

**Farm Agriculture Internship Program
Water Management Team
Feasibility Overview**

Project Description

The project will create an internship opportunity for those studying agriculture or soil science that will involve collaboration between University departments, extension specialists, and farmers. The project's main goal is to conserve water on small-scale farms in the Davis area. In this project, students will take responsibility for analyzing individual crops through farm irrigation analysis, involving flow rate and soil moisture analysis. Students will visit the student farm on the University of California, Davis campus to perform these uncommon but critical tests to provide the farmers with essential agricultural data. Equipment will be obtained through university resources and purchased with pending grant money. Farmers, provided with this data for free, will have an incentive to improve their irrigation practices to increase output and reduce water use. Students will gain internship credit and necessary field experience for career development.

The Big Picture: The ultimate purpose of creating this internship is to promote water conservation. By instilling this internship program, students would get necessary experience in collecting and carrying out soil data analysis. This analysis will provide the farmer with a specified plan on how to reduce water usage, essentially minimizing water usage while maximizing crop yield. Thus, this program would be beneficial to farmers and students while simultaneously promoting water conservation.

Project Timeline for Net Impact Water Management Team

Quarter Number	Week Number	Goal/Aim
2	8	Finalize feasibility report and “pitch” presentation; create draft of application of project; find potential source of funding
2	9	Reach out to established contacts, sending finalized pitch presentation and feasibility report
2	10	Wrap up and determine goals for next quarter
3	1	Create internship announcement flier
3	2	Apply for grants and possible funding sources
3	3	Meet with contacts to learn about gaining access to farm equipment
3	4	Finalize plan and coordinate meeting with administrators - everything should be ready to go except legal stuff

3	5	Meet with campus administrators to discuss internship and create program
3	6	Work through logistics of the program and figure out when the internship will be available to students
3	7	Distribute internship flier to relevant majors and professors so students may sign up for internship
3	8	Work through logistics - determine level of interest and finalize program
3	9	Begin wrap-up - include future implications and goals for project
3	10	Wrap up quarter for next year's team

Organizational Feasibility: A faculty mentor will oversee the project, and lead undergraduates on field trips to the Student Farm to perform analyses. The faculty will assist in training undergraduates in equipment use and data analysis. Relationships between farmers and extension specialists will be developed to ensure sustainability of the program and long-term goals of water reduction.

Tentative Internship Syllabus

Students will create a report consisting of 3 parts: Experiment Design, Data Collection and Processing, and a Conclusion. During the design portion, students will to create a plan to collect soil data for their assigned crop/portion of the farm. Data collection will be carried out on the Student Farm. Upon data collection, the student will use graphical representations and other methods of data processing and analysis to create a conclusion that would provide the farm with a specialized plan on how to conserve the most water and create the highest yield for the specified crop. This includes a primary farm visit, where the student will have the opportunity to choose a portion of the farm or specific crop to focus their study on. The secondary visit will be conducted and data collection will be carried out during this visit.

Internship Timeline

Week	Aim/Goal
1	Research and understand basics of soil analysis technology
2	First Farm Visit - travel to student farm and understand the farm divisions; divide sectors of farm (specific crops) between students for future analysis
3	Students will research the crop or sector that they were assigned, putting together a research report about the soil specifications required for that specific crop (i.e. soil pH, humidity, water content, irrigation system, etc.) to gain a greater understanding of the specific needs of that crop
4	Research report (experiment design) will be turned in and edited; sample graphs should be included so student has clear goal when collecting data; they know what data they're collecting and what equipment is needed to carry out data collection
5	Second Farm Visit - travel to student farm and conduct soil analysis for specified crop/sector

6	Data processing - create graphs and conduct data analysis for sector
7	Data analysis - determine what the data means and how it can be improved to maximize crop yield while minimizing water usage
8	Begin conclusion of experiment (written report)
9	Finish and turn in conclusion of experiment
10	Final - Formal presentation of experiment findings, and what methods the farmer can instill in order to improve soil quality and promote water conservation

Market Feasibility: Upon distribution of the internship announcement, interest will be gaged by the Net Impact Water Management Team members. The interest expressed by the students will be used to determine the number of seats available for the program and the rigor of the course (i.e. whether or not it should be considered a unit course as opposed to just an internship).

Potential Funding Sources

Source/Organization	Approximate Amount	Deadline to Apply	When We Hear Back
http://studentaffairs.ucdavis.edu/students/awards/apply/rso-awards.html	\$100	March 17	
Cross Cultural Center: http://ccc.ucdavis.edu/grants.html	Up to \$500	TBA	
Dean Witter Fund: http://studentaffairs.ucdavis.edu/students/dean-witter/	covers an event (fundraising event?)	Pending	
TGIF: The Green Initiative Fund	up to \$190,000	TBA	

Technical Feasibility: Avenues are being located in order to acquire university agriculture technology. This borrowed technology will serve the needs of the program. A vehicle for student and equipment transportation to and from the farms will be provided upon expansion of the program.

