

BIG IDEAS

2015-2016 Pre-Proposal Summaries

FOOD SYSTEMS

The aim of this category is to encourage the development of innovative solutions or approaches that address challenges in food systems, or that will result in progress or changes to support food security, sustainability and/or justice and health in food systems, and/or equitable access to nutritious food. Proposals may be aimed at campus-based program, local/domestic issues or international efforts.



A Mobile Application to Customize Rural Smallholder Farmer Investment Portfolios

Smallholder, cash-crop farmers in developing countries across the world face important, possibly life-changing, investment decisions. A software program, encoded with crop productivity data and best practices, provides the means to bring precision and objectivity to crop investment choices. This project aims to develop a mobile application that takes several important farmer and farm characteristics, combines them with market prices for outputs and inputs, and provides estimates on profits, costs, and minimum annual income levels. Local salespeople, who will be connected with non-government organizations that provide input packages and enhanced local crop varieties, will be given mobile devices loaded with this application. These salespeople will travel to farms and input farmer- and farm-specific information into the application, which will then provide farmers with on-the-spot, customized investment portfolios. These portfolios will include quantitative estimates of profits and net present value, as well as ranges of potential scenarios of economic well-being.

Agriculture Start-up Help Mobile Application

The project, Agri-Aid, is meant to help the government of Uganda in cutting down the country's poverty levels by getting most Ugandans involved in agriculture, specifically planting crops, since the many people in the country heavily depend on the agricultural sector. The application will provide information about what crops are grown in Uganda, where they are grown, how they are grown and where to sell the produce for commercial means.

Banana Wilt Diagnosis

The Banana Bacterial Wilt (BBW) diagnosis and control system will help farmers and concerned parties acquire a long term control strategy for the BBW disease. Production risks that have been caused by BBW disease will thus be reduced, increasing banana yield production and food consumption. The team also anticipates an

improvement in farmers' standards of living as a result of the additional income generated from the sale of bananas with increased production. Farmers will receive quality advisory services for early detection and monitoring of the BBW disease. Farmers will be sensitized about the modern technology, and their confidence will be boosted when they monitor the results using the new technology.

Bringing Twenty-First Century Tools to an Iconic Fleet

In recent decades, small-boat commercial fishermen and fish unloading and processing facilities have been in decline, whereby reducing access to fresh and local seafood. In order to address this problem and rebuild a localized seafood supply chain, fishing communities have initiated Community Supported Fisheries (CSF)s as a potential strategy. The ability of small-scale fishers and CSFs to succeed hinges on their ability to match supply with demand and maintain accurate business information. The proposed tool will access fisheries specific data via mobile and desktop devices for which fishermen and CSF managers can collect and exchange supply chain data in real-time. It focuses on three critical areas: (1) access to supply-- product need and availability; (2) inventory management - a mechanism managing inventory through production and distribution; and (3) traceability from boat to consumer. Small-scale fisheries are at a competitive disadvantage in the market, but this multifarious tool can be a powerful equalizer.

Come ~ EAT

Come EAT will reduce food waste, connect Oakland communities with healthy food, and ease the effects of gentrification through education and job training. The project's cross-sector partnership with PUEBLO offers a disruptive business model to generate higher economic and social returns to all stakeholders. The team will strategically position themselves in the healthy food market by transforming recovered produce into delicious and wholesome soups, salads, and smoothies. Through a dual-pricing model, Come EAT capitalizes on the growth of Downtown Oakland tech companies to provide East Oakland communities with access to healthy meals. Downtown Oakland customers will benefit from the quality and convenience of food as well as the feeling of goodwill and qualification for a tax write-off. This will allow Come EAT to bridge the gap between social classes in the Oakland community.

Cooking Simplified

Busy schedules and limited budgets make it hard for people to find themselves in the kitchen. For many, these barriers make pre-processed and fast food a more appealing option. As a result, rates of diet-related disease have increased, and health has declined. Cooking Simplified makes the preparation of wholesome and delicious meals at home an easier, more viable option for people on a budget. Cooking Simplified does the planning, shopping, and preparation work involved in home cooking by providing affordable meal kits, at no more than \$5/serving. These kits include simple recipes and all the ingredients necessary to easily make a multi-serving batch of flavorful and healthy meals. Cooking Simplified meal kits are designed to support more economical and efficient weekly meal planning, helping people return to the kitchen, and ultimately, to better health.

