

UCDAVIS

AGRICULTURAL SUSTAINABILITY INSTITUTE
College of Agricultural and Environmental Sciences



**UNIVERSITY OF CALIFORNIA DAVIS
AGRICULTURAL SUSTAINABILITY INSTITUTE
(ASI)**

STRATEGIC SNAPSHOT AT OCTOBER 2014

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OUR INSTITUTE AT A GLANCE

Update: October 2014

Our mission is to ensure access to healthy food and to promote the vitality of agriculture today and for future generations. We do this through integrative research, education, communication and early action on big, emerging issues.

Our vision for the Agricultural Sustainability Institute. ASI will be a:

- ◆ **Convenor:** engaging diverse perspectives
- ◆ **Clearinghouse:** synthesizing, translating and communicating useful information
- ◆ **Think tank:** being the thought leader for interdisciplinary research
- ◆ **Pioneer:** taking early action on major issues
- ◆ **Incubator:** nurturing the next generation of agricultural leaders
- ◆ **Action tank:** linking science with action for sustainable solutions

Thematic areas

Agriculture, Resources, & the Environment: integration of agricultural systems at the farm/ranch and landscape levels.

Food & Society: integration of the food system, linking production, distribution and consumption.

Education & Leadership: integrated programs for sustainability education and leadership - kindergarten through post-graduate, including a **new undergraduate major in Sustainable Agriculture and Food Systems** and support for the **MS in International Agricultural Development** and the **PhD in Agroecology** at UC Davis.

Sustainability Benchmarks: a crosscutting activity to produce scientifically-validated frameworks of issues and indicators to benchmark trends in sustainability of agriculture and the food system.

Farmworker and Rural Community Wellbeing: a crosscutting activity to address salient issues affecting wellbeing of farmworkers, food system workers, and rural communities through research, education and extension.

Programs and facilities

UC statewide Sustainable Agriculture Research & Education Program (UC SAREP)

Russell Ranch Sustainable Agriculture Facility at UC Davis

Student Farm at UC Davis

Inter-institutional Network for Food, Agriculture & Sustainability (INFAS), national network hosted by ASI

Team and associates

- ◆ Director of ASI and SAREP: Tom Tomich (since 2007)
- ◆ ASI Deputy Director: Ermias Kebreab (since 2014)
- ◆ Russell Ranch Sustainable Agriculture Facility Director: Kate Scow (since 2008)
- ◆ Student Farm Director: Mark Van Horn (since 1987)
- ◆ SAREP Deputy Director: Gail Feenstra (since 2014)
- ◆ 22 other full and part-time staff of various programs and projects
- ◆ 8 graduate student researchers, 2 teaching assistants, 3 research associates, and 14 student assistants
- ◆ 9 ASI-affiliated professorships in agroecology, sustainability science, sustainability and society, economics of sustainability, plant disease management/soil microbiology, soil science, pollination ecology, invertebrate community ecology, and sustainable animal systems.
- ◆ 15 ASI fellows, including faculty from the College of Engineering and the School of Education, as well as the College of Agricultural and Environmental Sciences at UC Davis.
- ◆ 12 academic colleagues serving on ASI's Academic Advisory Committee.
- ◆ A distinguished external advisory board of 29 leaders, representing diverse stakeholder interests.
- ◆ UC Davis CA&ES Dean's Office support in fundraising, events, administration, IT.
- ◆ An expanding network of partners, including UC Cooperative Extension specialists and farm advisors, and other partners in various sectors.

Current annual budget: approximately \$3 million; campaign underway to increase to \$6 million.

DIRECTOR'S MESSAGE: A SHARED SENSE OF PLACE

To: ASI External Advisory Board members, our guests, staff, and affiliated faculty

From: Tom Tomich, Director, ASI & SAREP

Date: 22 October 2014

Re: **External Advisory Board Meeting next Thursday, 30 October, at UC Davis**

Our Board Chair Howard-Yana Shapiro, my ASI colleagues, and I are looking forward to hosting over 30 guests next week for our 2014 ASI External Advisory Board meeting. I particularly want to take this opportunity to extend a warm welcome to our **twelve** new Board members: **Andrew Baskin, Renata Brillinger, Helene Dillard, John Foraker, Harold Goldstein, Kelly Gravuer, Barry Kriebel, Russ Lester, Joann Lo, Marshall McKay, Puon Penn, and D'Artagnan Scorza**. This is our largest "incoming class" of Board members in more than five years and we look to them to add important new perspectives as we develop ASI strategies for the years ahead.

I also want to thank our new *emeritus* Board members and outgoing student representatives and acknowledge their service to ASI, in several cases extending back to the founding of our Board in 2008: **Marcus Benedetti, Mary Delany, Greg Dresher, Jonathan Kaplan, Craig McNamara, Haider Nazar, Katharina Ullmann, and Kase Wheatley**. We have ongoing projects with many of our Board *emeriti*, so this really is a new chapter in our partnership with them and not a farewell.

For all of you who will be joining us next Thursday, **we have planned a full day of stimulating experiences aimed at crystallizing big ideas**. Most of our day will involve interactive visits to three key ASI "places":

Robbins Hall and the Robbins Hall Annex. Staff of our Sustainable Agriculture Research & Education Program (SAREP) moved into the newly-renovated Robbins Annex in early September. For the first time in SAREP's 28-year history, the statewide program has a "place" of its own. The Robbins Annex is only steps away from ASI offices in Robbins Hall and from the UC Davis Quad. By bringing our UC statewide program into the heart of the UC Davis campus, this move also provides an outpost for the UC Division of Agriculture & Natural Resources amid thousands of UC Davis students, creating exciting opportunities to engage the next generation, including potential future ANR leaders.

Our Student Farm. One of the three student teams in the Sustainable Agriculture & Food Systems capstone course I led last year worked with UC Davis campus planner Bob Segar to create an "innovation zone" concept spanning our Student Farm, the Domes student community, the Experimental College Gardens, and the Tri-Coops

student housing for the next long-term development plan for the campus. Through a participatory process, my students renamed this area the **Sustainable Living and Learning Communities (SLLC)** and made great progress to ensure the long-term integrity and unique values of these programs. Another of my capstone course teams is taking this work forward this year. As we will discuss next week, coordination within the SLLC has important implications for development planning at our Student Farm, including scaling and scope of our programs as well as for fundraising.

Our Russell Ranch Sustainable Agriculture Facility. Water and irrigation are but one prominent dimension of a very wide range of research underway at our Russell Ranch Sustainable Agriculture Facility, including (to name only a few) the effects of drought, tillage, and nitrogen fertilizers on microbial populations; tools to improve efficiency in nitrogen fertilization and reduce emissions of nitrous oxide (a powerful greenhouse gas); effects of biochar and compost on crop yields; impact of cover crops on soil phosphorus cycling and on soil nitrate capture; impact of management practices on insect and spider communities; and studies of native vegetation within working landscapes as habitat for monarch butterflies and native pollinators. While each of these lines of inquiry can stand on its own, a great source of the power and attraction of this facility is how “place” operates as an integrator to create a comprehensive scientific program encompassing many of our greatest sustainability challenges. Looking forward, we want to engage with you in creative conversations about how our agroecological research facility can better link with SAREP and our partners to ensure the vitality of California Agriculture throughout the 21st Century and beyond.

I hope you will enjoy reading my personal sample of twelve “new and noteworthy” ASI achievements of the past year immediately below (on pp. 5-6). Among those, the draft **Statement on Racial Equity** released in September by our Inter-institutional Network on Food, Agriculture and Sustainability (INFAS) stands out as a particular challenge to any complacency we may feel. **If you have time to read nothing else in preparation for our meeting next week, I would ask that you spend what time you have reading and contemplating that draft racial equity statement (on pp. 7-8).** One of our opening sessions will be a presentation and discussion of this draft statement. Throughout the day, I believe we need to challenge ourselves to consider how ASI may adopt or adapt that statement and what tangible actions we can take to ensure that all the people of California feel they have a “place” at ASI.

For those of you who are travelling to Davis next week, best wishes for safe travels! I look forward to a challenging, stimulating, and innovative annual meeting.

“New and Noteworthy” (November 2013 through October 2014)

- **UC SAREP has a home of its own** in the Robbins Annex, near the center of the UC Davis campus!
- SAREP and Student Farm staff collaborated with the UC Davis Nutrition Department on **“Shaping Healthy Choices,”** a program in Sacramento and Stanislaus Counties to prevent obesity and increase children’s wellness through procurement of regional produce, nutrition education, school gardens, and family involvement. **Preliminary results showed children classified as overweight or obese dropped from 56% to 38%** during the year the program was implemented in two elementary schools in Sacramento County. The study methodology is forthcoming in *Journal of Nutrition Education and Behavior*.
- SAREP researchers also completed analyses of **life cycle energy use and greenhouse gas emissions of organic walnut production** and hulling/shelling with local biomass power.
- More than 100 students are majoring in **Sustainable Agriculture & Food Systems (SA&FS)** at UC Davis this fall, compared with 30 in Fall 2013, 20 in Fall 2012, and 10 in Fall 2011, just after the major was approved. SA&FS has 30 graduates so far, with another 30 poised to finish this year.
- In continuing efforts to meet rapid growth in student demand, the Student Farm made significant advances in student mentoring and leadership development this year, including creation of a **leadership development program** for advanced students.
- Our Inter-institutional Network on Food, Agriculture and Sustainability (INFAS), a national network hosted by ASI, released the first draft of its **Statement on Racial Equity** (full text on pp. 7-8) in September. ASI hosted 9 visiting INFAS partners on the weekend of March 14-16, which featured a public panel entitled “Perspectives on race, gender, class and ethnicity in the food system”.
- **Working title: *Is Nitrogen the next Carbon?*** The University of California Press has contracted to publish our California Nitrogen Assessment. May 2015 is the deadline for the book manuscript, with publication anticipated later in 2015. Royalties from the book will go to ASI’s sustainable agriculture and food systems endowment.
- Russell Ranch Sustainable Agriculture Facility received an **Environmental Grant of \$100,000 from Wells Fargo Bank**. The gift will advance research on water use and irrigation management by a group of faculty and extension specialists. Drip irrigation and meters will be installed on selected Century Experiment plots this fall for research on water use, nitrate leaching, and greenhouse gas emissions.

- **Space stuff lands at Russell Ranch facility.** NASA's Jet Propulsion Laboratory collected imaging spectroscopy data during multiple fly-overs of the Russell Ranch. NASA's next steps include installation of two thermal radiometer towers, with plans in the works for data collection using an aerial tram system and Unmanned Aerial Vehicles (UAVs or "drones"). Additional investments in sensor technology and wireless data collection are anticipated through collaboration between UC Davis and the Lawrence Berkeley National Laboratory.
- **Wheat + tomatoes = pizza (and \$).** Building on the success of its tomato sauce and dried tomato organic product lines, our Russell Ranch facility delivered 10,000 pounds of whole wheat flour to the UC Davis Dining Service for the campus bakery and (of course) pizza production. Through the increased revenues from crops, including tomato and wheat product sales, greater efficiency, and hiring out land management services to other UC Davis units, the Russell Ranch facility operations team increased annual income to more than \$210,000 in 2013/14 (increasing almost 50% compared to just over \$141,000 the previous year).
- **The answer is: between 11 and 20.** (The question is: what is the smallest acceptable number of indicators for comprehensive benchmarking of food system sustainability?) Our Sustainable Sourcing team, which includes ASI and the Information Center for the Environment (ICE) at UC Davis, completed its prototype "**Sustainable Sourcing Checklist Generator**," a tool for seeking multi-stakeholder consensus on essential sustainability issues and the selection of suitable indicators to benchmark those issues using the project's semantic data linkages. Our Op-ed on this work was featured in the first issue of *SUSTAIN*, a new web-based publication of the International Finance Corporation of the World Bank. The *SUSTAIN* website attracted over 10,600 unique visitors from 58 different countries; 2.8 million people were reached by Twitter and a further 7 million were reached through Facebook.
- Sustainable Sourcing welcomed two major new partners: **Kraft Foods, Incorporated**, became a partner and donor with a \$50,000 gift; and the **Food and Agricultural Organization (FAO)** of the United Nations is collaborating on platform design and semantic web data linkages. Sustainable Sourcing also teamed up with founding partner Colorado State University (CSU) to organize a symposium at the **Ecological Society of America (ESA)** Annual Meetings in August, entitled "Sustainable Sourcing of Food Products: Social-Ecological Perspective of Constraints and Opportunities for Sustainable Food Production Strategies", which featured presentations by researchers from ASI and ICE, as well as CSU, the Earth Institute at Columbia University, and Loyola University of Chicago. A *Sacramento Bee* Op-ed entitled "**Scientists are Rising to the Challenges of Drought**" by ASI and the Union of Concerned Scientists published in conjunction with the ESA meeting received wide attention, stimulating comments from as far away as the UK.

