

**UCDAVIS**

**AGRICULTURAL SUSTAINABILITY INSTITUTE**

*College of Agricultural and Environmental Sciences*



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

**STRATEGIC SNAPSHOT AT NOVEMBER 2017**

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With contributions from many ASI staff members

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## OUR INSTITUTE AT A GLANCE

### November 2017

**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: Katharina Ullmann (since 2017)
- ◆ SAREP Deputy Director: Gail Feenstra (since 2014)
- ◆ Sustainable Sourcing Initiative Co-Director: Jim Quinn (since 2015)
- ◆ 26 other full and part-time staff of various programs and projects
- ◆ 1 post doc, 3 graduate student researchers, 1 teaching assistant, and 21 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.
- ◆ 17 additional 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.
- ◆ 15 academic colleagues serving on ASI's Academic Advisory Committee.
- ◆ A distinguished external advisory board of 25 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:** over \$4.3 million; campaign underway to increase to \$6 million.

## DIRECTOR'S MESSAGE

20 October 2017

Dear ASI Board members, guests, colleagues, friends,

As you can see in our proposed agenda for our meeting in Fresno on 2-4 November, we have a full schedule for our time together, including opportunities to build and deepen relationships, share information, and gain direct experience through field visits with local organizations. We begin with our evening gathering on Thursday, 2 November, which will be a time to connect and set the stage. During our main meeting on Friday, 3 November, we will critically discuss our evaluations of ASI communications and our efforts to promote racial equity; two areas where we have made some progress and yet we know we need to do more. The field trips on Saturday 4 November are intended to ground our discussions, particularly on social justice.

A big part of our Friday meeting will be a “World Café”: smaller, dynamic group discussions to dive deep into ASI's programs. At our meeting last year, we began a discussion of ASI's evolution and track record over its first decade. This year we are digging deeper into what ASI has delivered -- or failed to deliver. Looking back 5 years or so, what has ASI done well? What have been the failures or disappointments? What should ASI do more? What should ASI do less? What is ASI missing? What can we learn from this experience that will improve delivery going forward?

Next week, we will send you the 2017-2018 workplans for each of ASI's units. ASI staff have taken a longer view in planning this year, considering milestones over the past five years. These critical reflections will be a key input for the “World Café” session, which will lay the foundations for strategic planning and forward-looking strategy development in the year ahead.

We are fortunate to involve many guest observers in addition to our regular board members. As always, I am seeking creative, candid, challenging feedback and advice on ASI's strategic direction and our track record on delivering on that strategy. Particularly if you are new to ASI, you may wish to skim “ASI at a glance”, which gives a one-page overview of ASI (attached), with much more information available on our website ([www.asi.ucdavis.edu](http://www.asi.ucdavis.edu)).

For all of you who will be joining us on 2-4 November, best wishes for safe travels to Fresno. Please do not hesitate to contact me (cell: 530 574-2503) or Barbara Mohondro ([blmohondro@ucdavis.edu](mailto:blmohondro@ucdavis.edu)), if you have any questions or concerns regarding our agenda or the meeting arrangements.

Sincerely,

Tom

**Thomas P. Tomich**

W.K. Kellogg Endowed Chair in Sustainable Food Systems  
Founding Director, UC Davis Agricultural Sustainability Institute (ASI)  
Director, UC Sustainable Agriculture Research and Education Program (SAREP)  
Host, Inter-Institutional Network for Food, Agriculture and Sustainability (INFAS)  
Co-Editor, *Annual Review of Environment and Resources* ([www.annualreviews.org/loi/energy](http://www.annualreviews.org/loi/energy))  
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## ASI Top 25 For 2017

### SAREP: Agriculture, Resources, and the Environment

1. California Nitrogen Assessment recognized for its contribution to unprecedented partnerships between the agricultural sector and environmental justice advocates; California Rice Commission President and CEO Tim Johnson wrote: "The California Nitrogen Assessment provided a critical, early understanding of nitrogen impacts in the state, nitrogen use in agriculture and most importantly the trade-offs of policy solutions. Without this early work, presented objectively and based on data, current collaborative efforts between agriculture and the environmental justice community to find common solutions to drinking water problems for impacted communities would not be possible." These outcomes are built on successful meetings with growers, commodity groups, and environmental justice organizations.
2. Survey of agroforestry practices of farmers in Northern California and grant for SAREP's first agroforestry project (focusing on economics and ecology of elderberry trees in diverse landscapes).
3. Sonja Brodt appointed California state professional development co-coordinator for the [Western Sustainable Agriculture Research and Education Program](#) (WSARE), along with Jeff Stackhouse, UC Cooperative Extension (UCCE) Livestock and Natural Resource Advisor in Humboldt and Del Norte counties, with first year of funding going towards building social equity work at ASI and UC Division of Agriculture and Natural Resources (UC ANR).
4. Sonja Brodt designated co-leader of UC ANR Agroecology and Organic Farming Systems Work Group, along with Glen McGourty, UCCE Farm Advisor for Lake and Mendocino Counties. The new work group is intended to revitalize the defunct Organic Work Group.