Copiatech - Intelligent Solutions for Domestic Food Waste

Every year, American consumers waste 90 billion tons of food, worth \$115 billion. Current solutions for reducing food waste are woefully inadequate – “tips and tricks” from environmental advocacy groups to help reduce household waste fail to resonate with consumers, whereas individually-targeted apps tend to be complicated, cumbersome and address only a small fraction of the problem. Copiatech takes a comprehensive approach to reducing domestic food waste by combining several proprietary innovations with elements of

existing solutions for reducing food waste. Food purchases automatically populate an app that allows the consumer monitor their food purchases and inventory, to identify when food is wasted, and provides easy-to-follow assistance in avoiding future food waste. Copiatech aims to educate and empower the consumer to take proactive steps in reducing food waste.

Edible Campus Program

The Edible Campus Program aims to address local food insecurity by repurposing underutilized spaces for food production, turning waste into food, and engaging students as growers and producers. Developing a student farm, implementing vertical gardens, and producing citrus trees encompass the enterprise of the project. Co-led by the AS Department of Public Worms, AS Food Bank, and the UCSB Sustainability Program, this project empowers the campus community, especially students, to be responsible stewards and leaders of food systems. The project trains students in practices that address social, economic, and environmental aspects of sustainability and helps them to reclaim their personal connection to the land and their food.

Engaged Agroecological Education and Community Building

This 3-month summer internship program for UC Berkeley students will organize and execute two one-week sessions of an urban agroecology summer camp for local middle school and high school students, in addition to establishing consistent garden maintenance. A team of four interns will manage crop planning, watering schedules, produce donations, weekly open hours, workshops and community outreach in preparation for the camp. The youth camp will include hands-on gardening lessons, nutrition and cooking classes, facilitated discussions around food justice issues, guest speakers from Bay Area farms, as well as field trips to neighboring urban gardens.

FeedX

Food providers (especially for Asian families and students cooking at home, whose time and efforts put into cooking a meal for one versus three people are similar) get to sell their additional meals to others with an approximate profit margin ranging from 30% to 50%, and gain the experience of sharing homemade food and culture. Food consumers in nearby regions (residents/students/travelers) that were previously confronted with the problem of paying a relatively high cost for satisfying or local food that caters to individual tastes now have the option of purchasing authentic meals at a low cost.

Fight the Hunger

Fight the Hunger is aiming to develop an anti-food wasting campaign in the Santa Barbara area. The organization will develop a delivery system so that homeless shelters can pick up food from restaurants at specific times. It plans to work with homeless shelters and both local and corporate-owned restaurants to execute this system, which will distribute good food that would otherwise be thrown out. This would help the homeless shelters allocate their funds for food towards other resources that can be provided. The team's next step would be to create advertisements for the Santa Barbara area to hopefully start a movement that spreads across the city. Fight the Hunger's goal is to get restaurants in the area to sponsor their cause. Restaurants will be rewarded with the title of being an ethical restaurant.

Foodwise

Ordering off a menu is a black-box problem. Unfamiliar dishes and minimal transparency about ingredients and nutritional value leaves diners, especially with serious dietary concerns, in the dark. Tens of millions of

Americans suffer from obesity, heart disease, diabetes, and serious food allergies, and the choices made when eating out significantly affect their well-being. The Big Idea? Build the restaurant menu of the future. Instead of providing a static selection of dishes, this menu application will offer curated suggestions for each person's dietary needs at any given restaurant. Advanced machine learning and natural language processing technology will drive the analytics engine at the heart of the application. And behavioral economics principles will inform its design, so consumers won't have information overload but will be empowered to make better choices. The goal? Inspire a shift toward a more transparent, accountable, and healthful way of eating away from home.

Freedge - Community Fridges

The problem of downstream food waste, which occurs at the consumption level, is very important in middle and high-income regions where it accounts for 31–39 percent of total food waste. At the same time 12% of the global population is undernourished. Freedge is a food sharing mechanism that promotes the installation of community fridges, aiming to reduce food waste and build a stronger community. It is a place where members of a neighborhood can share food and ideas. Freedges have glass doors (so passersby are more encouraged to open it) and beautiful shades that serve as evolving art installations. Freedge's ultimate goal is not to install a few isolated community fridges, but to encourage local actors around the world to install community fridges in their neighborhoods and become part of the freedge network.

Garden Buddies: Support by Students. Nutrition for Families.

The Garden Buddies team is applying traditional horticultural knowledge in an innovative way to support families in growing their own nutritious food. By providing needy families with hands-on training and year round support, students will help families extend the growing season and produce highly nutritious food with minimal inputs. This program will partner residents in the Lansing, MI community who are battling hunger and the lack of food security with students who are excited to share their expertise in cultivating food through an extended growing season. Together a relationship will be built that will help families receive access to knowledge, better nutrition and higher education.