Statements developed (March-September 2014) by members of the Inter-institutional Network for Food, Agriculture, and Sustainability (INFAS) and colleagues*

Racial Equity Statement

INFAS is a network of educators and researchers who are dedicated to food system sustainability and committed to supporting, learning from and partnering with activists in our communities. We recognize that our food system is profoundly inequitable and institutions of higher education hold power and privilege that can be used for good or harm. Equity in opportunity, food access and health outcomes is a non-negotiable foundational principle of a sustainable food system and a core value and commitment for us.

To help build equity in the food system, we are focusing on the barrier of structural racism as an initial entry point. We recognize multiple forms of oppression; so we also will focus on gender and class oppression, and the intersections among race, class, and gender that shape barriers and opportunities to equity.

We make a commitment to collaborate with communities of practice and place through our research, education and convening capabilities to better understand, communicate and find solutions to how food system disparities affect the experiences of those most affected by systemic inequities. We will strive to work with and respect community members as leaders, co-creators of knowledge, co-formulators of questions and co-facilitators in building solutions as we endeavor to create a more just food system for all people.

Preamble to Vision and Racial Equity Statements

As members of the Inter-institutional Network on Food, Agriculture & Sustainability (INFAS), we see that food and agriculture are part of a diverse set of interconnected systems. We recognize the value of systemic analysis to identify full impacts of policies and practices, how components of the food system function, and gaps in our understanding. We recognize that the food system has effects on, and is affected by, almost every other sphere of human activity and well-being. Therefore, we value transdisciplinary and interdisciplinary approaches to solving problems, in addition to contributions that are made within single disciplines.

We recognize that the global food system is profoundly inequitable along lines of gender, class, and race. In the US, racial inequity is expressed in the still-living legacies of slavery, racism, and theft of resources from indigenous peoples, all of which continue to prevent equal opportunity for many individuals and groups. Inequity is also expressed structurally in the leadership, infrastructure, and decision-making mechanisms of our food system, which continues to favor the small subset of the population (usually white, male and coming from backgrounds of relative affluence) that has held power in the US from its founding as a country.

We recognize multiple converging trends in US food systems that are leading us away from sustainability, resilience and social equity and toward irreversible thresholds at which we could enter a drastically transformed and impoverished world. We know that we live in a time of increasing uncertainty that demands new coping mechanisms. Global environmental change (climate change, nutrient cycle disruption, loss of biodiversity, ocean acidification, etc.) constitutes a cluster of potentially severe thresholds to which food systems contribute; strikingly, the loss of human diversity, as native peoples and their languages continue to be decimated, also is irreversible.

We value the cultural diversity of the US food system: the many foodways and cultural practices of all our peoples. We understand that specific foods people eat, food production, and food consumption have spiritual, cultural, and social significance that goes far beyond food's nutritional and economic value.

We see that US policies and practices sometimes push food system actors away from sustainability, resilience and social equity. We understand that these policies and practices have global impacts, affecting the food system choices of people across the world as well as within our own borders and leading to limits on opportunities for all, but especially women, poor people, and people of color. We know that policies and practices can be changed with sufficient motivation, knowledge and mobilization of political power.

We seek to meet our responsibilities as food citizens from our positions within, or working with, institutions of higher education. We understand that the goal of "sustainability" is a call to action that requires much more of us than our formal job descriptions, and we come together to learn and act in more effective ways to promote racial equity, economic equity, and environmental restoration and health. The means by which we anticipate achieving these goals are through 1) creating an active, healthy, and diverse INFAS network; 2) cultivating a new generation of leaders in administration, institutions, and society with education that responds to their needs and the changes that are happening in food systems; and 3) transforming food system knowledge generation, use of knowledge, policy, economic concentration, and distribution of profits to facilitate the first two goals.

Vision Statement

We envision a US food system that is environmentally sustainable and socially just. This requires structural equality so that race, class, and gender no longer determine health outcomes, social status, or economic opportunity and so that healthy, restored agroecosystems and fisheries are achievable.

**Members, in alphabetical order by first name:*

Casey Hoy, The Ohio State University

Cheryl Danley, Food Corps

Curtis Ogden, Interaction Institute for Social Change

Joann Lo, Food Chain Workers Alliance

Joanna Friesner, University of California, Davis

John O'Sullivan, North Carolina A&T University

Molly Anderson, College of the Atlantic

Patricia Allen, Marylhurst University

Shorlette Ammons, North Carolina A&T State University (CEFS)

Tom Kelly, University of New Hampshire

Tom Tomich, University of California, Davis

I – STRATEGIC FRAMEWORK

What distinguishes ASI?

The units of ASI are held together and distinguished by a shared mission, vision, values and operational principles and a passion for excellence in sustainability science that can transform California agriculture and fully realize California's potential for global leadership in research, education, and action for agricultural sustainability. These strategic elements were developed collaboratively by ASI staff with input from advisory board members and other stakeholders. We welcome additional comments and suggestions at any time.

*Status: Changes and additions appear in **blue italics** below. The vision for ASI developed at the inaugural external advisory board meeting in December 2008 now reflects six years of refinements. As was initiated in 2012, this year's snapshot includes greater detail on milestones attained in the past year and updates workplans for the coming year in Part IV, "Themes, Milestones, Initiatives, and Current Workplans."*

I.1. Our mission is to ensure access to healthy food and to promote the vitality of agriculture today and for future generations. We do this through integrative research, education, communication and early action on big, emerging issues.

I.2. Our vision for food and agriculture:

- ◆ A food and agricultural system that is innovative, adaptive and profitable;
- ◆ promotes prosperity and equity for people working in agriculture and the food system and for their communities;
- ◆ provides healthy food for everyone;
- ◆ improves the environment and human health;
- ◆ builds awareness and understanding of the food system; and
- ◆ engages public participation in policy decisions affecting food and agriculture.

I.3. Our vision for ASI:

- ◆ **Convenor:** engaging diverse perspectives
- ◆ **Clearinghouse:** synthesizing, translating, and communicating useful information
- ◆ **Think tank:** being the thought leader for interdisciplinary research
- ◆ **Action tank:** linking science with action for sustainable solutions
- ◆ **Pioneer:** taking early action on major issues
- ◆ **Incubator:** nurturing the next generation of agricultural leaders

I.4. Geographic scope of ASI:

- ◆ **California:** our primary mandate is to serve our home state, which is recognized widely as one of the largest and most dynamic agricultural sectors on the planet. The UC SAREP statewide program is an important mechanism for statewide impact through partnerships with UC Cooperative Extension specialists and county-based farm advisors, among others.
- ◆ **United States:** to realize ASI's potential for national impact, we host the Inter-institutional Network for Food & Agricultural Sustainability (INFAS), which was launched in 2010.
- ◆ **International:** we envision a gradual increase in international activities as appropriate opportunities arise, emphasizing academic exchange and scientific networking. In addition to international exchanges and global networks, our two regional priorities are linkages with programs in the Mediterranean, arid, and semi-arid agro-climatic zones (e.g., Australia, Chile, Egypt, Italy, South Africa, Spain, and the International Centre for Agricultural Research in Dry Areas) and with sub-Saharan Africa. (At this time, we do not anticipate creating capacity for international project implementation; instead ASI will collaborate with the CA&ES International Agricultural Programs Office at UC Davis.)

I.5. Our core values: creativity, inclusiveness, integrity, partnership

I.6. Our operational principles

Practicing sustainability: we strive to enact sustainability principles and practices in our own activities.

- ◆ **“Walking the talk”:** we work to use sustainable practices in our own operations and actively strive to embody our core values: creativity, inclusiveness, integrity, partnership.
- ◆ **Community:** we embrace and enact the UC Davis Principles of Community in our daily work.
- ◆ **Respect for all:** we affirm the inherent dignity in all people and endeavor to relate to all with respect, fairness and justice.

Legitimacy: we set our priorities and design our programs in response to concerns and aspirations of stakeholders representing the diversity of California

- ◆ **Spanning boundaries:** we serve the entire state, and all segments of agriculture and the food system.
- ◆ **Science in the public interest:** we are committed to transparency in governance and priority setting; to open access to results and information; and to accountability to stakeholders.
- ◆ **Historical awareness:** we recognize the University's historic, current, and potential future roles in shaping agricultural and food systems and their effects on

environment and society. We strive to make informed and responsible decisions regarding research, teaching and outreach based on this knowledge.

- ◆ **Seeking consensus, while respecting differences:** our activities employ a common set of ground rules, including respect for different viewpoints.

Usefulness: responsiveness to stakeholders' needs – the broad interests of society as well as needs of specific groups – is key to the relevance of our initiatives and provides the necessary focus on real issues and opportunities.

- ◆ **Communication for impact:** we ensure that input from stakeholders consistently is sought and used effectively and that our products are translated to reach key audiences in forms they can use.
- ◆ **Integration of knowledge:** we actively seek and recognize the value of knowledge embodied in experience on farms and ranches, in communities, in industry, and in policy arenas.
- ◆ **Commitment to experiential learning:** we recognize the value of learning-by-doing and actively seek to integrate practical opportunities in our educational programs, training, and outreach activities.
- ◆ **Creating and sustaining a learning organization:** feedback, monitoring, evaluation, and impact assessment will be embedded in overall design of our activities.

Credibility: we hold ourselves to the highest standards of professional integrity and scientific rigor.

- ◆ **Forward-looking agenda:** we will create and sustain mechanisms to identify and assess emerging opportunities and threats, based on scientific analyses and stakeholder input and informed by global trends.
- ◆ **Broad scope, with multidisciplinary balance:** we integrate economic, environmental, and social dimensions of sustainability.
- ◆ **Scientific integration and synthesis:** our activities span big, inter-linked issues and multiple scales – ranging from molecular to global; past, present, future.
- ◆ **Open inquiry:** we promote critical analysis to challenge 'conventional wisdom' and to expand our understanding of technical, institutional, and policy options using the best natural and social science methods available.

II - INSTITUTIONAL ASSETS

ASI's foundations

II.1. Land Grant Heritage

The College of Agricultural and Environmental Sciences (CA&ES) at UC Davis has a 100 year history of serving agriculture and addressing environmental concerns in California and around the world. In 2006, CA&ES established ASI to focus research, teaching and outreach on the challenges facing agriculture in the coming century. ASI provides a hub that links initiatives and education in sustainable agriculture and food systems across CA&ES departments and divisions, across the University of California, and with other partners across our state, nation, and planet. Issues facing the land grant system in the US include needs to (1) develop and expand research programs and academic curricula to reflect a contemporary view of agriculture and food systems, (2) remove barriers to interdisciplinary research, teaching, and extension, and (3) engage a wide variety of stakeholders to assess their needs and develop priorities to design useful programs and create effective means of communication.

II.2. Programs and Facilities

(See Appendix 1 for ASI organization chart and Appendix 2 for one-page descriptions of each unit or program.)

Inter-institutional Network for Food, Agriculture and Sustainability (INFAS) – a national network hosted by ASI comprised of university and college educators, researchers, and activists, who collaborate in analysis, synthesis, and problem-solving with practitioners to increase U.S. food-system resilience; to illuminate critical trends and common stewardship of public goods essential for food systems, such as water, biodiversity, ecosystem services, and public institutions; and to reduce inequity and vulnerability in the U.S. food system.

INFAS currently has scholar members at 26 institutions spanning 20 states and plans to expand to encompass institutions in more states, including areas currently underrepresented in food systems and sustainable agriculture efforts, and more diverse populations. Because it includes scholars from different disciplines, INFAS has the capacity to consolidate data and raise visibility about complex food system challenges and opportunities. Furthermore, individually we network extensively with diverse populations to link knowledge with action.

A key INFAS goal is that community activists and national advocates will have science-based evidence to advance agendas in support of food system sustainability, including improved access to healthy food for all U.S. children; policy makers will better understand farm and food policy choices and their consequences, particularly for vulnerable children; and more effective programs will be implemented to address hunger and malnutrition in the U.S.

INFAS is committed to equity in the food system and focusing on structural racism as an initial entry point. We recognize multiple forms of oppression within the food system and we seek to address intersections among racial, class and gender oppression. We want to explore with other networks and movements how knowledge and understanding can dismantle oppression and advance equity to drive the larger transition towards food system sustainability.

INFAS, endowed by the W.K. Kellogg Foundation in 2010, had its inaugural meeting at UC Davis on November 11th, 2010.

Sustainable Agriculture Research and Education Program (SAREP) – established in 1986, a statewide program of the University of California Division of Agriculture and Natural Resources with capabilities in grant administration, knowledge management, communication and outreach.