### SAREP: Food and Society

5. Northern CA Collaborative Regional Alliance for Farmer Training created in partnership with the Farmers Guild, Grange Farm School, and Farmer Veteran Coalition, hosting farmer-to-farmer tours throughout the year.
6. County-level food system assessment of Kern County completed, a successful stakeholder-driven project.
7. California Food Hubs Network continued to grow. SAREP assessed the characteristics, needs, and impacts of California food hubs, hosted in-person workshops with managers from each food hub, and toured established food hubs.

### Russell Ranch Sustainable Agriculture Facility

8. Bumper crop of research at Russell Ranch with investigations of short and long term impacts of cover crops on soil structure, microbiology, carbon storage in tomato cropping systems, impact of manure inputs on soil resilience to water extremes, effect of long term cropping systems on soil microbiomes, interaction between irrigation and ecosystem services in soil.

9. National Press coverage for Kate Scow's work in soil microbiology thanks to a story in the *Washington Post*, viewed 2.6 million times.
10. Two successful workshops at Russell Ranch in a new series on principles of soil health in collaboration with SAREP.
11. Permanent home (one of two required) identified and occupied for Russell Ranch sample archives.
12. Kate Scow awarded the Nyle Brady Frontiers in Soil Science lectureship, giving the keynote at the international annual meeting of The American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America

### **Student Farm**

13. Katharina Ullmann appointed as new Student Farm director after a national search
14. Celebrated the Student Farm's 40<sup>th</sup> anniversary and the 30-year career of Mark Van Horn as director
15. Community Table Project distributed 10,000 pounds of free produce to students on campus through the campus food pantry.
16. New annual record: approximately 500 students engaged on a weekly basis for an academic quarter - as course enrollees, employees, volunteers or interns.
17. UC Global Food Initiative funded work with colleagues at UC Berkeley and UC Santa Cruz to expand experiential learning in food and agriculture systems and develop best-practice tool kits for use by other UC campuses and also by other colleges and universities.

### **Inter-institutional Network for Food, Agriculture and Sustainability (INFAS)**

18. Two INFAS members appointed to Association of Public and Land Grant Universities (APLU) 2050 Commission on Food Security; INFAS engaged additional members on all working groups to ensure inclusion of voices regarding sustainability in agriculture and food systems.
19. Response for broad dissemination crafted by INFAS members to the APLU Commission report, highlighting where the report fell short in addressing inequities and providing recommendations for improvement in social justice.
20. INFAS joined National Sustainable Agriculture Coalition (NSAC).

### **Food System Informatics**

21. National Science Foundation (NSF) and Environmental Protection Agency (EPA) grants for food systems informatics brought scientific recognition and funding to develop regional cases and our networks of scholars
22. Riparian Summit at UC Davis, bringing riparian scientists and conservation advocates to campus for a three-day workshop that included agriculture's role in riparian conservation.
23. 2<sup>nd</sup> annual IC-FOODS conference will take place 6-8 November at UC Davis

### **Social Equity**

24. Internal social equity assessment produced recommendations to improve ASI practices and programming to better meet equity goals
25. New funding from UC ANR to strengthen SAREP's capacities to promote social equity through its programs.

## 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: The vision for ASI developed at the inaugural external advisory board meeting in December 2008 now reflects ten years of refinements. Now in a fully “mature” form, this year’s snapshot includes greater detail on milestones attained in the past five years 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

ASI Strategic Snapshot at November 2017

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.

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

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. As a Network, our collaborative work goes beyond the vital work that participants do as individuals and within their networks; it will help to normalize a discourse that addresses social justice and the myriad interconnected environmental and economic challenges in the food system.

We strive to collaborate on difficult issues that can't be solved by any one person or institution, and that span boundaries in discourse and practice; challenges that a collaborative national network is positioned to pursue. We recognize that this will be a long-term effort and will take commitment to working together and with many partners.

