CASFS Research Protocol  
(Last modified 3/4/14)

OVERVIEW
Supporting faculty, graduate and undergraduate research is central to the CASFS mission:

\[\text{The mission of the Center for Agroecology & Sustainable Food Systems (the Center) is to research, develop, and advance sustainable food and agricultural systems that are environmentally sound, economically viable, socially responsible, non-exploitative, and that serve as a foundation for future generations.}\]

The function of the CASFS Research Protocol is to ensure that all interested research parties have equal access to the CASFS fields and to facilitate smooth integration of current and future research, education, and production activities.

The CASFS director and staff would like to make it clear that all researchers are welcome to visit the farm, and are welcome to propose projects. The research protocol is meant to be a tool to facilitate interaction and communication between researchers and CASFS staff so that the process of implementing research on the farm can be more systematic, fair, and welcoming to all. The CASFS staff realize that an important part of the CASFS mission is to support research and education, and that researchers are an integral part of success of farm operations and longevity. Researchers are invited to discuss proposals (as outlined below) whether or not they have funding, and CASFS will accommodate as much research as is feasible and possible given funding and staff constraints.

PROJECT CLASSIFICATIONS

All proposed research on the CASFS farm will be classified on a best-fit basis into three categories based on the level of CASFS staffing needed and the degree of impact on production programs and operations. Not all studies may fit precisely into one of the three distinct categories, but research projects will be classified based on having the closest fit by sharing multiple traits with one of the three categories.

Category 1 Projects:
- These projects are complex, manipulative production system experiments where the researcher dictates crop planning and management.
- These projects will require highly specialized cultural practices (e.g. unique and complex irrigations, plant spacing, inputs, tillage, etc.)
- Researchers will dictate crop and/or cover crop selection, production, and irrigation methods, rotations and tillage systems within a specified area of the CASFS fields where these practices do not fit into the existing production system.
- These projects have the potential to leave a legacy footprint (e.g. increased pest, disease, or weed, soil compaction, changes in organic matter, reduced cover crop, etc.)
- These projects will require a high level (~12hrs/month) of CASFS staff coordination.
- Example 1: Research exploring Anaerobic Soil Disinfestation (ASD) as a biological alternative to methyl bromide.
- Example 2: Research studying the impact of intercropping vs. monoculture planting of 3 new cover crops on carbon sequestration and insect pest loads

**Category 2 Projects:**
- These projects are simple, manipulative experiments where site managers perform their basic production operations, and researchers request management modifications
- These projects will require unique but not highly specialized cultural practices (e.g. small changes in input application, only one variation in irrigation type or amount, etc.)
- Researchers will study cropping systems within the existing production rotation and may have a small impact on the normal projected yield.
- These projects have little or no potential to leave a legacy footprint (e.g. increased pest, disease, or weed, soil compaction, changes in organic matter, reduced cover crop, etc.)
- These projects will require a medium level (~8hrs/month) of CASFS staff coordination.

- Example 1: Comparing normal irrigation (control) vs. reduced irrigation (treatment) in plots of a crop in a planned CASFS rotation.
- Example 2: Leaving a ‘weed strip’ along side a set of crop rows to determine the impact on natural enemy and pest populations at increasing distance from the strip

**Category 3 Projects**
- These projects are mostly observational that require little or no change to crop plans, planting or management.
- These projects will require no changes to the existing cultural practices or will not interfere with existing cultural practices.
- Researchers will study crops/cropping systems within the existing production rotation and will have no impact on projected yields.
- These projects have no potential to leave a legacy footprint (e.g. increased pest, disease, or weed, soil compaction, changes in organic matter, reduced cover crop, etc.) The project will require a limited level of staff coordination (~4hrs/month) of CASFS staff coordination.

- Example 1: Research examining pollinator visits to crop flowers
- Example 2: Research examining parasitoid abundance, and pest parasitism, and harvesting a nominal amount of crop leaves to assess herbivore damage

**NUMBER OF PROJECTS THAT CAN BE ACCOMMODATED**

Due to the already complex schedule of operations and programs at CASFS, the center is only able to accommodate a set number of projects in each category at any given time. This maximum is:

(2) Category 1 projects
(3) Category 2 projects
(6) Category 3 projects
Once the limit of projects that can be accommodated has been reached, any additional proposals will be reviewed and approved on a case-by-case basis, but may need to be postponed until other projects are completed.