The UC Division of Agriculture and Natural Resources (ANR) sponsored a 5-year external review for SAREP in 2009. Key documentation is included in Appendix 12. Major points from that review include:

- ◆ **Structure:** ANR endorsed the consolidated ASI/SAREP strategic plan and external advisory board, as long as “the distinct mission and objectives of SAREP are delineated” in ASI strategic plans and annual SAREP work plans.
- ◆ **Governance:** recommended expanding the external advisory board, in particular to include UCCE representatives. (This has been implemented.)
- ◆ **Scope:** recommended expanding SAREP’s geographic coverage, stakeholder engagement, and commodity coverage.
- ◆ **Collaborations:** Recommended expanding engagement with ANR programs, workgroups, AES scientists, UCCE specialists, and county-based advisors.
- ◆ **Science-based approach and communications:** SAREP should be the premier source and statewide dissemination focus for ... unbiased, balanced, science-based information on sustainable agriculture.
- ◆ **SAREP grants program:** ANR recognizes the importance of the grants program in “impacting a greater range of programs”, “leveraging additional funds,” and “stimulating thinking”; the grants program “must be accountable in terms of reporting and communications.”

Based on its external review of SAREP, ANR renewed commitment to SAREP. Taken together, these DANR recommendations are in accord with our own strategic planning and programming objectives for SAREP as a key unit of ASI.

Subsequent to the SAREP external review, ANR has gone through its own strategic review and reorganization and has launched five new strategic initiatives. SAREP and ASI have deepened involvement with two of these ANR strategic initiatives: “Sustainable Food Systems” and “Healthy Families and Communities”.

Legacy of SAREP's Biologically Integrated Farming Systems (BIFS) program--

BIFS projects typically included on-farm demonstrations, a collaborative model of outreach and extension to share technical information, and an organized program of monitoring key biological and economic variables to inform on-farm decision making. Between 1995 and 2002, SAREP funded ten multi-year projects in nine different farming systems--apple, citrus, dairy, prune (dried plum), rice, strawberry, tomato & cotton, walnut and winegrape -- through a competitive grants process. These projects were part of a larger set of initiatives including Biologically Integrated Orchard Systems (BIOS) projects coordinated by the Community Alliance with Family Farmers (CAFF) and the California Department of Pesticide Regulation's Pest Management Alliance grants. Between 2002 and 2009, SAREP partnered with key UCCE advisors and specialists to acquire funding for two additional BIFS projects addressing fresh grape and lettuce farming systems. SAREP also led a workgroup to strengthen networking between UC researchers and extension staff with stakeholders beyond the UC system working on projects to encourage adoption of integrated farming systems.

BIFS projects demonstrated that when participating growers had evidence that yields and profits could be maintained with more environmentally-sound farming practices, they often adopted these practices on most of their acreage. Many non-participating growers were exposed to innovative practices through project outreach activities. There were many encouraging outcomes that emerged as a result of our BIFS projects. A few examples include:

- The West Side BIFS project (tomato & cotton) was instrumental in initiating a growing interest in conservation tillage among California growers.
- The Lodi-Woodbridge Winegrape project supported a regional sustainable winegrape growing program that eventually led to a certified eco-label for wines.
- Collaborations initiated by the Rice BIFS project led to a grower advisory group to guide much-needed research on alternative weed management systems.
- The publication of Agroecology in Action: Extending Alternative Agriculture through Social Networks by Keith D. Warner in 2007 used several BIFS projects as case studies to illustrate the value of learning sustainable farming practices through collaborative sharing of knowledge.

SAREP Solution Centers: Looking ahead to the next generation of BIFS. SAREP's leadership and collaboration in BIFS projects showed that growers can be willing partners in developing a more sustainable food and agriculture system. As ASI and SAREP agendas shift in response to stakeholder priorities and other developments, such as newer emphases on research and outreach at landscape level issues (in our Agriculture, Resources and Environment theme) and the community level (in our Food and Society theme) our work nevertheless must remain linked with (and grounded in) practical "grass-roots" experience exemplified by BIFS. Thus, SAREP's legacy of experience with collaborative innovation processes through BIFS that are designed, led and implemented by groups of farmers is an important component of ASI's institutional repertoire that compliments researcher-designed and implemented experiments at the Russell Ranch Sustainable Agriculture Facility and student-led initiatives at the Student Farm at UC Davis. The first SAREP Solution Center for water and nutrient

management was launched in 2013 with a portion of funding from a USDA NIFA AFRI grant received by ASI affiliated faculty member Will Horwath.

Russell Ranch Sustainable Agriculture Facility – Russell Ranch Sustainable Agriculture Facility – a 300-acre facility that houses the Long-term Research on Agricultural Systems (LTRAS) and Sustainable Agriculture and Farming Systems (SAFS) projects (our “Century Experiment”); the only long-term research facility for research on sustainability in irrigated agriculture in a Mediterranean climatic zone and one of the few facilities of its kind anywhere. Funding has been below sustainable levels for years. ASI Deputy Director Kate Scow has successfully led development of a new scientific plan for the Century Experiment, which focuses on the question: “Can we increase sustainability as we increase food production?” Key priorities in Russell Ranch planning include:

Integrative research at Russell Ranch:

- Diversify farming systems at Russell Ranch (i.e. perennials, market vegetables, mixed crop-animal systems, biofuels)
- Introduce more flexibility into the design of the systems to stay relevant and realistic
- Enhance capacity and promote research projects to address California’s pressing concerns: competition for water, water use efficiency, climate change, habitat preservation, energy efficiency, air and water pollution
- Create a network connecting university research to landscape scale on-farm research (possibly building on SAREP’s Biologically Integrated Farming Systems experience).
- Increase data collection from research projects at Russell Ranch; increase real time wireless data collection; make all data publically available and interactive.
- Facilitate and increase linkages with international interests in Mediterranean agriculture and sustainable development in general (Russell International)

Education at Russell Ranch:

- Create a “living laboratory” around Russell Ranch with facilities to support in-field teaching and student research
- Strengthen connections to other ASI programs and local community (i.e. Student Farm and SAREP)
- Encourage experiential education through class field trips, undergraduate internships and grants for graduate student research

Russell Ranch communication as a two-way flow:

- Create two-way channels of communication both to deliver and listen to science from users and practitioners, policy makers, extension specialists, NGOs
- Engage public on climate change and role of agriculture, resource conservation, food safety and security by hosting field days and hands-on workshops.

Student Farm – provides undergraduate and graduate students with experiential learning including sustainable production practices, applied research and outreach; includes Children’s Garden Program for K-12 students and teachers. The Student Farm continues to thrive, but additional funding is needed to realize significant upside potential.

In response to increasing student participation in Student Farm activities and higher levels of knowledge, skills and interests on the part of many of these students, the Student Farm launched a program planning and development project in early 2011. Student Farm staff have begun to implement changes in response to this input. These changes focus on: improving communication within the SF programs and activities; clarifying student roles, opportunities and requirements; and, strengthening the student community, particularly the ties between different Student Farm programs. Within the Student Farm’s program planning and development process, emphasis has been placed on developing and refining several student leadership positions and pathways.

More broadly, ASI-affiliated faculty and staff also are collaborating with interested students, faculty, staff and administrators to develop academic programs for a campus ‘sustainable living and learning community’ in the Student Farm neighborhood. ASI-affiliated faculty and Student Farm staff helped develop the program vision for the campus Sustainable Living and Learning Community and develop on- and off-campus partnerships to support the creation of a renewed residential learning community adjacent to, and collaborating with, the Student Farm.

Other collaborations with diverse campus partners:

- Partnerships with campus Dining Services have been strengthened through joint educational efforts linking all phases of the campus food system and increased sales and marketing of Student Farm and Russell Ranch products.
- The Student Farm is collaborating with the innovative D-Lab at UC Davis on project-based learning opportunities where sustainable agriculture meets appropriate technology.

Collaborations with primary and secondary schools and regional food producers:

- Student Farm staff are leading a project with on- and off-campus partners that provides diverse learning experiences for traditionally underrepresented high school students that increases their awareness of, and interest in, college studies and careers in sustainable agriculture and related areas.
- Student Farm’s School Gardening Program staff are collaborating with statewide partners on a new CDFA Specialty Crops program-funded project focused on training both educators and trainers of educators involved in developing and using

school garden programs. These staff also are part of statewide team that provides training and support for school food service, nutrition, teachers, garden educators and farmers on using and promoting fresh fruit and vegetable consumption in schools.

- School Gardening Program staff continue to lead a collaborative Farm-to-School project focused on increasing procurement of regional produce, professional development, and assessing program effectiveness in three distinct northern California school districts.
- The Student Farm is contributing to the Center for Land Based Learning's beginning farmer program, helping identify needs and develop the curriculum.

Bachelor's degree in Sustainable Agriculture and Food Systems – ASI hosts a new interdisciplinary undergraduate major, bringing liberal arts and experiential education principles into undergraduate agricultural sustainability education; core courses are offered by ASI-affiliates; governed by a committee of department chairs. The Sustainable Agriculture and Food Systems (SA&FS) undergraduate Bachelor of Science degree received final approval in June 2011, accompanied by great interest from students, the media, and the general public. The major is governed by a council of nine CA&ES department chairs, who meet at least once per year. It is hosted by ASI, which also hosts the internship program that is integral to the major. The Community Development Unit of the Department of Human Ecology provides the administrative home and the academic advisor. The master advisor and faculty advisors for each of three tracks are ASI-affiliated faculty.

PhD in Agroecology and other graduate courses – ASI will support rejuvenation of this established area of emphasis within the top-ranked Ecology Graduate Group. Efforts also are underway to design a new graduate seminar on food systems to be offered through the Community Development Graduate Group. Enrollments currently are low in the agroecology area of emphasis. There has been great growth in interest in food systems among Community Development masters students. Funding for graduate student fellowships can attract new, high-caliber students, who will contribute to ASI research and education activities. Preliminary inquiry in 2009 found that “agroecology” is studied in a range of graduate groups at UC Davis and is not confined to the Agroecology Area of Emphasis. Needs of the broader group include Web presence and activities (intellectual and social) to convene students and faculty, both of these needs can be addressed by ASI. This also suggests that the process to identify recipients for the annual Shapiro Family Award for Best Agroecology Dissertation also needs to reach out to students (and their advisors) beyond the Ecology Graduate Group. The inaugural Shapiro Family Award for best dissertation in agroecology (or a related field) was awarded in 2010.

International Agricultural Development Graduate Group – Over the years, a large number of students in International Agricultural Development have collaborated with ASI and its units in various capacities, for example, as graduate student researchers and teaching assistants. Now that ASI affiliated faculty member Kate Scow is chairing the IAD graduate group, it seems likely that these mutually beneficial interactions will expand.

UC Davis Students for Sustainable Agriculture (SSA) – a campus student group working to promote agricultural and food system sustainability in academic programs and campus operations; includes about 10 leading members and 320 members of the community through listserv. Although not officially part of ASI, SSA's activities include working with the ASI director, the director of our Student Farm and other staff to provide input from student perspectives and to facilitate liaison with other students at UC Davis.

II.3. People (See Appendix 3 for ASI personnel list)

Twenty-seven staff (full- and part-time), including a five-person core support team serving ASI, SAREP and all affiliated facilities and programs. ASI typically employs 2-3 postdoctoral scholars, 5-12 graduate student researchers and 10-20 undergraduate student assistants. *Status: As shown in Appendix 4, our core staffing levels have remained relatively steady at about 16 FTE over the last four years. We currently have fewer grant funded staff; this fluctuates as new grant funded projects are initiated, and older projects are completed.*

Nine ASI-affiliated professorships, including Kellogg Chair in Sustainable Food Systems (T Tomich), Boswell Chair in Sustainable Management of Soil Resources (W Horwath), and Sesnon Chair in Sustainable Animal Systems (E Kebeab) and other affiliated faculty in agroecology (*A Gaudin, starting January 2015*), sustainability and society (R Galt), economics of sustainability (P Merel), plant disease management/soil microbiology (J Leveau), invertebrate community ecology (L Yang), and pollination ecology (N Williams).

Fellows of the Agricultural Sustainability Institute. In addition to ASI-affiliated professorships, the designation "Fellow of the Agricultural Sustainability Institute" recognizes faculty who are significantly engaged in ASI activities and are chosen by the ASI Director based on suggestions from ASI staff. In appreciation to faculty members who have aided in ASI's rapid growth and development, the institute named ten "Fellows of the Agricultural Sustainability Institute" in January 2012 and has added two new ASI fellows each year. Fellows were identified based on service to ASI and contributions to ASI research, education and outreach. All new fellows made distinguished contributions in two or more of these categories. ASI anticipates announcing two new ASI fellows each year. *Status: two new ASI Fellows were announced in 2014, Associate Dean Social/Human Sciences, Dave Campbell (CA&ES Dean's Office) and Professor Chris Van Kessel (Plant Sciences). All affiliated faculty are listed on ASI's [web site](#).*

II.4. Annual funding:

We estimate that the total core funding from CA&ES and ANR for the current fiscal year (2014/15) will be \$1,144,993, a small decrease from \$1,159,744 last year due to ANR's internal payroll allocation process. Note: beginning in FY 13/14, the core funding income totals shown on Appendix 5 now include funds designated for payroll benefits that previously were not included in core funding allocations. Therefore, the apparent increase of core funds is the result of a change in accounting practices and does not reflect a real increase in core funding.