INFAS, endowed by the W.K. Kellogg Foundation in 2010, had its inaugural meeting at UC Davis on November 11<sup>th</sup>, 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. In the last few years the Farm has strengthened its internship program and engaged its more experienced and advanced students as employees to serve as teachers, role models and mentors of their less experienced peers. These developments have been critical to effectively serve the rapidly increasing number of students involved in the program. The Farm’s Leadership Development Training Program for its student employees includes weekly group meetings with all student employees and employee workshops focusing on both technical skills and communication skills. These efforts have resulted in very positive changes in these student employees’ skill levels, confidence and performance, which have also improved the overall sense of community and functioning of the Student Farm.

More broadly, ASI-affiliated faculty and staff are also collaborating with interested students, faculty, staff and administrators to develop academic programs for the developing Sustainable Living and Learning Communities (SLLC) project in the Student Farm neighborhood. Student Farm staff and ASI-affiliated faculty helped develop the program vision for the SLLC and develop on- and off-campus partnerships to support program development and the planning, infrastructure and resource development necessary to support it.

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 collaborates with colleagues from the Plant Sciences department on research and education projects related to plant genetic diversity and breeding including a project focused on variety development for organic systems and training students to be plant breeders.

- 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, secondary, and community-based educators—and regional food producers:

- The Student Farm is contributing to the educational efforts of organizations such as the Center for Land Based Learning, Soil Born Farm, Urban Tilth and the California Institute for Rural Studies through serving on advisory committees, teaching classes and workshops, and hosting visits to the Farm.
- Collaborating with garden and farm based learning educators to offer an annual regional symposium on school gardening.
- Working towards institutionalizing successful school garden programs in public schools, through strategic conversations and collaborations with local, regional, and state leaders.

**Bachelor's degree in Sustainable Agriculture and Food Systems** – ASI helps support this interdisciplinary undergraduate major in various ways. ASI affiliates teach the major's core courses and serve as the major's master advisor and faculty advisors for each of major's three tracks.

The major is governed by a council of nine CA&ES department chairs, who meet at least once per year. The Department of Land, Air and Water Resources provides the administrative home and the academic advisor.

**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.

### II.3. People

*Thirty 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: Our core staffing levels have remained relatively steady at about 16 FTE over the last five years. We currently have 6 FTE of grant and temporarily 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 Kebreab) and other affiliated faculty in agroecology (A Gaudin), 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 to three 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 new ASI fellows each year. *All affiliated faculty are listed on ASI’s [website](#).*

### II.4. Annual funding:

*We estimate that the total core funding from CA&ES and ANR for the current fiscal year (2017/18) will be \$1,713,909 slightly above our funding level from previous years. Note: beginning in FY 13/14, the core funding income totals shown on Appendix 5 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 be about \$4.3 million for 2016/17.* 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. Please see Appendix 7A for a current view of ASI's advisory and accountability structures, including the 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

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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 website](#). 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.

- **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.
- **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. We are continuing to build and train 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.
- **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

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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. *Six UCCE specialists and advisors (Zaccaria, Lundy, Geisseler, Putnam, Miyao) are actively engaged in research and/or are key advisors at Russell Ranch.*

- **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.
- **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 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

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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. A \$50,000 gift from Kraft Foods in 2014 has supported further work.

### 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 Communications 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. The increased awareness of ASI by campus development leaders is an important development over the past several 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. Melissa focuses on fundraising for the Student Farm and Experiential Learning programs, 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 revenue 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/our-funding-and-support-1>.*

**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 used the November 2015 meeting of the External Advisory Board to discuss campaigns developed from two "big concepts" (of roughly \$50 million each in endowment and current gifts). The Associate Vice Chancellor for Campus Planning is continuing to collaborate with us on development of these place-based concepts.*

Plans, priorities and current status on ASI endowment efforts:

- Our first-ever year-end appeal for ASI was conducted in 2012.
- 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 just the current fiscal year, at

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\$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. *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: the \$1 million goal has been reached. Thanks to the \$200,000 leadership gift from TomKat Charitable Trust and additional gifts from Columbia Foundation, Gaia Fund, Clarence E. Heller Charitable Foundation, McClarty Family Foundation, and Gellert Foundation.*
- 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. *Project goal: all 72 acres adopted and core of donor support is identified for long term research.*

**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 part-time proposal coordinator, to support efforts by faculty and other partners to produce high-quality proposals for competitive extramural grants. *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

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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). 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.