Gender in Agricultural Development: A Massive Open Online Course

Massive Open Online Courses (MOOC) are a fairly recent phenomenon in distance education and consists of an online course aimed at unrestricted participation and open access via the web. MOOCs, first introduced in 2008, has been hailed as transformative, and a game changer for workforce development across the globe. It is evident that gender equity to productive resources in agriculture is critical to meet the food production needs for an increasing population, estimated to be 9 billion by 2030. The proposed MOOC will examine the differential impacts of gender in agricultural development and will follow a "learn, design, train" approach to provide insights to gender issues in training programs as well as best practices for encouraging girls' participation in agricultural sciences.

Gleanr, A New Crowdsourcing Technology to Reduce Food Waste

Almost half of the food produced in the United States is wasted. Waste occurs on every level of production: edible food is left to rot in fields, food is destroyed during distribution, food fails to be sold in supermarkets, and consumers fail to eat much of the food they purchase. There are hundreds of groups around the country that tackle food waste by focusing on narrow goals like redirecting excess food from college dining halls to homeless shelters. While these groups contribute to reducing wastefulness, this contribution is negligible. Gleanr is a new technology that will complement these existing attempts while adding an entirely new layer:

crowdsourcing. Gleanr will start by focusing on farm waste: farmers will list sources of gleanings to be taken from fields, and consumers will be able to access a map of these gleanings to enjoy the harvest. Gleanr will then expand to include all waste-sources.

How Bugs Will Save the World

According to the UN Environment Programme, roughly one third of the food produced for human consumption is lost or wasted. Simultaneously, vulnerable forage fish stocks, which are a key component of the oceanic lifecycle, are declining due to overfishing. They are being harvested to be processed into fishmeal which feed the aquaculture boom and livestock. Black soldier fly larvae are capable of feeding on waste and efficiently creating both the protein and fat necessary to meet nutritional requirements of feed operations. If a mere 6% of the food waste were converted into bug protein, it would offset 100% of the need for forage fish. The potential for impact is massive. The project assesses the current state of the bugs-in-food industry and major forces affecting its growth. The project will include analyses of economic potential, political viability, and technologic feasibility.

Kids In Nutrition

Kids In Nutrition (KIN) connects passionate college students and curious elementary school children in order to create a desire in these children to live healthy and active lives. UCSB student volunteers lead weekly (for seven weeks) health education sessions for kindergarten through fourth grade in the Santa Barbara and Goleta school districts. Through much testing, trial, and error, the curriculum has evolved to become an effective teaching tool. KIN's next big idea is to create a series of systems that make this program replicable at any college campus. With instructions and guidance from the executive board, this program will be able to turn any college campus into a hub that teaches children how to live a healthy and active lifestyle in surrounding schools, after-school programs, and kids clubs. KIN's main goal is to invoke a cultural change in which younger generations place a higher priority on making healthy lifestyle choices.

Living Foods

Living Foods is a leading edge food science company which uses the science of the microbiome (gut bacteria) to change the way people eat. The microbiome is often referred to as the "second brain" because of its influence on the rest of body - brain, kidneys, liver, intestines, and heart. Yet the world is only just learning about what constitutes a healthy microbiome and which foods encourage bacteria biodiversity. Living Foods will translate the newest scientific findings about the microbiome into a line of products. The project will start with instant ramen - a \$4 billion food category that has not changed in 40 years. It will use the latest bacteria sequencing technology to test the impact of the product on the consumers' microbiome, and optimize its recipe. As Living Foods learns more about the impact of different ingredients and preservation techniques, it can extend to new product categories that deliver similar benefits.

Merced Urban Ag Community Network

Merced Urban Ag Community Network finds sustainable solutions for food systems that enrich the community around it. It will build urban gardens in the city of Merced so that it is possible to help those who are in need. In order to do this, empty lots that are unused will be utilized. The education and skills that come as a result of the community effort will allow individuals to live a more sustained healthy lifestyle. By building these gardens it will beautify the city, help solve issues caused by poverty, and give citizens resources that will give them leverage against food insecurity. By incorporating as much of the entire community to make this a successful operation, there will be greater chance that others continue the lead in the public food initiatives.