We project total annual funding for ASI will remain stable at about \$2.9 million for 2014/15. ASI's budget includes core funding from CA&ES and ANR, endowment income, current use gifts, earned income from operations at the Student Farm and the Russell Ranch Sustainable Agriculture Facility, indirect overhead returns from CA&ES, and expenditures from grants. These budget figures do not include salaries of ASI affiliated faculty. Please see Section III.5 below and Appendix 5 for additional financial information.

III – STRATEGIES FOR ACTION

How ASI works

III.1. Priority Setting and Accountability

ASI is building institutional capacities to look ahead a decade or more to anticipate big issues and to develop and revise a dynamic agenda for sustainability science research, education, and action. By design, ASI's mission and vision for change are too broad to work on all elements at once. Thus, a strategic, proactive approach to priority setting is necessary to create themes and activities that are appropriately focused, that are feasible to pursue with available human, institutional and financial resources, that remain true to ASI values and operational principles, and that result in a cumulative process that enhances science-based understanding and action for sustainable agriculture and food systems. Mechanisms for accountability to ASI's stakeholders are fundamental to ensuring the legitimacy of ASI's evolving agenda and the usefulness of our products. ASI is working to establish and maintain a range of communication channels that will create meaningful roles for stakeholders in identifying sustainability challenges, shaping priorities, collaborating to find practical solutions, and providing feedback on our results. *Status: Please see Appendix 7A for an updated view of ASI's advisory and accountability structures, including the new Academic Advisory Committee.*

Engagement with stakeholders

- **External Advisory Board.** The main purposes of our external advisory board are to advise the ASI director on strategic directions and priorities for action and to assist in identifying resources to accomplish our mission (see Appendix 9). The board also is expected to help ASI maintain and enhance communication channels with diverse stakeholder groups to ensure that ASI programs are directly addressing the needs of specific groups and society as a whole regarding sustainability of agriculture and food systems. To this end, ASI's external advisory board is structured to reflect a wide range of differing perspectives and is drawn from leaders in their respective fields, including farmers and ranchers; agricultural, environmental, and community organizations; food manufacturers and retailers; educators; policymakers; and the media. Student input is represented on this board as well as through "Students for Sustainable Agriculture," a campus based organization. This board also serves the functions of SAREP's Program Advisory Committee. Additional board members are designated as needs and opportunities arise. Board meetings are convened at least once a year, with other means (e.g., email, conference calls) used as needed to seek advice and input between meetings. A three-person subcommittee of the advisory board, including the board chair, has been established as an executive committee to provide more frequent strategic advice to the director, as needed. In line with suggestions at the inaugural Board meeting in 2008 and with a recommendation of the SAREP external review that year, two new advisory board members were recruited to better represent perspectives from UC Cooperative Extension.

Roles of board members. Roles of board members were outlined (Appendix 9) and finalized during the inaugural advisory board meeting in 2008. Ideas regarding the strategic roles of board members that were discussed include: (a) providing feedback, ideas and advice; (b) connecting ASI to new constituencies and resources; (c) staying aware of the difference between their roles as external advisory board members and, in several cases, their roles as ASI partners; and (d) bringing multiple perspectives. A gradual process of transitions began in 2011, with some new members joining and some founding external advisory board members completing their service each year. Departing board members will be designated “board emeriti” and we look forward to their continuing involvement with ASI.

- **Online surveys.** ASI used a Web-based survey initiative to provide for large-scale stakeholder input and to create a first-cut for identification of priority issues for sustainable agriculture and food systems in CA. Results of the 2008 online survey (Appendix 14) have informed development of our portfolio of initiatives.
- **Consultation.** Our communication strategy will enable us to take a more systematic approach to our ongoing process of consultation and engagement with stakeholders.

Scientific input to priority setting processes

- **Scientific assessment for priority setting.** Scientifically-validated indicators will be developed for use by many stakeholders to benchmark trends in sustainability in California’s agriculture and food system. These indicators will reveal where there has been progress toward sustainability and where there are problems; whether there are tradeoffs across sustainability objectives; which strategies and responses can be most effective in addressing problems and balancing tradeoffs; and where knowledge gaps matter most. Creation of the set of indicators also will create capacity to monitor changes, assess risks, and anticipate emerging sustainability challenges and opportunities. In addition to providing the scientific foundation for an operational definition of “sustainability” for California’s agriculture and food system, the sets of sustainability indicators will inform ASI priority setting and could contribute to development of agricultural sustainability standards and a long-term strategic vision for the future of California’s food system.
- **Monitoring, evaluation, and impact assessment.** To establish an adaptive, learning organization that can effectively incorporate lessons from experience, ASI needs to develop, implement, and institutionalize processes that monitor and evaluate the quantity and quality of our outputs and that assesses outcomes and impacts on our goals. Some relevant mechanisms are in place in SAREP, but much more needs to be done over the years ahead to create a learning organization. (Also see Section V below, Indicators of Success.)
- **International board of science advisors.** To ensure that ASI’s agenda is on the cutting edge of sustainability science, experts in this field have suggested that ASI

institutionalize periodic input to the director from a network of international scientific leaders. Thanks to the Packard Foundation, input of this type was obtained in development of the California Nitrogen Assessment; that experience proved very valuable. Using a somewhat different approach, we created a technical advisory committee for the project on Sustainable Sourcing of Agricultural Raw Materials.

III.2. Interdisciplinary, integrative activities

ASI will lead and manage interdisciplinary, integrative activities that cannot be undertaken effectively within academic departments. ASI will focus and integrate research, education, communication and engagement activities across its evolving agenda and update and adapt these activities as understanding develops in all dimensions of sustainability of agriculture and the food system—plant and animal science, environmental and natural resource stewardship, social and economic issues.

- **Research.** ASI assembles and coordinates interdisciplinary teams to design, seek funding, and implement major sustainability science projects, hosted and managed by ASI. These research projects have the primary goal of identifying scientific principles and practices that enhance sustainability of agriculture and the food system. Priorities include (a) identification of emerging, scientifically-valid innovations and help move them from the margins to the mainstream, (b) coordination and support for long-term research, and (c) knowledge management to ensure that research methods, protocols, and results are archived, synthesized and made available for use by other researchers. For details, see sections IV.1, IV.2, IV.4.
- **Education.** ASI supports programs to educate students of any age, professionals, and the public regarding science-based sustainability principles and practices, exposing them to a variety of ideas, practical experiences, and divergent viewpoints on questions that remain controversial. For details, see section IV.3.
- **Grantmaking.** SAREP grants are a top program responsibility and a key ingredient in building support for sustainable agriculture and food systems activities. From 1987 – 2011, these grants have taken a variety of forms, including (but not limited to) both competitive grants and targeted “academic venture capital” grants for new initiatives. A list of awarded grant projects is available on [SAREP’s web site](#). For several years, lack of funds has precluded an effective grant program. As a result, current problems include both lack of sufficient size to attract attention and unreliability from year to year, which also affects the number and quality of potential grantees.
- **Communication, translation and dissemination.** ASI produces and disseminates science-based information that responds to stakeholders’ needs and improves sustainability of agriculture and the food system through uptake and use by a diverse clientele, including all segments of agriculture across a diversity of scales and systems, agricultural labor and rural communities, and bridging the rural-urban interface. Fenton Associates provided recommendations for ASI’s communication

strategy in February 2009. *Status: A new ASI/SAREP communication coordinator was recruited in 2014.*

- **Distinguished speakers and seminar series.** Graduate students and faculty have expressed interest in a regular series sponsored by ASI, which could serve as a means to bring colleagues together for stimulating, rewarding, and enjoyable exchanges of ideas at the forefront of sustainability science. The series was inaugurated with a seminar by Professor Jules Pretty of the University of Essex, speaking on “Sustainability and the State of the World Food System” on 3 November 2010. *Status: ASI hosted distinguished speaker **William C. Clark** of Harvard University, who spoke on “Linking Knowledge with Action for Sustainability” in January 2014. Clark also met with a number ASI programs including the Sustainable Sourcing Project, Russell Ranch, and the Student Farm. The ASI distinguished speaker series welcomed **Gary Paul Nabhan** of the University of Arizona for a talk on “Growing Food in a Hotter, Drier Land” in April. Food Justice Activist **LaDonna Redmond** was the invited speaker for the Bradford-Rominger Sustainability Leadership Award Ceremony in May; the Student Farm also hosted LaDonna for a breakfast potluck for further discussion with students.*
- **Meetings, conferences, symposia and other events.** ASI hosts a variety of scientific and social events, providing forums for stakeholder consultations, formation of collaborative partnerships, and implementation of research education and outreach activities. ASI events provide a “safe space” to convene people with differing (even conflicting) views, unveil controversy, deepen understanding, and to build consensus for action or support public discussion where no consensus yet exists. ASI has institutionalized “working agreements” to ensure interactions are based on mutual respect.

III.3. Leadership, collaboration, and coordination

Internal accountability and coordination

Strategic planning, budgeting, and implementation of activities of ASI, SAREP and other ASI units are coordinated within an overall vision, mission, and strategies in order to enhance effectiveness of current programs and of new initiatives. Principles that guide these processes include subsidiarity (delegation to the level of most effective management and decision-making); transparency; and mutual accountability. Now that key recruitments are completed and our team is in place, we are planning training to create a “high performance team,” including enhanced abilities to work effectively in distributed, multi-disciplinary, culturally-diverse teams; to build and maintain internal capacity to facilitate such teams; to leverage team members’ creativity and problem solving capability; to relate effectively with diverse external partners; and to value the diverse contributions from various team members, units and partners.

- **Accountability to UC Davis College of Agriculture and Environmental Sciences (CA&ES) and UC Division of Agriculture and Natural Resources (ANR).** The ASI director also serves as SAREP director and reports to the Dean of CA&ES and the Vice President of ANR. A memorandum of understanding between CA&ES and ANR (see Appendix 11) delegates management and administrative support of SAREP to CA&ES.
- **ASI/SAREP core support team.** All core support team positions serve ASI as a whole in order to achieve synergies in strategic planning, priority setting, stakeholder engagement and accountability; budgeting and financial controls; fundraising and proposal preparation, and grant management; communication and public awareness; and monitoring and evaluation.
- **Internal steering committee.** This group includes ASI unit heads and academic coordinators, members of the core support team, affiliated faculty, and student representatives. The committee exists to facilitate synergistic communication, cooperation and collaboration among ASI programs and projects. It focuses on the day-to-day operation and management of ASI and affiliated units. Meetings are open to all staff and agendas typically are distributed in advance. The committee meets as needed, typically about once every six to eight weeks.

Collaboration and coordination with students, faculty and cooperative extension

ASI seeks to bring people together across all divisions of the College of Agricultural and Environmental Sciences at UC Davis, from other UC campuses, UC Cooperative Extension (UCCE), and with other partners across the State of California. These talented people do not need more meetings for meetings sake. As with any of our partners, we strive to respect their time and believe that people respond favorably to collaborative opportunities with clear purposes, real chances for useful results, and that are stimulating, rewarding, and enjoyable.