Financial Feasibility: This venture will not be for profit. An internship manager or faculty will need to be reimbursed for management of the internship. Transportation will need to be considered for students and the equipment. Sources of outside funding through campus sustainability initiatives and grants are being pursued. We are currently working up a speculative budget for future expenses and researching potential grants that could aid us in our finances.

[Insert cost-benefit chart, including bullet points of potential and approximate costs, also list the use of it for the program (i.e. flow meter (~\$x) - used to determine quantity of water being administered to plants)] This should give us an exact approximation as a dollar amount that we will use during the pitch fest.

Sample Program Application

Future Implications

Our first trial would be to employ the internship program on the Student Farm on the University of California, Davis campus, which is explained in detail above. Following a successful quarter, the Net Impact Water Management 2017-2018 team will create an extended program that will reach out to local farmers (this should take transportation costs into consideration). Essentially, the project will start small and locally, expanding in the future from one quarter a year, to possibly 2-3 quarters a year. After establishing that the internship program is successful and working out all the flaws, the program will expand to reach out to local farmers in Yolo County to continue promoting water conservation in agriculture.

Conclusions

A program syllabus and internship announcement will be created in order to market a structured program to potential collaborators, in order for this program to move forward. This requires coordination between the Net Impact Water Management Team and university officials, which will focus on gaining access to necessary farm equipment and meeting with campus administrators to make the program a formal internship for students.

Network and Contacts

Name of Contact and Title	Contact Information	Comments/Description
Marcel Holyoak Department of Environmental Science and Policy Professor and Chair	maholyoak@ucdavis.edu	Recommended to talk to Marissa Baskett and Randy Dahlgren
Marissa Baskett Lead faculty for Environmental Science and Management Major	mlbaskett@ucdavis.edu 530-752-1579	Has not responded to email
Randy Dahlgren Lead faculty for Environmental Science and Management Major	radahlgren@ucdavis.edu	Encouraged us to put together a brief description of proposed internship and distribute to relevant majors; provided example internship announcement
Luis Eduardo Chair of Community and Regional Development	leguarnizo@ucdavis.edu	Referred us to Ryan Galt
Ryan Galt Associate Professor of Agricultural Sustainability and Society	regalt@ucdavis.edu	Met with Galt and he referred us to William Horwath
William Horwath Professor of Soil Biogeochemistry and Soil Biogeochemist	wrhorwath@ucdavis.edu	Has not responded to email or follow up email

Center for Land-Based Learning	landbasedlearning.org	No response yet
Stavros Vougioukas Professor, Biological and Agricultural Engineering	svougioukas@ucdavis.edu	Research focuses on mechanization for crops, referred us to Zaccaria, Grismer, Shackel
Daniele Zaccaria Water Management Specialist	dzaccaria@ucdavis.edu	Busy in Fall Quarter, available to schedule a meeting in Winter
Kyeema Zerbe Associate Director, Innovation Institute for Food and Health	klzerbe@ucdavis.edu	Net Impact Advisor, Farm Bureau connections
Shrini Upadhyaya Professor, Biological and Agricultural Engineering	skupadhyaya@ucdavis.edu	Answered water-related questions
Mark Grismer Professor, Land, Air and Water Resources	megrismer@ucdavis.edu	Answered water-related questions
James Muck Student Farm Coordinator	jimmuck@ucdavis.edu	Held panel on water issues in agriculture
Rachael Goodhue Chair, Agricultural and Resource Economics	goodhue@primal.ucdavis.edu	Responded but not interested
Jim Chalfant Professor, Agricultural and Resource Economics	jim@primal.ucdavis.edu	Did not respond
Kate Scow Director, Russell Ranch	kmscow@ucdavis.edu	Did not respond, possibly reach out again soon
Anthony O'Geen Cooperative Extension Specialist	atogeen@ucdavis.edu	Shared concerns with project logistics
Stuart Pettygrove Cooperative Extension Specialist	gspettygrove@ucdavis.edu	Did not respond
Samuel Solis Cooperative Extension Specialist	samsandoval@ucdavis.edu	Referred us to Scow and Zaccaria
Larry Schwankl Cooperative Extension Specialist	ljschwankl@ucanr.edu	Did not respond

Hussein Ajwa Cooperative Extension Specialist	haajwa@ucdavis.edu	Did not respond
Stephen Kaffka Cooperative Extension Specialist	srkaffka@ucdavis.edu	Did not respond
Jeffrey Mitchell Cooperative Extension Specialist	jpmitchell@ucanr.edu	Did not respond
Edward Spang Professor, Food Science and Technology	esspang@ucdavis.edu	Responded, meeting scheduled
Cort Anastasio	canastasio@ucdavis.edu	
Gale Feenstra ASI		

Kyle Brown
Viktoria Haghani
Alex Wilder
2016-2017