#### **I. AGRICULTURE, RESOURCES AND THE ENVIRONMENT**

##### **SAREP 2012-2017 Milestones and Highlights**

###### **Energy and Climate Footprinting**

- SAREP: Completed and publicized work on life cycle assessments of six California crops: rice, honey, almonds, walnuts (including a case study of organic walnuts), peaches, and dried plums, and a comparative assessment of regional versus continental-scale supply chains for processed foods (tomato products). The almond work included pioneering new methods by ASI affiliate Alissa Kendall to account for medium-term sequestration of carbon in woody biomass and has been used by the Almond Board of California to engage policymakers. We also completed analytical work for a comprehensive LCA of processed tomato products, which includes assessment of impacts beyond energy and greenhouse gas footprinting.

###### **Responding to Climate Change**

- SAREP: provided input on the Science and Technical Advisory Council for the California Climate and Agriculture Network (CalCAN) and the editorial board of the California Agricultural Water Stewardship Initiative.

###### **Sustainable Management of Nutrients and Water in Agricultural Landscapes**

- SAREP: The California Nitrogen Assessment: Challenges and Solutions for People, Agriculture, and the Environment was published by UC Press in 2016. We conducted separate meetings with 11 distinct groups of stakeholder representatives ranging from commodity boards to government agencies and water quality advocates for input on the Executive Summary, and delivered two outreach workshops with ANR and external partners for growers and for community members affected by water quality issues in the San Joaquin Valley. We also gave numerous presentations on the CNA findings at relevant conferences and meetings.
- SAREP: Created the Solution Center for Nutrient Management, an information portal and networking platform focused on sustainable nutrient management strategies for California farms. Includes a website with 13 distinct resource pages on topics ranging from reduction of N<sub>2</sub>O emissions to soil health, 9 farmer profiles, and a searchable research database with over 230 entries with summaries for lay audiences. The website receives over 3,000 unique visits per year. We also held three online discussion forums with 100 registered users and two roundtable meetings with 23 farmers to encourage farmer-to-researcher and farmer-to-farmer networking.

### **Harnessing Ecosystem Services to Increase Agricultural Sustainability**

- SAREP: funded PhD student Margaret Lloyd (now UCCE Small Farms Advisor in Yolo County/Capital Corridor) to conduct research and create outreach products on use of compost and cover crops to control disease in strawberry production (as possible alternatives to methyl bromide).
- SAREP & Russell Ranch: Designed and conducted a half-day workshop for farmers on principles and practices to build soil health.
- SAREP: Initiated a new research and outreach area in diversified and perennial cropping systems (including agroforestry) with an exploratory survey to investigate the potential for expanding these strategies in California as a way to increase ecosystem services and improve farm productivity, and also to support those farmers already experimenting with these approaches.
- SAREP: Sonja Brodt is co-leading a renewed UC ANR work group on Agroecology and Organic Farming Systems, to enhance networking and collaboration in these areas across the UC system and beyond, and to raise the profile of research and outreach in these topics.

### **Russell Ranch Sustainable Agriculture Facility 2012-2017 Milestones and Highlights**

- Russell Ranch: Annual Russell Ranch field days focusing on irrigation, technology, soil health, nitrogen have brought together researchers, growers and other stakeholders (140-170 participants). We held special themed workshops on soil biology and soil health. We hosted CDFA Environmental Programs staff to observe techniques for soil health. We host several hundred visitors every year and are the go to place for sustainable agriculture and agriculture in general (via Dean Office, International Program Office, Global Affairs).
- Russell Ranch: We hired 3 farm staff members including mechanic who builds farm equipment for RR to reduce economic and environmental costs, as well as specialized equipment for researchers.
- Russell Ranch: We have created a new database for core data collected in the Century Experiment, as well as other experimental data. This database will be made available at a site hosted by the UC Davis Library.
- Russell Ranch: New publications include an overview of Century Experiment in California Agriculture and a database paper Ecological Archives (under review).
- Russell Ranch: annually hosts a number of field trips that are part of UCD courses, including SSC 100 (Southard, Introduction to Soil Science), SSC 109 (Horwath, Soil Nutrient Management), SSC 111 (Scow, Soil Microbiology), SSC 211 (Scow, Advanced Soil Microbiology). Students found differences in soil aggregate stability, soil carbon, and biodiversity in the following ranking: native grassland > organic > conventional. We encourage more courses at UCD to utilize Russell Ranch for field trips and class projects.