- **Recognition and awards for leadership and excellence in interdisciplinary, integrative science.** Professional recognition and rewards for interdisciplinary, integrative research, education, and engagement with stakeholders are inadequate in comparison to more conventional academic pursuits. ASI can help redress this imbalance by creating appropriate incentives (awards, prizes, other forms of recognition) for students, faculty, and UCCE colleagues who demonstrate particular leadership or promise of excellence. Mentoring of junior colleagues is another important area for greater attention. Currently, ASI administers two awards: the Eric Bradford-Charlie Rominger Sustainability Award for uncommon leadership in the field of sustainability and the Shapiro Family Award for Best Agroecology Dissertation, in recognition of research excellence.
- **Student Advisors.** The Students for Sustainable Agriculture (SSA) group, an informal group on the UC Davis campus, provides occasional input to the director regarding

undergraduate and graduate student concerns and ideas related to ASI and the environmental, economic and social relevance in sustainability education programs. In addition to SSA, there are college-based student groups throughout California and it is hoped that SSA can assist in engaging with other campuses. Opportunities for student engagement include student representation on ASI board and the internal steering committee, participation in search committees, and co-sponsoring of social events and speakers with Students for Sustainable Agriculture (SSA). *Status: SSA is in the process of reorganizing. ASI currently relies on informal student leaders to assist in identifying students for various advisory functions, including graduate and undergraduate representatives on ASI's external advisory board and internal steering committee. With the launch of the Sustainable Agriculture and Food Systems major, undergraduate peer advisors (positions funded by ASI so far) provide an important and highly effective source of advice and input from students.*

- **Domes Academic Advisory Committee (DAAC).** *DAAC had its inaugural meeting of faculty and Domes affiliates on May 30, 2014. The DAAC provides a forum for discussions around, and coordination of, future academic directions of research and learning at the Domes, and serves to advise the ASI director on all Domes academic activities. The DAAC focuses on the nature of the Domes Academic Plan as well as the past, present, and future academic practices and community-based academic activities that exist at the Domes and in other sustainable living communities on campus.*
- **Faculty leadership.** The deputy director for ASI is a CA&ES faculty member and advises the director on CA&ES linkages and issues, including involvement with the other ASI-affiliated faculty positions designated in CA&ES. The director is in frequent contact with counterparts at UCSC and has participated in events at UCB and UCR, but much more time will be required to develop full potential for faculty engagement to tap into talent across California. *Status: From January 2014, Professor Ermias Kebreab graciously has agreed to serve as ASI deputy director and we are pleased that Professor Kate Scow now will be able to focus her scientific leadership on RR.*
- **Faculty engagement.** In a survey conducted some years ago, approximately 150 UC Davis faculty members identified themselves as strongly interested in sustainable agriculture. This likely understates interest on the Davis campus and does not include faculty on campuses elsewhere in California, including other UC campuses (especially UC Agricultural Experiment Station faculty at UC Berkeley and UC Riverside and also our colleagues at UC Santa Cruz); California State Universities, community colleges, and other institutions where collegial relationships exist, such as Stanford and Santa Clara. We have been experimenting with different approaches tied to specific opportunities (e.g., requests for proposals) and need to continue to develop our repertoire for engagement and follow up with colleagues on the UC Davis campus. Plans for a "Faculty and UCCE Advisory Committee" were considered as a general means of communication and coordination, but seemed to be unworkable (too many meetings, no pressing purpose) in 2007 when ASI was a smaller organization. *Status: In 2013, the first CA&ES faculty review of ASI suggested: "At this point the*

ASI should focus on increasing faculty involvement. While this can be somewhat tricky, with an appropriate mission and appointment by the Dean, an advisory committee could support the ASI on all facets, including RR, the Student Farm and to some extent, SAREP. This committee could both advise the director and advocate for the institute. The members of this committee should include those heavily involved in ASI activities which may not necessarily be the faculty designated as the Sustainable Ag faculty presently, but most likely identified via involvement in ASI related research. There are different models of faculty involvement on institute/center boards on campus that can be considered.” Among other benefits, we share the review committee’s view that expanding faculty involvement is one (of several) important roles for the ASI faculty advisory committee. We also agree that this is an opportune time to create this important academic counterpart to ASI’s external advisory board. Director Tomich has worked with Professor Kebreab, in his capacity as ASI deputy director, and other ASI leaders to create guidelines on the purpose and operation of an Academic Advisory Committee for ASI (Appendix 7B) and to appoint its initial 12 members in October 2014 (Appendix 7C).

- **Collaboration with UC DANR strategic initiatives, other statewide programs, and centers.** ASI has established relationships with faculty and UC statewide programs working on complementary issues (e.g., the DANR strategic initiatives on sustainable food systems, healthy families and healthy communities, and water as well as the Agricultural Issues Center and the Statewide Integrated Pest Management Program).
- **UC Cooperative Extension specialists and farm advisors.** SAREP has built working relationships with a number of UCCE specialists and county-based farm advisors (who in total comprise over 400 UC professionals across the state) through support for collaboration among county, regional and campus-based researchers. Competitive grants are one means to build collaborative links across organizational boundaries, but working groups, communities of practice, collaborative proposals and symposia are other means to that end. Through active participation in various ANR initiatives, workgroups, programs and events, we seek to broaden and strengthen relationships between ASI/SAREP and UCCE. Adding two UCCE professionals to the external advisory board also was a step toward greater statewide collaboration. In due course, it is anticipated that a new category of Agricultural Experiment Station Affiliates of ASI will be created, with the CA&ES Dean’s Office, and linked to the SAREP Solution Centers, recognizing UCCE specialists and advisors who contribute significantly to project design, development of science-based materials, and service as technical interpreters, resource people, and network facilitators.
- **Mechanisms for consultation and collaboration linking faculty, students and UCCE staff.** Regular interaction with numerous interested faculty and UCCE staff would be valuable to ASI as a means to communicate about activities, assess needs, collaborate in development of new initiatives, and reflect on results; such contact is essential to fulfill SAREP’s’ responsibilities. Particularly through with leadership from our two SAREP academic coordinators, we have been effective in bringing together faculty and UCCE staff for specific purposes (e.g., responding to funding

opportunities). Our UC SAREP Solution Center for Nutrient Management, launched in 2013, continues to develop as a vehicle for solution-driven, meaningful collaboration with farm advisors, other ANR colleagues, California farmers, and other stakeholders. The modular Solution Center approach, which we have developed with guidance and support from faculty, farm advisors, staff, and ASI External Advisory Board members, can be replicated to address a wide range of sustainability issues spanning SAREP themes as funding sources are developed.

III.4. Communication and engagement

- **Statewide communication and engagement.** Other partners in California (e.g., Roots of Change and many of the types of organizations represented on the ASI external advisory board) play complementary roles with UCCE in our efforts to assist California's policymakers and communities (both urban and rural) in understanding and implementing sustainable food and agricultural systems and sustainable resource management. Selecting, building and sustaining key relationships with this complex set of implementation partners and potential end users (see graphic in Appendix 6) require a thoughtful and well-targeted strategy for communication and engagement. *Status: A new ASI/SAREP communication coordinator was recruited in 2014. She is working to implement a strategic approach to ASI communications.*
- **National and international leadership, networking and collaboration.** California's reputation for innovation and leadership in agriculture and the environment is recognized nationally and internationally. The State's reputation in these areas is linked with the University of California. Thus, ASI is positioned to build on this recognition over time for impact that extends beyond California.
- **Leadership of the new Inter-institutional Network for Food and Agricultural Sustainability (INFAS).** The INFAS network was endowed by the W.K. Kellogg Foundation with a \$1.5 million gift in 2010. ASI hosts and coordinates INFAS, which is a national network of more than 24 academic leaders in sustainable agriculture and food systems, including directors of counterpart centers and holders of endowed chairs at land grant universities and other academic institutions across the US. A national coordinator for INFAS was recruited in 2012 and is based with ASI. With unanimous support from members of the INFAS executive committee, the half-time national coordinator position was made permanent in 2013 and is funded with INFAS endowment income.
- **Global connections.** The ASI Director and other UC faculty have extensive professional relationships internationally that will provide the basis for an envisioned international network of leaders in sustainable agriculture and food systems. In collaboration with the Information Center for the Environment (ICE) at UC Davis, ASI launched its first global project in 2011 with \$875,000 from Mars Incorporated to develop a framework for indicators of environmental, social, and economic

sustainability of crops and raw materials being sourced by global food companies. This project engaged representatives of multiple stakeholders in global supply chains for key crops and livestock products and has coordinated closely with Mars' evolving sustainability initiative. The first phase of the Mars-funded project was completed successfully in 2013. *Status: a \$50,000 gift from Kraft Foods in 2014 is supporting further work on sustainable sourcing; possibilities for a new round of funding are being explored with Mars Incorporated and a number of other companies.*

III.5. Fundraising

Fundraising is a major preoccupation for the entire ASI team. Our Directors of Major Gifts from the CA&ES Dean's office, our Communication Coordinator, Proposal Coordinator, and Budget and Finance Officer each play indispensable roles in providing support to the ASI Director, Deputy Director, Program Manager, Academic Coordinators, and faculty affiliates in these efforts. In addition to the team effort, implementation of our fundraising strategy must be supported by a compelling, socially relevant vision and mission, a results-oriented plan of activities, and an exciting strategy for communication, public awareness and engagement. Success also will depend crucially on active involvement and support from our advisory board members, UC leadership, and other friends and partners of ASI. ASI units and programs increasingly are viewed as campus-wide assets, which has opened opportunities to gain attention from "central" campus development. *Status: The increased awareness of ASI by campus development leaders is an important development over the past two years, since success in ASI's endowment campaigns will require more than one eight-figure (\$10 million or more) gifts. ASI has for several years benefited from approximately 0.3 FTE of CA&ES Director of Major Gifts Melissa Haworth's time. Patrick Nolan joined the CA&ES development team in April 2014 and will devote a majority of his attention to ASI development prospects. Patrick will focus on fundraising for the Student Farm and Experiential Learning programs, enabling Melissa to focus on the Russell Ranch Sustainable Agriculture Facility and other ASI endowments, including the campaign to endow an agroecology professorship.*

In broad terms, ASI's needs include reliable sources of funding to revitalize SAREP grants at levels of \$750,000 to \$1.5 million per year, and to fully-fund essential activities of the Student Farm, the Russell Ranch Sustainable Agriculture Facility, the new undergraduate major in Sustainable Agriculture and Food Systems, the Agroecology PhD, and to implement ASI's vision, mission and strategies, described above. ASI is included in the pop-up menu on the "gift button" on the UC Davis Website (<http://giving.ucdavis.edu/>), enabling donors to make electronic donations to ASI.

We are implementing a multi-year campaign to pursue three ambitious fundraising goals (listed below). *Status: Please see Appendix 5 for data on annual income since fiscal year 2007/08, Appendix 33 for information on our grant proposal submissions, and Appendix 34 on cumulative totals for ASI endowments. Public documentation of our*

multiple sources of funding is available on our ASI website at <http://asi.ucdavis.edu/about/funding>.

Goal 1. Build ASI's endowments. ASI benefits greatly from the income and prestige associated with several endowments, particularly the ASI program endowments such as the gifts from the WK Kellogg Foundation and the Campbell Soup Company. The importance of endowed funds is demonstrated clearly by funding for the Student Farm. As of the 2011/12 fiscal year, the Student Farm's funding is coming from a portion of the annual payout of the Bixby Endowment. The Fred H. Bixby Estate established this endowment to support practical agriculture at UC Davis. Proceeds from the Bixby Endowment have been supporting UC Davis for many years. The annual payout of about \$198,000 allocated to the Student Farm roughly corresponds to \$4.4 million of the total endowment, which currently is valued at over \$10 million. Because of the stability of the endowed fund, the Student Farm was not subject to the budget cuts that affected other college programs and facilities. So, although this does not increase the level of Student Farm funding, the endowment allocation significantly reduces budgetary risk, increases predictability in program planning, and also signals an enduring commitment by CA&ES.