Night Lights in Rural Senegal: Communicating Agroecology Research to Farmers

The team proposes a solution to slow adoption and incomplete presentation of culturally-relevant farming practices in the West African Sahel. Through visual presentations that do not include any text, given at night in rural village centers with the use of a generator, Night Lights in Rural Senegal proposes an innovative way to disseminate relevant agricultural research findings of a minimal input innovations with great potential to increase food security. The research is farmer- inspired, and the team includes many people native to Senegalese villages who can help guide the design of the presentation. The team plans to give presentations at night in villages that have no electricity where all members of the community, men and women, young and old, will be able to see the results and discuss their implementation.

NutroBridge Nutrition Assistive Application- Education, Affordability, Convenience

NutroBridge combines education with affordability and convenience to help users achieve food equity; even consumers with fewer choices available can take control of their market decisions. Consumers in minority and socio-economically subjacent communities often lack appropriate access to food retailers, calculated in terms of distance, price, or breadth of options; in 2009, 2.9 million households were affected by food deserts. Even when varied food is available, many consumers lack the resources and knowledge to effectively utilize less common produce. NutroBridge will pair with an established fitness tracker, MyFitnessPal, to create detailed, personalized dietary recommendations alongside recipe suggestions and relevant local sales. This interface will allow users to plan complete, appropriate meals for daily or weekly menus before committing the time and money required for a store visit. The team will utilize the partnership cultivated between the students and the University's administration to jumpstart NutroBridge's initial development.

Peas-Makers

Pigeonpea was introduced in 2011 to Guatemala to relieve malnutrition. It adds protein to their diets and additional income as it is grown in between the rows of their staple crops such as corn and beans. The farmers in rural areas of Guatemala take the dried pigeon pea plants and beat them with sticks to crack the dried pods. They flip the dried remains from tarp to tarp in hopes to separate the peas from the husks and use the wind to aid their process. Their methods are inefficient and lose many pigeon peas along the way. The Peas-Maker crushes and filters the pigeon peas from their pods and only requires cheap, accessible parts and an individual farmer so it can be places in many homes.

Planet Murple

Planet Murple helps kids aged 5-9 find joy in exploring fruits and vegetables with their family, while laying the foundations for a lifetime of healthy food habits. Murple's stories, products, and games make eating healthy irresistibly fun. As kids discover the magical world of Murple, they experience the wonders of real and natural food. They become explorers, and the grocery store and the kitchen transform into an intergalactic adventure! With stories and playing cards, kids seek out new fruits and vegetables and take on new culinary challenges. They are motivated to become more adventurous eaters, build cooking skills, and apply their imagination to tasty creations. Finally, kids are told to play with their food.

Radelish

Radelish aims to create a service/mobile application to help individuals with highly restrictive diets dine out safely. Diet-related health issues are a growing problem on a global scale. In fact, 60% of households today

have at least one member who is on a restrictive diet. Radelish is helping these people by partnering with restaurants across the Bay Area, educating them about Radelish's cause, and obtaining comprehensive ingredient lists for a subset of dishes at each restaurant. Radelish is targeting users with ingredient specific dietary restrictions (i.e. broccoli, shellfish, ginger) and much more prevalent restrictions as well: gluten-free, dairy-free, vegan, etc. Currently the mobile app is in the prototype phase. There are four restaurants within the Berkeley area that have partnered with Radelish. Usability testing has also been conducted and 86% of the people surveyed agreed that they would use the app when they ate out due to their dietary restriction.

Ricult

70% of the world's poor are smallholder farmers where they produce 80% of the world food. These farmers live in poverty and hunger due to the inefficient agricultural value chain driven by numerous middlemen. Ricult's solution is a marketplace auction platform with predictive analytic algorithm accessible through both low cost feature phone that cannot use the internet and smart phone. Ricult's platform will connect farmers directly to buyers, farm input sellers, banks, logistics, and best practices information. Ricult's Predictive Analytic Algorithm will make real time, data driven recommendations to the farmers based on various data (soil, humidity, weather, market price, etc.) that will help improve farmer's productivity. Ricult's platform will provide the smallholder farmers the benefit from the scope, scale, and supply chain efficiencies of large enterprise. Ricult ultimately aims to increase food production and improve the farmers' bottom line, increasing their revenue while reducing their operating cost.

Safi Organics

Safi Organics produces a carbon-negative soil conditioner derived from biomass (farm) waste designed for rural smallholder farmers, leading to a 30% increase in crop yield and 50% increase in income by reversing soil degradation. Biomass waste is present in most rural farms every year after harvest, and yet most of this waste is burned in open air rather than economically utilized because existing capital-intensive/centralized processing technologies often require the long-distance transport of this waste, which is very expensive. Safi Organics has developed patent-pending environmentally friendly reactors and unique recipes enabling the low-cost and decentralized conversion of waste into carbon-negative soil conditioner in under 2 hours. The company's EcoCert-certified product is already sold to more than 80 acres of land in the preliminary pilot project, with highly positive customer reviews. In addition, this product actively sequesters 1.5 tons/acre of CO₂ into the soil per planting season, directly mitigating climate change.

