and Disease Management).
- Review: Lab 6: Animals, plants and microorganisms, good & bad

**LAB & GARDEN WORK**
- 12:30-2:00: Grafting demonstration and practice (at Garden).
- 2:00-2:30. **Vegan snack break, presented by food group #7.**
- 2:30-3:15: Garden rounds.
- 3:15-4:15. Harvest and weigh experimental plots. Enter weights in Lab #1.
- 4:30-4:45. Lab #7 due.

**Week 8. Small-scale agrifood systems, part 2.**

**Monday, May 20. Organic agriculture.**

**READINGS**
- FFDG: Part I (Gardens as a development strategy, introduction), Chapter 3 (Gardens, economics and marketing), Chapter 2 (Gardens and nutrition in drylands), Chapter 15 (Processing, storing and marketing food from the garden), Chapter 16 (Weaning foods from the garden)

**Wednesday, May 22. Interviewing, night visits.**

**LAB & GARDEN WORK**
- NO REGULAR LAB MEETING THIS WEEK.
Work in groups to complete interviewing of gardeners at GHGP and doing your night visit.

**Sunday, May 26. Farm visits, Los Olivos.**
Depart 7 a.m. Campbell Hall Parking Lot

**LAB SCHEDULE**
6:15. Meet at Campbell Hall traffic circle, load vans.
7:30-8:00: Arrival.
8-9: Tour of the farm.
9-12: Field work with instruction.
12:00-1:00: Vegan snack break, presented by food group #8.
1:00-2:30. Continue field work.
2:30: Depart.
3:30: Arrive UCSB.

**Week 9. Review for Final.**
Monday, May 27. Review for practicum and final exam.

**Wednesday, May 29. Interviewing, night visits.**

**LAB & GARDEN WORK**

**QUIZ #4 at beginning of lab** (12:30-1:15). Covers all material through Week#9.
Monday
1:15-2:00. Garden rounds.
2:00-2:30: Vegan snack break, presented by food group #9.
2:30-2:45. Walk to olive grove just W of Harder Stadium.
2:45-4:00: Pruning demonstration and practice.
4:00-4:15: Walk back to class plot.
4:15-4:45: Finish lab and turn in.

**Week 10. Review for Final Part 2; Final Part 1: Lab Practicum, GHGP.**
Monday, June 03. Review for final exam, part 2 (on seminar).
Review for final exam.

**Wednesday, June 05. Final exam, part 2 (Lab Practicum).** 12:30-2:30. Lab Practicum.
3:00-3:30. Vegan snack break, presented by food group #10.
3:30-4:30. Garden plot rounds, evaluation of garden plot groups.

**Week 11. Final exam Part 2. Tuesday, 2013 June 11, (12:-00–3:00), HSSB 1231.**