In ASI's initial strategic plan in 2008, the overall target was to raise \$50 million in ASI endowments and philanthropic gifts in order to increase ASI's total budget to \$6 million per year. The total increase would comprise about \$2 million for research, \$1 million for education, \$750,000 for staffing and operations, and \$250,000 for facilities and equipment. *Status: Looking ahead to the medium term, in anticipation of the next UC Davis campus-wide campaign, we will be revisiting the ASI endowment campaign during the coming academic year. We have been encouraged by the UC Davis Vice Chancellor for Development to envision a \$100 million campaign goal for ASI, comprising both endowment and current gifts, as part of a much larger CA&ES fundraising goal. The CA&ES Dean also has lent her support to exploration of this possibility. We will use the October 2014 meeting of the External Advisory Board to begin this discussion, by envisioning campaigns developed from two "big concepts" (of roughly \$50 million each in endowment and current gifts). The Associate Vice Chancellor for Campus Planning is collaborating with us on development of these place-based concepts. We will be elaborating these and testing their feasibility over the coming year.*

Plans, priorities and current status on ASI endowment efforts:

- Our first-ever **yearend appeal for ASI** was conducted in 2012. *Status: the yearend appeals have had some success and will be repeated.*
- Grow the **Sustainable Agriculture and Food Systems Endowment to support the Agricultural Sustainability Institute** in perpetuity. The Sustainable Agriculture and Food Systems Endowment to support the Agricultural Sustainability Institute is a general endowment fund to be used at the discretion of the ASI Director to support all aspects of the ASI program. **ASI urgently needs to replace a significant**

source of income from the Rosenberg Endowment (committed by CA&ES for 2 more years, at \$75,000 annually). Endowments are critical resources for building ASI programs. The reliability and flexibility of these significant flows of income is essential if ASI is to be proactive in setting the agenda for sustainability science and action rather than merely reacting to agendas set by others. *Status as of October 2014: the endowment stands at \$31,590, meaning the immediate goal of exceeding the \$25,000 threshold to create the endowment has been reached. Intermediate goal: identify and solicit several donors in the 5-6 figure range. Longer term goal: secure anchor gift of 8 figures.*

- Reach \$1 million goal for **Endowed Professorship of Agroecology.** Establishing an endowed professorship is one of the most valuable gifts one can give to higher education since an endowed professorship ensures continued academic excellence for generations to come. The prestige of an endowed professorship allows the university to attract and retain top faculty. The funds the endowment pays out in perpetuity provide the faculty holder independence in their research. Free from some of the constraints of funding agencies they would have more flexibility and freedom to pursue science in the public interest. The professorship holder would also have funding to train more students building the cadre of scientists working in agroecology. *Status: \$550,000 secured, comprising \$200,000 leadership gift from TomKat Charitable Trust, \$200,000 from the Plant Sciences Department at UC Davis, \$100,000 from Columbia Foundation, and \$50,000 from the Gaia Fund. With \$450,000 still remaining to be raised, the December 2014 fundraising deadline for this target is approaching rapidly.*
- Establish an **endowment for the Russell Ranch Sustainable Agriculture Facility.** To launch the Russell Ranch Endowment Campaign, we are offering a limited opportunity to adopt an acre at Russell Ranch. Donors are invited to adopt one, or more, of the 72 one-acre plots of the Century Experiment. For \$10,000, your name (or a name you designate) will be associated with an acre in perpetuity. The first acre was adopted in 2012 by Del Monte Foods. *Status as of October 2014: in the past year, four additional acres were adopted in perpetuity, bringing the total to seven. While some of these pledge commitments will be met in the coming years, the endowment stands at \$37,000. Immediate goal: solicit at least 10 iconic companies / individuals to Adopt-an-Acre. Longer term goal: all 72 acres adopted.*

Goal 2. Secure two or more large program grants each year, totaling \$1 million or more. Criteria for allocation of ASI resources to development of grant proposals include: (a) a “champion” steps forward to lead development and writing of the proposal, (b) proposed project is interdisciplinary and will allow ASI to draw in faculty across departments, (c) fit with ASI’s thematic areas, (d) intellectual merit and potential contribution to ASI’s research, education and outreach programs, (e) potential for connections across the University of California and with other institutions, (f) potential for outreach and collaboration with external stakeholders, (g) significant funding amount, (h) acceptable requirements for matching funds, (i) likelihood of success, and (j) time and resources available to prepare a high-quality proposal. (These criteria are not prioritized.) We have an active and effective team, orchestrated by a half-time

proposal coordinator, to support efforts by faculty and other partners to produce high-quality proposals for competitive extramural grants. Our half-time proposal coordinator began working in January 2010 and subsequent numbers show the renewed increase in ASI grant activity: 13 of 18 project grants were awarded in 2010/11, totaling \$1.36 million and of 19 proposals submitted in fiscal year 2011/12, 13 were successful and brought ASI almost \$ 1.7million in new funds. *Status: Of 24 proposals submitted in fiscal year 2013/14, only seven were successful, bringing ASI only \$314,000 in new funds. Despite submitting a similar number of grant proposals as in previous years with more emphasis on the larger opportunities, ASI did not meet its grant funding goal for the first time since this goal was adopted in 2008. However, several important grants have already come in for FY14/15. In broader perspective, we believe our approach to extramural funding is sound and we expect to be back on track for the coming year. Please see Appendix 33 for additional detail on our current funding proposal status and trends over time.*

Goal 3. Sustain UC support above \$1 million per year. Despite continued cuts and uncertainty in the overall budget situation, leadership from the CA&ES Dean's office and the UC DANR Vice President's office has helped ASI maintain core funding. Continuing support signals strong commitment by CA&ES and ANR to our agricultural sustainability initiatives and, as such, these are powerful assets in our fundraising efforts in addition to being the foundation for the viability of ASI. However, the crisis in California State funding since 2008 has meant it was not possible to sustain UC support (from CA&ES and ANR) above \$1 million per year. SAREP's base budget from UC DANR was cut 20% (approximately \$100,000) in fiscal year 2009/10 (proportional to the overall cut faced by DANR), but it is a pleasure to be able to report that ANR has been able to continue the same level of funding for SAREP in 2010/11 and there is reason for optimism that this funding may stabilize going forward. Although the Russell Ranch budget from CA&ES was cut 6% (about \$14,000) in the 2011/12 fiscal year (the same rate as all CA&ES departments), the Student Farm budget was spared these cuts because of the CA&ES Dean's commitment of about \$198,000 from the annual payout of the Bixby Endowment to funding the base budget of the Student Farm (discussed above under Goal 1). Because of this mix of changes, it seemed appropriate to recast Goal 3 as "Sustain UC support above \$750,000 per year" (from the original \$1 million). *Status: funding from CA&ES and the UC Division of Agriculture and Natural Resources have remained steady. As noted above, since FY 13/14, the core funding shown in Appendix 5 includes employee benefits that previously were not included in core funding allocations. Therefore, the apparent increase is the result of a change in accounting practices and does not reflect a real increase in core funding. However, it does seem appropriate to reinstate ASI's original goal of maintaining UC core support above \$1 million per year.*

IV – THEMES, MILESTONES, INITIATIVES, & CURRENT WORKPLANS *Next Steps for ASI work*

Overall status: the current thematic structure and priorities for ASI initiatives is working well, though it will be some time before ASI has resources sufficient to pursue all proposed initiatives. **Blue text below indicates 2013/2014 milestones. Green text indicates 2014/15 workplans.**

IV.1. Agriculture, Resources and the Environment Theme (including SAREP and Russell Ranch Sustainable Agriculture Facility activities)

Milestones and Progress on 2013/2014 Workplans

*Completed a case study of **life cycle energy use and greenhouse gas emissions of organic walnut production and hulling/shelling** with local biomass power as part of the CDFR-funded project on Life Cycle Assessment of Air Emissions and Greenhouse Gas Offset Potentials in Perennial Fruit and Nut Crops.*

*Presented results of the **life cycle assessment of greenhouse gas emissions in California nut crops** at three national and international conferences as well as to orchard crop producers and researchers in Australia.*

*Almond Board of California awarded \$54,000 to ASI affiliated faculty for **greenhouse gas emissions assessment of almond processing and distribution**, to complete the suite of almond life cycle assessments.*

*Completed post-scientific review revisions of 3 out of 8 chapters of the **California Nitrogen Assessment (CNA) report**, in preparation for stakeholder review. Remaining chapters are in scientific review or nearing completion of revisions. Signed a publishing contract with UC Press.*

*Launched website with preliminary information products, held advisory committee meeting, and began information compilation for the searchable database for the **Solution Center for Nutrient Management**.*

*Released preliminary communications about a project identifying **non-chemical alternatives to methyl bromide** for disease management in strawberry production.*

Russell Ranch Sustainable Agriculture Facility

*Through greater efficiency, increased revenues from crop sales, and by marketing land management services to other units at UC Davis, we have **increased the annual income of the Russell Ranch Sustainable Agriculture Facility**. Electricity is now*

installed in the barn, a new sign has been erected at front entrance and some older equipment replaced.

Russell Ranch field day, “Soil Matters: Underground at the Century Experiment” on May 28th, brought together researchers, growers and other stakeholders with a total of 140 attendees.

Russell Ranch has completed processing, archiving and measuring bulk density for soil samples that constitute the **ten-year soil survey of Century Experiment** (3400 samples in 8 depth increments to 3 meters deep in 72 plots).

Wells Fargo Water and Irrigation Initiative was kicked off with initial funding of \$100,000 from Wells Fargo. A **working group** of faculty and extension specialists is **focusing on water use and irrigation management** and a post-doctoral fellow will be hired soon. **Drip irrigation and meters** will be installed this fall in some of the plots of the Century Experiment.

In collaboration with the Jet Propulsion Laboratory (JPL) at NASA and Susan Ustin’s laboratory, remote sensing data (imaging spectroscopy) were collected during multiple fly-overs of Russell Ranch along with ground-based plant data. Our joint collaboration is expanding with plans to install two 30 feet towers in surrounding fields for thermal radiometers, and future plans for aerial tram and UAV flights.

As part of RR’s “close the loop” objective, we are evaluating use of **anaerobically digested food waste and dairy manure** as fertilizer sources in a project funded by the California Department of Food and Agriculture (CDFA) in collaboration with Ruihong Zhang (Biological and Agricultural Engineering).

Addition of **biochar** to soil from our long term biochar plots resulted in **improved aggregate structure, small increases in water retention, and reduced mobility of pesticides**. Addition of **biochar decreased yields of** compost- and mineral-fertilized **tomatoes** in the long term biochar plots. (Daoyuan Wang from China and UCD grad student Deirdre Griffin)

Addition of soil amendments in conventional tomatoes showed **compost increased tomato yield in the tomato wheat rotation, while cover crops (in a drought year) lowered tomato yields** and decreased bulk density (UCD grad student Megan McCaghey, funded by CTRI).

Research on soil phosphorus in the Century Experiment revealed **soil phosphorus mobilization** in the rhizosphere of cover crops had little effect on overall phosphorus cycling (Gabriel Maltais-Landry, Peter Vitousek, Stanford University, paper published in *Soil Biology and Biochemistry*, 2014).

Different **cover crops** planted at Russell Ranch showed marked **differences in their ability to capture soil nitrate** and critical time-points for nitrate leaching and this will guide design of more nutrient-efficient rotations (UCD grad student Matt Dumlao's PhD dissertation and Martin Burger).

Research on the **long term effects of fertilizers on nitrous oxide emissions** in the Century Experiment showed that effects of mineral nitrogen fertilization were longer lasting than cover crop fertilization (UCD grad student Gabe LaHue and Chris van Kessel)

In a **comparison of in-field diagnostic tools** to improve nitrogen management for high yield and high protein wheat at Russell Ranch, the Greenseeker NDVI proved most useful in predicting overall protein yield potential (Farm Advisor Mark Lundy)

Research on **characterization of functional traits of soil microbes** found microbial communities in the organic system were quite different from the conventional and no input systems during the growing season but not after harvest (UCD grad students Priya Singh and Kelly Gravuer).

Research on the impact of crop configurations and management practices on **arthropod (insect and spider) communities at multiple spatial and temporal scales** was initiated at Russell Ranch, to be continued in 2015 (UCD grad student Luke Peterson and Emilio Laca).

An evaluation of a rapid respiration test for estimating potential mineralization to reassess fertilizer N recommendations was conducted at Russell Ranch; however water-extractable organic N proved a better predictor of N mineralization (UCD grad student Jordon Wade and Martin Burger).

Soils from the organic management system have larger microbial populations, higher organic C and organic N content than in conventional systems. Addition of labeled nitrogen fertilizer resulted in faster rates of urea transformation and **greater N₂O emissions** in the organic than conventional system (Postdocs Rad Schmidt and Fungai Mukome)

Published review article on meta-analysis of **long-term impacts of nitrogen fertilizers on soil microbial** biomass and communities (Soil Biology and Biochemistry, 2014) (Extension Specialist Daniel Geisseler and Kate Scow)

Whole wheat flour was milled for UC Davis's Dining Service and 10,000 lbs. has been delivered for the campus bakery and pizza production.

Research and management of Russell Ranch large-scale wildflower plantings (now 5 years old) continued to be conducted in collaboration with Jessa Kay Cruz at Xerces Society (international non-profit organization).

A visiting student from Pakistan and scientist from Turkey conducted research on impacts of nitrification inhibitors on microbial communities and effects of management practices on soil physical properties, respectively.

An **undergrad student from Brazil** participated in a yearlong internship focused on economic analyses of the Century Experiment's long-term results, in collaboration with Karen Klonsky.