### **Sustainable Management of Nutrients and Water in Agricultural Landscapes**

- Russell Ranch: We are the 24rd year of our tomato-corn under organic, conventional and a mixed management system, and our wheat-fallow rotations. This includes a new 6-year rotation with 3 year alfalfa followed by tomato-corn-tomato that has proven to

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significantly increase yields of tomatoes and corn in rotation. An economic analysis of costs and benefits of integrating winter cover crops into tomato-corn rotations is underway.

- Russell Ranch: Analyses of our twenty-year soil survey of Century Experiment (3400 samples in 8 depth increments to 3 meters deep in 72 plots) have continued over past several years: total carbon and nitrogen, Fourier Throughput Infrared Spectroscopy (FTIR), Permanganate oxidizable carbon (POXc) and Olsen P. These unique long term data are valuable for determining the potential for California agricultural soils to sequester carbon and offset greenhouse gas emissions (Jessica Chiertas, Kate Scow, Amelie Gaudin, Toby O'Geen UCD)
- Russell Ranch: We have investigated potential to reduce fossil fuel based mineral N inputs with legumes as part of rotations in 2 treatment of the Century Experiment
- 4 years of data show ~30% reduction in mineral N input can be provided by using winter cover crops (vetch, bell bean, oats) in a tomato-corn rotations
- Mineral fertilizer N could be reduced in tomatoes following 3 years of alfalfa in a rotation
- Russell Ranch: We have installed subsurface drip irrigation in the Century Experiment in almost all irrigated rotations. A working group of farmers, faculty, extension specialists and postdocs have used data collected from installed water meters, soil moisture probes, and evapotranspiration sensors to better understand crop water demands and optimize water use in different systems and crops. We have compared different technologies available to determine how much water to apply using drip irrigation.
- Russell Ranch: A 3 year comparison of furrow and subsurface drip irrigation in the organic tomato-corn plots (with fertility from cover crops and composted poultry manure) has found that subsurface drip irrigation results in decreased microbial biomass and activity, as well as aggregate stability, compared to furrow irrigation (Deirdre Griffin, Amelie Gaudin, Kate Scow, UCD and UC ANR--funding from Wells Fargo and UC Water Center). This raises questions about trade-offs from reducing soil ecosystem services when irrigation water and distribution is significantly reduced.
- Russell Ranch: We collaborated on a \$416,150 grant with PowWow Energy "Irrigation optimization and well pump monitoring leveraging smart meter data" funded by the California Energy Commission. A demonstration field at Russell Ranch showed that substantially reducing energy and water inputs via irrigation did not reduce tomato yield or quality.
- Russell Ranch: We have established two experiments investigating irrigation management, including: i) comparison of subsurface drip (including different drip tapes, spacing of emitters) versus flood check in alfalfa; ii) effect of deficit irrigation in processing tomatoes (Daniele Zaccaria, Dan Putnam, Isaya Kisekka)
- Russell Ranch: We compiled soil phosphorus budgets--including major stocks, inputs and outputs--in different Russell Ranch farming systems (tomato-corn and wheat) and compared them to long term vegetable experiment in the Salinas Valley (Gabriel Maltais-Landry, Peter Vitousek, Stanford University).
- Russell Ranch: In wheat plots in Century Experiment we compare water productivity in SDI versus furrow irrigated wheat (in rotation with tomatoes) and compare how injected versus broadcast application of N improves grain protein content and apparent fertilizer

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recovery. The overall goal is to figure out if small grains rotated with crops like tomatoes could leverage the existing SDI setups of those crops to improve water and nitrogen use efficiency. (Mark Lundy UCD)

### **Responding to Climate Change**

- Russell Ranch: Two 30 feet towers for thermal radiometers have been installed in larger research plots (wheat and tomato) adjacent to Russell Ranch. The Century Experiment was one of the demonstration sites for weekly measurements of visible, IR, and thermal data. This was followed by UAV measurements in specific plots (Darren Drewry, Simon Hook NASA; Susan Ustin UCD)
- Russell Ranch: Research on our rain-fed wheat rotations, and in adjacent small plots, have focused on drought resistant and perennial wheat varieties from the Land Institute in Kansas, with the goal of identifying new varieties resistant to drought. In particular water and N productivity, as well as soil N and C as a function of productivity, was measured in perennial wheatgrass Kernza. The variety survived its first season in California without any irrigation in the driest year on record. Experiments are being expanded to larger plots to measure water and fertilizer interactions, carbon sequestration, rhizosphere communities and other parameters under more realistic conditions. Multiple benefits (grain-though low productivity, forage, and C farming) are being explored (Mark Lundy UCD)