Projects that are already in progress at the time of the implementation of the research protocol will be continued on current locations. Researchers involved in those projects should still submit an application for record-keeping purposes. Current projects will count towards the project maximum as outlined above.

**PROJECT LOCATIONS**

Category 3 projects are welcome in all 5 of the CASFS sites: Alan Chadwick Garden, Farm Garden, CSA production areas, Hay Barn Field and Quarry Field (see attached map).

Category 1 and 2 projects are welcome in the Hay Barn and Quarry fields (see attached map). The proposed research must fit within the existing plot boundaries and row spacing of the respective field. Contact the RLM for more information. A category 1 or 2 project may be located in other CASFS site (Top, Mid, and Lower Fields, see attached map) if the research goals necessitate research land that has been in organic production for a longer time frame (e.g. 5+ years). The research location request will be considered as part of the proposal review, and in the proposal, the researcher should outline why a field that has been in production for a longer time frame would benefit the research.

Prospective researchers are invited to visit the CASFS sites prior to submission of proposals to familiarize themselves with the farm, and to assess which sites might be most appropriate for their study.

**PRODUCTION RELATED COSTS AND INCOME GENERATED FROM RESEARCH FIELDS**

The researcher must cover all input costs of any proposed research project. For category 1 projects, the researcher must cover all production related inputs including but not limited to: seeds, plants, compost or fertilizer, drip irrigation consumables, or other materials needed for implementation of the cropping system desired. For category 2 projects, the researcher must cover all production related inputs including but not limited to: seeds, plants, compost or fertilizer, drip irrigation consumables, or other materials needed for implementation of the cropping system desired that would not be included as part of the planned rotation. In other words, the researcher is responsible for all costs related to modifying the rotation to fit the research goals. Category 3 projects, by definition, will not require a change to crop rotations or implementation, and thus researchers of category 3 projects will not be required to pay for production related inputs.

For category 1 and 2 projects, the researcher must budget for any and all labor needs including but not limited to: bed prep, planting, weeding, thinning, fertilizing, irrigating, rodent control, harvesting, data collection, analysis, plot setting, and all post-production research tasks. For assistance in budgeting for the input and labor costs please see the attached Research Cost Worksheet and/or contact the Research Lands Manager (RLM).
For research projects in all categories (1, 2, 3), researchers are required to supply any special equipment, flags, traps, and/or other miscellaneous supplies needed to conduct the research and collect data.

CASFS staff understand that projects will be a mix of funded, unfunded and some in the ‘pilot’ stage. Researchers with unfunded or pilot project ideas are welcome to submit proposals, and when possible, given CASFS funding constraints, accommodations will be made by CASFS to support research projects without funding or with a limited amount of funding.

Any funds generated from produce harvested from areas in which research projects are being conducted will be kept by CASFS.

**PROPOSAL PROCESS AND APPROVAL TIMELINE**

Researchers are asked to submit a short proposal outlining the project title, dates, proposed project category, project description, production-related costs, and proposed location (see form below). Once submitted to the RLM, the RLM will share the proposal with the approval committee. The approval committee membership will include the Heller Chair (committee chair), the CASFS Director, the RLM, the site manager(s) for the proposed research, an additional member from the CASFS faculty advisory committee, and a graduate student representative from the Environmental Studies Department.

Proposals for all trials (see exception*) must be submitted by 15 January for projects beginning 15 April - 14 October or by 15 July for projects beginning 15 October - 14 April.

*Category 3 projects developed by undergraduates with a faculty sponsor must be submitted at least six weeks before the start date of the proposed project.

Proposals should be sent via email to the Research Lands Manager (RLM). The RLM will schedule an informational meeting (2 hours max) with the researcher and the RLM to discuss the proposed trial, go over cost estimates and discuss changes to the project proposal form. The RLM will then forward the proposal and any relevant revisions to the approval committee who will decide project approval.

Researchers are encouraged to submit proposals for projects during extramural proposal development. Researchers should use the same proposal form to the RLM indicating that this is a proposal in development. Discussions at the proposal development stage help to ensure that grant proposal budgets accurately reflect the input and labor costs of the research on CASFS sites, and if approved, researchers can receive assurance that funded projects will be allowed on CASFS sites. The CASFS Director will supply letters of support for inclusion in grant proposal packages for researchers with pre-approved projects.