2014/2015 Workplans

Energy and Climate Footprinting

- *Re-assess overall direction and priorities for future grant proposals and projects under this initiative.*
- *Complete analysis and grower- and policy-oriented outreach for project on life cycle assessment of greenhouse gas emissions and offset potentials in perennial fruit and nut crops.*
- *Conduct analysis of energy use and greenhouse gas emissions in almond processing and distribution networks.*

Responding to Climate Change

- *Continue on Science/Technical Advisory Committee for the California Climate and Agriculture Network (CalCAN)*

Sustainable Management of Nutrients and Water in Agricultural Landscapes

- *Complete scientific review and stakeholder review of California Nitrogen Assessment report and prepare for UC Press publication.*
- *Continue to develop outreach materials and activities for California Nitrogen Assessment.*
- *Create and begin to populate database for the SAREP Solution Center for Nutrient Management and conduct field days and discussion forums for farmers.*
- *Continue development of strategy for instrumentation of Century Experiment for research on water use, nitrate leaching and greenhouse gas emissions, using sensor technology and wireless data collection, through collaboration with UCD faculty and Lawrence Berkeley National Lab researchers.*
- *Analyze the long-term soil samples (20th year) of the century experiment for multiple depths and properties, including microbial communities, soil carbon, nitrogen and other elements.*

Closing the Loop: Integrating Sustainable Waste Management in Agriculture

- *Expand “Close the Loop” experiments in small plots (currently amended with biochar, compost) and in microplots of Century Experiment to evaluate agricultural waste materials as nutrient sources and potential sources of contamination. Proposal successfully funded by CDFA.*

Harnessing Ecosystem Services to Increase Agricultural Sustainability

- *Complete funding of PhD student research on alternatives to methyl bromide for managing disease in strawberry production, and create and disseminate public communications about project results.*
- *Design and implement research and outreach at Russell Ranch and through the Solution Center for Nutrient Management, about use of soil amendments and other field management practices to build healthy soil microbial communities for healthy crops.*
- *Develop strategy to obtain endowment funding to strengthen Russell Ranch infrastructure and meet equipment needs.*
- *Install new Hydropass water valves and meters on long-term Russell Ranch plots, drip irrigation on all non-organic tomato plots, and high-resolution sensors in an organic tomato drip-furrow comparison.*
- *Conduct groundwater study for Russell Ranch and surrounding area, using real-time groundwater level data, in collaboration with Graham Fogg and student Carlos Flores Arenas*
- *Upgrade Russell Ranch database to include real-time data from weather station and soil moisture probes, increased operational data on fuel use and tillage, and develop capacity to record data on farm operations in the field.*
- *Increase capacity to conduct spatial and temporal analyses of long-term Russell Ranch data using GIS, multivariate and Bayesian statistical approaches, and other tools in collaboration with UC Davis faculty and ESRI.*
- *Increase number of publications utilizing long-term data from Russell Ranch*
- *Develop a funding program to provide small grants to support graduate student research projects at Russell Ranch.*

IV.2. Food and Society Theme (all of the following are SAREP activities)

Milestones and Progress on 2013/2014 Workplans

Building Regional Markets and Communities

- *We successfully raised over a half million dollars (grants) to conduct new research and outreach supporting values-based supply chains, new markets for small and mid-scale farmers, farmer wholesale tours and urban ag youth tours.*
- *We completed a small marketing study for the California Farm Academy to suggest appropriate market venues for their beginning farmer program.*
- *We continued to support farm-to-school programs with evaluation research in seven Northern California school districts and summarized results for funders, school districts, community partners, public and policy makers.*
- *We developed and published (with the National Farm to School Network), a national evaluation framework with common metrics for farm-to-school programs, researchers and policymakers.*
- *We collaborated on a multi-component program to prevent obesity with Dr. Sheri Zidenberg-Cherr (Nutrition Dept.) and Carol Hillhouse (School Gardening Program, ASI) Preliminary results showed that children classified as overweight or obese dropped from 56 percent to 38 percent during the one year the Shaping Healthy Choices Program was implemented in Sacramento County. This is a significant impact.*
- *We expanded our local/regional food systems bibliography. We published results of key challenges that emerged from the literature and have shared it in practitioner and professional conferences nationwide.*

Community Food Security

- *We collaborated on organizing and implementing a national food security conference for Cooperative Extension personnel (through eXtension) in Cleveland, OH, including a one-day Dismantling Racism training workshop.*

Food System Assessments/Food Policy

- *We continue to work with San Luis Obispo partners to do outreach on the San Luis Obispo food system assessment.*

2014/2015 Workplans

Building Regional Markets and Communities/Community Food Security

- *Continue supporting farm-to-school programs and evaluation research in Yolo County school districts, Stanislaus and Sacramento counties. Write policy briefs, UC Delivers and peer-reviewed articles.*
- *Expand collaboration with Nutrition Dept. and funded projects that link our procurement/cafeteria evaluations and nutrition education, garden-based learning, and community education to reduce obesity.*
- *Follow-up with farmers from small, beginning, ethnic farmer tours with consultations and farmer-to-farmer meetings; gather outcome and impact data. Build relationship with Farm Credit.*
- *Work with UCCE and community organizations to conduct assessment research on beginning farmers in CA (focused on marketing).*
- *Expand values-based supply chain initiative through collaborative research and extension projects on a) farmers' experiences with values-based supply chains/ food hubs and b) farmers' participation in the specialty processed foods industry (AFRI grants).*
- *Expand Urban Agriculture research and outreach in California through a) outreach of ANR UA Portal, b) policy briefs, and c) UA tours with 4-H youth.*
- *Conduct collaborative research on the economic impact of regional food systems, focusing on the qualitative impacts of regional food systems for communities.*
- *Organize comparative case studies using local food systems bibliography.*

Community Food Security

- *Work with ANR to find mechanisms for offering Dismantling Racism trainings for as many ASI staff and other ANR personnel as possible.*

Food System Assessments/ Food Policy

- *Explore development of CA food system indicators with Roots of Change, for use in CA Food Policy Council and/or SFS Capstone Course*
- *Work with the Ag, Resources and Environment team to test the indicator generator framework by applying it to several existing county food system assessments.*

IV.3. Education and Leadership Theme (including Student Farm activities)

Milestones and Progress on 2013/2014 Workplans

- *We continued our traditions of recognition by awarding the annual **Bradford-Rominger Sustainability Leadership Award and the Shapiro Family Award** for best dissertation in agroecology or a related field. We were very pleased to present the 2014 Eric Bradford and Charlie Rominger Agricultural Sustainability Leadership Award to UC Cooperative Extension's Mary Bianchi. The award recognizes the work of a UC colleague who epitomizes the qualities of two great figures in California agriculture -- livestock geneticist Eric Bradford and sustainable farmer Charlie Rominger. Food Justice Activist LaDonna Redmond gave a thought-provoking speech on the history of oppression in the food system and its present-day effects on communities of color; the Student Farm hosted her for a morning potluck to continue the discussion with students.*

Student Farm

- *The Student Farm made significant advancements in student mentoring and leadership development this year. In the last two to three years, we have enlisted our more experienced and advanced students as employees to help us maintain and enhance our educational program as part of our strategy to serve the rapidly increasing number of students involved in the program. In the past year, a team of two staff and two graduate students began working to create a leadership development program for these advanced student employees. The effort started with identifying what the SF community values in its leaders and in what areas our student leaders feel they need support. Then the team started developing workshops in two broad areas: technical competencies, which focus on practical aspects of farming and gardening, and interpersonal competencies, which focus on the student employees' developing and maintaining positive relationships with the students they are helping mentor. Pilot workshops were first offered in the spring and year-round workshops are now being scheduled.*
- *Students also organized various activities and events such as social events, 'farm dialogues,' and student-led skills workshops in areas outside normal SF activities. In addition to helping students learn from one another and develop their leadership capacity, these events strengthen the SF community and students' voice in the Farm's development.*
- *The SF's Kids in the Garden program engaged record number of talented UC Davis students to lead hands-on tours for hundreds of primary school children this year. Our winter training program for the students leading these tours was approved as a formal course during the year. This will help make the program more visible to students and we will receive funding for a graduate student TA for the course this winter.*
- *SF staff played important roles in the developing relationship between ASI and UC Davis Sustainable Living and Learning Community (SLLC) and the different entities*

in it. Coordination within the SLLC is an important part of the SF's growth and development planning, including programs, infrastructure and fundraising, over the next several years.

- We have collaborated with partners on campus and around the state on several of grant-funded projects focused on school gardens, garden-based education and farm-to-school. These have included train-the-trainer programs to reach diverse communities and provide professional development, training and support for teachers, nutritionists, garden educators, food service providers, farmers and others involved in developing regional farm to school networks and school garden programs. With our partners, we have awarded 90 mini-grants over three years for trainers to deliver our school garden trainings in their own regions. We developed and used a webinar format for the first time to connect our network of new trainers and communicate more efficiently with colleagues around the state.*
- We have supported the work of our research partners in the UCD Department of Nutrition to roll-out a multi-component intervention program in schools called "Shaping Healthy Choices" that impacts children's wellness through procurement of regional produce, nutrition education, school gardens and family involvement.*

Sustainable Agriculture and Food Systems major

- Three years after the Sustainable Agriculture and Food Systems (SA&FS) major was approved and UC Davis students began declaring the major, enrollment in SA&FS exceeded 100 students, with more in the process of transferring into the major. 20 students graduated with BS degrees in SA&FS in the past year. Enrollment in the five SA&FS core courses continue to grow. The freshman Introduction to Sustainable Agriculture course added a third lab section to increase enrollment from 40 in 2013 to 56 in 2014, while enrollment in the two-quarter Senior Capstone sequence increased from 18 to 30.*

2014/2015 Workplans

Post-Secondary Experiential Learning and Formal Post-Secondary Education

- Advance the Student Farm program planning and development process. In particular, further develop and begin refining our new leadership development program for advanced student employees.*
- Help lead the development of the SLLC concept in collaboration with the different SLLC entities and campus leadership in areas of planning and development. Continue guiding the academic development of the Domes community and lead the development of plans and documents for the campus Long Range Development Plan process and fundraising strategies and plans for the SLLC*
- Continue shepherding and contributing to the Sustainable Agriculture & Food Systems major by assisting with aspects of program administration, contributing to academic advising, teaching several core and other required courses, and providing in numerous internships for SA&FS majors.*

Education for Primary and Secondary School Audiences

- *Provide on-campus, hands-on educational programs in food, nutrition, agriculture and ecology to over 1700 regional primary school students. Work with partners to provide field-based experiences for traditionally underrepresented high school students and increase their awareness of college and career futures in sustainable agriculture.*
- *Participate in a small but significant national school gardening leadership team that has formed during the last two years with the goal of developing a national organization that can impact policy and influence institutional changes to support development and use of instructional gardens in public schools.*
- *Continue to provide support to active research projects that evaluate and quantify the impact of school gardens on children's learning and wellness.*
- *With our statewide colleagues and campus fundraisers, regroup and strategize to secure new funding for continued professional development that supports and promotes school gardening efforts in California.*

Cultivating Leadership in Sustainable Agriculture and Food Systems

- *Identify 2015 winner for the Bradford-Rominger Sustainability Leadership Award*
- *Identify 2015 winner for the Shapiro Family Agroecology Award*

IV.4. Crosscutting Initiatives

Milestones and Progress on 2013/2014 Workplans

Farm and Food System Workers and Healthy Rural Communities

- *We have almost gathered all observations and interview data in the farmworker activity study in caneberries (on two farms). Data are now being analyzed.*

Benchmarks for Food System Sustainability

After finishing its first major phase the previous year, Sustainable Sourcing spent this past year focused on manuscript writing, building out new partnerships, and planning the next phases of our work. Key milestones include:

- *Designing a “Sustainable Sourcing Checklist Generator” protocol for multi-stakeholder targeting of sustainability issues and selection of indicators using the project’s semantic data linkages, to provide the smallest number of acceptable indicators for comprehensive coverage of target issues.*
- *Making progress on the design of a computer interface for using the “Sustainable Sourcing Checklist Generator” in real-time.*
- *Progress in strategic expansion of membership on stakeholder and technical advisory committees. In particular, we welcomed Kraft Foods, Incorporated as a new stakeholder partner, which gave \$50,000 for general project support. We also want to highlight a growing partnership with the Food and Agricultural Organization of the United Nations (FAO), who is collaborating with us on platform design and data linkages.*
- *Writing and submitting 2 journal articles, currently in review, and one Op-ed featured in the first issue of the International Finance Corporation’s new magazine “Sustain”.*
- *Submitting 3 competitive funding proposals: to USDA, Gates Foundation, and the International Social Science Council.*
- *Presenting our work and networking with potential partners at a variety of professional events, including a symposium at the Ecological Society of America annual meeting.*

2014/2015 Workplans

Farm and Food System Workers and Healthy Rural Communities

- *Expand and build colleagues in this area in order to identify highest priority collaborative projects. Explore market-based solution and food security projects involving farm and food system labor.*

Benchmarks for Food System Sustainability

Sustainable Sourcing of Global Agricultural Raw Materials project:

- *Begin one or more sustainability case studies using the “Sustainable Sourcing Checklist Generator” protocol in partnership with key stakeholders.*
- *Launch prototype semantic web information management platform for public access.*
- *Submit one or more large competitive grant proposals to fund further development of the informatics platform and other project activities.*
- *Continue to design and focus next phase of project activity with key stakeholder collaborators.*
- *Continue to explore opportunities for further funding and in-kind support with corporate and philanthropic partners, and through competitive grants programs.*

IV.5. INTER-INSTITUTIONAL NETWORK FOR FOOD, AGRICULTURE AND SUSTAINABILITY (INFAS)