Sustain - Sustainable Fertilizer for Underdeveloped Countries

Malnutrition and hunger affects 875 million people every year. Half of all children who suffer from hunger will die by the age of five. One of the primary difficulties in underdeveloped regions is inadequate access to agricultural resources such as seeds, water, and fertilizer. Sustain aims to provide farmers with a sustainable source of fertilizer. Sustain has developed a self-sufficient method to enable small landholder farmers in underdeveloped regions to improve their crop yield by providing a novel way to produce high value fertilizer on-site. Sustain takes waste produced by livestock and, through an aerobic composting method, produces high nitrogen content fertilizer and manure, both essential for healthy plant growth. Improving conditions for farmers will provide them with more food for their families and more income break free from the vicious cycle of poverty.

The Better Bowl

The Better Bowl's core mission is to simultaneously address two independent but deeply related issues facing the local food movement. Firstly, the lack of access to healthy and nutritious food options, especially those available to college students, is of primary concern. Secondly, the Better Bowl is dedicated to addressing the lack of public knowledge regarding the environmental and social consequences of food choice. The Better Bowl strives to create a community oriented food establishment focused on serving smoothies and other grab-and-go options that include imperfect produce in order to reduce food waste and reimagine the concept of high quality produce.

The Growing Box

The Growing Box is a compact agricultural production system that features zero-net energy, water and fertilizer system, with optimized space-efficient design to achieve high-density nutrient rich crop yield. This will eliminate food insecurity for low income households, and provide green independence from unsustainable conventional agriculture.

Ungraded Produce LLC

Ungraded's ultimate goal is to create a market for food that would ordinarily go to waste. By diverting an unconventional, but viable product--ugly produce--to consumers, they will address the interrelated environmental, economic, and social issues in the farm to consumer pipeline. Ungraded's business model takes into account the main barriers to demand in the produce sector: cost and convenience. Studies show that Americans buy less produce than they want to consume in order to cut costs. By presenting an option 30% cheaper than grocery store comparables, Ungraded appeals to consumers looking for a cost-effective way to eat healthily. Additionally, their online delivery service will present a convenient way for customers to access their products. Every decision Ungraded makes is influenced by their mission to make fresh, affordable produce available to all people, and they hope that customers will feel both comfortable and empowered in choosing to shop with them.

Unmanned Ground Vehicle for Water Leak Detection

The Unmanned Ground Vehicle (UGV) project is the future of the next generation's agricultural gadgets. Instead of the past's archaic methods of manually searching for leaks with acoustic procedures, the UGV project hopes to replace the previous methods with a more strategic appliance - a powerful camera attached onto a fully autonomous vehicle. Utilizing a combination of dynamic image processing techniques and mobilization, this rover-camera duo is able to autonomously navigate through way-points and detect pipe leaks more frequently, efficiently, and accurately than a field worker would. Powered and guided by the Mission Planner program and Pixhawk Autopilot System, the rover is capable of decreasing overhead costs, and most importantly, aiding in the preservation of water. The project's state of the art features are distinguished through the data collection platform, algorithm design, and friendly user-interface.

Veggy

Nowadays, the public health and environment are growing problems which need to be addressed. According to the recent press release from the World Health Organization, the reduction of meat consumption can address both of these problems. Veggy is the new global vegan startup: tasty, trendy and affordable to promote veganism to vegan and non-vegan people. Veggy wants to show the world that eating vegan is not

anymore boring. Veggy will provide its tasty french vegan cuisine through food delivery before becoming the new trendy chain of restaurant that will educate people and promote veganism all around the world.

Youth Program to Improve Poultry Production in Rural Nicaragua

The One Health Nicaragua team will address food insecurity concerns in Sabana Grande Nicaragua by working with children and focusing on improving poultry production. Integrative workshops for students in Sabana Grande will focus on egg production, chick care, coop management, and disease prevention. Local students will manage a demonstration flock providing them the opportunity to gain first hand experience with effective methods for raising, handling, and vaccinating poultry. Children can then share their information with their family increasing knowledge dissemination throughout the community. Introducing poultry husbandry skills in the classroom will affect changes at the family level, and sustainably improve overall community poultry production in Sabana Grande. This in turn will lead to greater food security within the community.