**EXPECTATIONS OF RESEARCHER**

In both the proposal and implementation phase for approved projects, there are a number of expectations that CASFS has for researchers working in CASFS sites.
1) All researchers are expected to abide by CASFS third party organic certification standards in the design and implementation of their research. All inputs including fertilizers, amendments, pesticides, fungicides, seeds, transplants, etc. must be allowable inputs under certification standards to which CASFS adheres (e.g. CCOF).

2) Researchers are expected to use best practices while conducting research. Researchers should work to minimize their legacy footprint on CASFS lands to the maximum extent by limiting activities that contribute to soil compaction (e.g. walking in crop fields only when necessary, replications that are done in winter or during “fallow” times, sampling in heavy rain events or right after irrigation to field capacity, excessive foot traffic in furrows during winter rainy season, etc.). (Likewise, CASFS staff operating equipment for research trials should ensure to clean equipment between working in different fields to minimize spread of pests and diseases between treatments, and for production purposes.)

3) Researchers will be responsible for coordinating with the RLM regarding application of any CCOF-approved pesticides or fungicides. The RLM is approved to train in pesticide application. The researcher should make it clear at the time of proposal submission if staff time would be requested for spraying or for application training. The researcher should also coordinate with the RLM to ensure that appropriate signs are posted after spraying, as the farm receives large numbers of visitors from the public, including many school children.

4) CASFS has limited storage space, and thus researchers should discuss any storage needs (equipment, plant or soil samples) with the RLM.

5) Researchers should make clear if the research project will require disposal of crop residue, and should plan to work with CASFS staff to coordinate such disposal on or off-site.

6) The researcher is also responsible for the clean up of the research site at the conclusion of the trial. This includes finding suitable, off-farm disposal sites for pest-infested soil, root, or leaf material.

7) Due to the high level of pedestrians and the presence of farm infrastructure that is easily damaged, parking on the farm and driving on farm field roads is discouraged. However, it is understood that research requires bringing large amounts of equipment and taking heavy samples away from the farm. When possible, researchers are encouraged to park in the A-Quad parking lot with the appropriate permit, or metered parking. If parking at the farm or driving on farm field roads is necessary, please discuss with the RLM for prior approval.

8) It is expected that any research project that uses CASFS sites for research should acknowledge the participation of CASFS in the research project by inserting the following acknowledgement into any publication or presentation, “This research was supported by the Center for Agroecology and Sustainable Food Systems at the U. of California, Santa Cruz”.
Instructions for the Research Cost Worksheet

**Background**
This worksheet is available to help researchers seeking projects on the CASFS farm to budget accurately for production related costs for the project and for costs incurred to CASFS. The worksheet is intended primarily for those proposing category 2 and 3 projects. This worksheet and the embedded formulas are meant to be an estimation of production costs and any production related costs above and beyond these figures must be covered by the project.

**Instructions:**

*Lines 1-4: costs*
These cells are formulas to calculate the totals from the Input Costs, Labor, and CASFS Costs sections. Do not enter anything into these cells.

*Line 6: project duration*
Enter the project duration in months.

*Lines 7-10: crop specifics*
Enter the approximate number of acres of the project. Change crop spacing as necessary for desired crop. Consult RLM for questions about crop spacing and arrangement.

*Lines 13-16: fixed inputs*
These lines are fixed formulas by acreage; do not enter anything into these cells.

*Lines 17-18: variable inputs*
Enter the amount and price of any additional fertilizer, and the number of harvest boxes needed. Consult RLM for specific details.

*Lines 22-26: labor*
These amounts are fixed formulas based on acreage and the pay rate is based on student labor. Harvesting will fluctuate based on crop; please consult the RLM for more precise figures.

*Lines 30-36: CASFS costs*
These amounts are fixed formulas based on acreage; do not enter anything into these cells. Labor costs, tractor operator costs, and tractor hour costs are calculated based on UC Davis Cooperative Extension Labor Cost Estimates ($10/ hour for general labor, $13/ hour for machine operator) and Hourly Equipment Cost Estimates ($25/ hour). General coordination provided by the RLM will be covered by CASFS, and thus no cost to the researcher ($0).
CASFS Research Proposal Form

Name of Project:
Submission Date:
Start and End Date of Project:
Proposed Category of Project:
Proposed Field Site(s) of Project:
Proposed Production Related Project Costs:
Brief Project Description (250 words max):

Approved: ___________________________ Date: ____________
(CASFS Research Lands Manager)