Milestones and Progress on 2013/2014 Workplans

- *Convened two INFAS meetings to engage in network design. The first was a spring workshop hosted by ASI at UC Davis that included a public panel entitled 'Perspectives on Race, Ethnicity, Class, and Gender in the Food System'. Nine INFAS colleagues from across the US joined the workshop and panel, which was attended by 35+ campus community members. The key milestone of this workshop was a proposal to the network that INFAS revise its purpose to have an explicit focus on structural racism as an initial entry point in food system work. The second gathering was the summer INFAS annual meeting which provided space for the Network Design team of INFAS to engage the broader network in the design process, specifically the proposal to focus on structural racism as a Network principle. The proposal was met positively; constructive input led the Design team to develop additional preamble text to more broadly frame the work of the Network.*
- *Engaged community members outside INFAS to join the Network Design team, which had realized additional voices were vital to the process. Cheryl Danley (FoodCorps) and Joann Lo (Food Chain Workers Alliance) agreed to participate as network collaborators.*
- *The INFAS Statement on Racial Equity was released, in its first complete draft form, to the Network and colleagues in September 2014. Tom Tomich, INFAS host, proposed to engage ASI in a discussion on the statement in consideration as an operational principle for ASI. Internal ASI discussion commenced September 2014.*

2014/2015 workplans

- *The Network design and development core team is planning to hold at least two meetings; a smaller meeting of the core team and a second larger meeting that will include a broader stakeholder group from within the Network, and new collaborators not currently in the Network.*
- *The design process, with broader stakeholder representation, will set the initial Network priorities for action which are expected to include activities such as: broadening the Network to include additional stakeholders which may be new institutions, advocates, and other relevant organizations including from outside academia; leveraging the network design process to initiate development of commitments to social justice at additional INFAS member institutions; increasing visibility of sustainable agriculture and food systems research and education; engaging in discussions with, or submitting proposals to, federal funding agencies to impact research directions; and outreach and communication to inform the network and its linkages.*

- *A third gathering, the INFAS annual meeting will also be held, probably in conjunction with an already-scheduled meeting or conference to enable broader participation. It is anticipated that this meeting will focus on the network design priorities identified from the earlier meetings and how to take action on levels that range from the individual, institutional, regional, and network.*
- *The INFAS Coordinator will assist ASI in promoting the value of racial equity on an Institute-wide level and seek input from a variety of stakeholders within and outside of ASI.*
- *The INFAS Coordinator will assist ASI in its contribution to the new UC initiative: Global Food Institute. These efforts will include strengthening and expanding the inter-UC network component of INFAS.*

IV.6. FUNDRAISING

Milestones and Progress on 2013/2014 Workplans

- **Recruit, hire and train additional development professional to focus on ASI fundraising priorities.** Patrick Nolan joined the development team in April 2014 and is focusing on fundraising for the Student Farm and Experiential Learning programs.
- **Reach \$1 million for Agroecology Endowed Professorship.** Continuing. Still at \$550,000.
- **Bring in 3 paying supporters of the Sustainable Sourcing of Global Agricultural Raw Materials Project.** One new supporter, Kraft Foods, has contributed \$50,000 to the project.
- **Work with academic leadership on building Russell Ranch Endowment through Adopt-an-Acre and larger proposals.** Adopt-an-Acre program continues to grow, albeit slowly. 7-figure philanthropic proposal involving Russell Ranch as a key partner was developed but was unsuccessful.
- **Secure at least one 7-figure gift to ASI program.** Major proposal noted above was unsuccessful but relationship development continues.
- **Bring in at least \$1 million in competitive grant funding, emphasizing pursuit of larger grant opportunities.** Despite submitting a similar number of grant proposals as in previous years with more emphasis on the larger opportunities, ASI did not meet its grant funding goal for the first time (since this goal was adopted in 2008), netting just \$314,000 in FY 13/14. However, several important grants have already come in for FY14/15, and we expect to be back on track for the coming year.

2014/15 workplans

- **Reach \$1 million for Agroecology Endowed Professorship.**
- **Identify three paying supporters of the Sustainable Sourcing of Global Agricultural Raw Materials Project.**
- **Secure major gifts (\$25,000 minimum) from at least 10 donors who have not previously supported ASI.**
- **Secure \$100,000 for Russell Ranch Endowment via Adopt-an-Acre or other gifts.**
- **Secure at least one 7+ figure gift to ASI program.**
- **Identify at least two planned gift commitments for ASI.**
- **Bring in at least \$1 million in competitive grant funding, emphasizing pursuit of larger grant opportunities and building strategic partnerships.**

IV.7. COMMUNICATION

Milestones and Progress on 2013/2014 Workplans

- *We hired a new communications coordinator to update and implement ASI's communications plan, with a focus on website development, content creation and management, network building, and institutional communications capacity.*
- *Our new website's development is well underway. All ASI programs have been through initial design meetings, and the SAREP site is nearing completion. The website redesign includes creation of a searchable publications/resources database, new opportunities for blogging and storytelling, clear explanations of our programs and projects, and simplified access to information.*
- *We are improving and diversifying the ways we share our work and message. This year's efforts included student-created videos of the SA&FS and student farm experiences, ASI and ANR blog posts, op-eds, magazine articles, and continued social media participation.*

2014/15 workplans

- *Complete ASI website redesign.*
 - *Write web content in collaboration with program staff for the website to ensure our operational principles and values are represented.*
 - *Work with students, campus communicators, and staff to develop regularly updated content on website with stories of our work.*
- *Improve communications staff's ability to support each program's needs, and improve ways for staff to actively engage in communications, outreach, and engagement. Steps for the upcoming year include:*
 - *Incorporation communications staff budget into every grant proposal to build communications staff capacity*
 - *Develop communications templates and short messages that can be easily accessed by all staff*
 - *Develop protocol for using and creating communications materials*
 - *Host periodic brownbag workshops to build communications capacity amongst staff*
- *Better serve ASI's collaborators, community partners, and audience by developing communications materials that meet their needs, improve ASI's reach and visibility, and provide clear evidence of ASI's role in California agriculture and food systems as well as clear paths to partnership on emerging issues. Steps for the upcoming year include:*
 - *Develop annotated experts list and contact management system*
 - *Acknowledge project partners on website, through social media and stakeholder communications*
 - *Improve web content to highlight achievements and impact*

IV.8. MONITORING AND EVALUATION

Milestones and Progress on 2013/2014 Workplans

- *Completed staff transitions in core positions, enabling timely tracking of communication and fundraising efforts.*
- *Serving as co-lead on a committee of the UC-wide Global Food Initiative focusing on tracking ongoing UC research on sustainable agriculture and food systems.*

2014/15 workplans

- *Refine overall ASI outcome statements and define theories of change for desired outcomes. Collaborate with staff to monitor and document key indicators of progress in thematic area initiatives.*
- *Enhance documentation of ASI and SAREP research and networking through participation in UC Global Food Initiative.*

V - INDICATORS OF SUCCESS

Where are we going?

ASI's strategic plan, and particularly our vision statement, suggests a number of desired transformations within agriculture and the food system and institutional capabilities to be built within ASI. With input from our director, deputy director, academic coordinators, communication coordinator, and proposal coordinator, ASI's program manager is working to institutionalize monitoring and evaluation of various performance indicators, including measures of inputs, outputs, their uptake by partners, and ultimately studies of outcomes for our partners and impacts in the "real world."

We are developing monitoring systems that will serve several useful purposes: 1) focus our work on ASI's mission and priority goals, 2) guide adaptive management of our current projects and activities, 3) stimulate learning within our team and with our partners, and 4) provide compelling evidence of ASI's impacts for current and potential funders and other stakeholders.

During 2011 – 2012, we worked with an evaluation consultant, Francesca Wright, to guide our development of a broad monitoring and evaluation plan. Based on meetings with SAREP's academic coordinators and Student Farm staff, we identified a first draft of potential outcome statements and associated data collection methods.

Status: We have made progress in tracking many aspects of the following draft outcome statements. Although multiple staff transitions over the last year have delayed efforts to fully articulate and document our indicators of success, our current staffing will allow us to produce key measures of many intermediate outcomes. (See section IV.8 above).

1. ASI Builds Knowledge through Externally Funded Projects & SAREP-awarded Grants

- For internal learning, team members identify and share process insights at key points during and after projects. Track key learnings on shared written documents, including formulation, testing, and reframing of hypotheses.
- For external audiences, identify key findings and outcomes from projects; track and report via ASI web site, press releases, various reports, as appropriate.

2. ASI Distributes Knowledge

- Track staff presentations and publications (using MyInfoVault – on-line campus academic activity reporting system)
- Track media coverage
- Track web site use
- Track meaningful and significant external inquiries via simple on-line form. (Consider follow-up w/ email survey to clients.)
- Periodic email surveys to "customers" (e.g. Student Farm alumni, key strategic partners to document uptake)

3. ASI Incubates Leaders, Producers, Consumers and Advocates

- Track SA&FS graduates
- Track # of students participating in Student Farm activities. Consider follow-up w/ some.
- Track # of K-12 students & school district personnel trained in eco-garden trained.

4. ASI Collaborates with Strategic Partners

- Explore informal group process to document growing network of strategic partners every 6 – 8 months. (Large wall paper, post-its, color coding, photo recording.) Link with ASI contacts database.

5. ASI Leverages Resources

- Track external funding

We expect our monitoring and evaluation plan to be a dynamic construct that we will adapt and improve over time. Since time is always a constraint, we are looking for ways to streamline data collection, and effectively use the support offered by our student assistants.

Lastly, our process should help us to evaluate how we are living up to our operational principles: practicing sustainability, legitimacy, usefulness, and the scientific credibility of our work.

VI – LIST OF APPENDICES

Appendices can be accessed at: <http://asi.ucdavis.edu/about/advisory-board/Board-meetings/2014-external-advisory-board-meeting>

Institutional Framework and Assets

- Appendix 1: Organizational Structure
- Appendix 2: Programs and Facilities
- Appendix 3: Personnel
- Appendix 4: Core Staff and Grant Funded Staff (FY 06/07- FY 14/15)
- Appendix 5: ASI Annual Income (FY 07/08 – FY 14/15)
- Appendix 6: Stakeholders
- Appendix 7A: Advisory and Accountability Structure
- Appendix 7B: Academic Advisory Committee – Purpose & Operation
- Appendix 7C: Academic Advisory Committee – Current Members

External Advisory Board Documents

- Appendix 8: External Advisory Board - Current Members
- Appendix 9: External Advisory Board – Purpose and Operation
- Appendix 10: Report from 6th External Advisory Board Meeting, 21 November 2013

UC ANR and CA&ES Documents

- Appendix 11: MOU between UC DANR and UC Davis CA&ES
- Appendix 12: SAREP External Review documents
- Appendix 13: CA&ES Faculty Review of ASI

Themes and Possible Priorities

- Appendix 14. Results of the 2008 Online Consultation on Priorities

Education and Leadership Theme – Concept Notes

- Appendix 15: Experiential Learning for Post-Secondary Students
- Appendix 16: Formal Post-Secondary Education in Sustainable Agriculture and Food Systems
- Appendix 17: Education for Primary and Secondary School Audiences in Agriculture, Environment, Food & Nutrition
- Appendix 18: Cultivating Leadership in Sustainable Agriculture and Food Systems

Food and Society Theme – Concept Notes

- Appendix 19: Building Regional Markets and Communities
- Appendix 20: Community Food Security for Low-Income Residents
- Appendix 21: Food System Assessment/Food Policy
- Appendix 22: Farmworker Wellbeing

Agriculture, Resources and the Environment Theme – Concept Notes

- Appendix 23: Energy and Climate Footprinting of Food Production and Supply Chains
- Appendix 24: Responding to Climate Change
- Appendix 25: Sustainable Management of Nutrients and Water in Agriculture Landscapes
- Appendix 26: “Closing the Loop”: Integrating Sustainable Waste Management in Agriculture
- Appendix 27: Harnessing Ecosystem Services to Increase Agricultural Sustainability

Crosscutting Initiatives – Concept Notes

- Appendix 28: Benchmarks for Food System Sustainability
- Appendix 29: Farmworker and Rural Community Well-being

Communication and Fundraising

- Appendix 30: Our messages
- Appendix 31: Fenton Communications Strategy: Summary and full report
- Appendix 32: Fundraising Case for Support
- Appendix 33: Fundraising – ASI Grant Proposal Successes
- Appendix 34: Fundraising – Cumulative Philanthropic Support (current use gifts and endowments)
- Appendix 35: [*\[To be revised in 2015: Fundraising – Campaign Projections\]*](#)

SAREP Grant Program

- Appendix 36: SAREP-funded Projects 2011-2012