### **Closing the Loop**

- Russell Ranch: We have investigated use of biodigestate—the by-product of biogas generation-- as a source of N fertility to grow tomatoes and corn. We measured performance of liquid and solid forms of anaerobically digested food waste and dairy manure perform. We found that fertigation in subsurface drip with liquid biodigestate from food but not dairy waste could support tomatoes at yields similar to those obtained with mineral fertigation systems. A solid form of biodigestate supported yields of furrow irrigated corn similar to those grown with mineral fertilizer. (Rhuihong Zhang, Sungpyo Kim, Kate Scow UCD; funded by California Department of Food and Agriculture (CDFA))
- Russell Ranch: We are in the 7th year of our long term biochar experiment looking at effects of this soil amendment made from pyrolyzed walnut hulls (from Dixon Ridge farm) on a tomato-corn rotation. We found biochar (10 tons/ha) boosted corn yields by 8% in year 2 but not year 4---after that the benefit disappeared. Also, biochar amendment changes water relations in soil: adding biochar (20 tons/ha) to sandy soil, but not the higher clay RR soil, increased soil water holding capacity by 17%. (Deirdre Griffin, Daoyuan Wang, Sanjai Parikh, Kate Scow, UCD).

### **Harnessing Ecosystem Services to Increase Agricultural Sustainability**

- Russell Ranch: For the past four years, Russell Ranch soils were used to study the effect of organic, conventional and mixed systems soil on survival of Shiga Toxin producing E. coli (STEC) on lettuce in growth chamber experiments. The organic managed soil appears to be more suppressive to the pathogen than conventional soil with the mixed system soil being intermediate in its response.

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- Russell Ranch: Biodiversity research during the past five years has focused on milkweed habitat for monarch butterflies and associated insects with an extensive corridor of milkweed plantings. Investigations focus on identifying factors determining consequences of species interactions, with a specific emphasis on factors that change over time. For example, monarch caterpillars do best on milkweed in the late spring and early fall and researchers are exploring roles of climatic factors, predator communities and changes in plant quality/defense (Louie Yang, UCD).
- Russell Ranch: We launched a soil health research and outreach program that includes data collection, surveying grower attitudes about soil biodiversity, special workshops, collaboration with NRCS, and development of outreach tools.

## **2017-2018 SAREP AGRICULTURE, RESOURCES AND THE ENVIRONMENT WORKPLAN**

### **Energy and Climate Footprinting**

- SAREP: Complete life cycle assessment of environmental impacts of processing tomato production and processing and disseminate results.
- SAREP: Continue engagement with Community Alliance for Agroecology around environmental justice concerns in relation to life cycle assessment and related research studies.

### **Responding to Climate Change**

- SAREP: Continue participation on Science/Technical Advisory Committee for the California Climate and Agriculture Network (CalCAN).

### **Sustainable Management of Nutrients and Water in Agricultural Landscapes**

- SAREP: Assess need for additional outreach products for the California Nitrogen Assessment, and collaborate with Cooperative Extension and other colleagues and external partners to create outreach events around the state.

### **Harnessing Ecosystem Services to Increase Agricultural Sustainability**

- SAREP: Publish a concept paper on current status and benefits of agroforestry systems, utilizing lessons from international case studies, and establish a web presence for this work on SAREP's website.
- SAREP: Conduct outreach on whole orchard recycling research project led by ASI affiliate Amelie Gaudin.
- SAREP: Begin new project on agronomic, economic, and marketing feasibility of elderberry hedgerows as a commercial specialty crop in California, as a means to incentivize more hedgerow planting.
- SAREP: Begin new project to develop e-learning modules for organic specialty crop farmers on key topics including nutrient and irrigation management, pest, disease and weed management, and farm economics and marketing, in collaboration with Organic Farming Research Foundation and Cal Poly San Luis Obispo.

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- SAREP: Continue to build networking and web presence around diversified and perennial farming systems and agroecology on SAREP's website.
- SAREP: Work with co-leader and members of the new UC ANR Agroecology and Organic Farming Systems Work Group to plan inaugural meeting activities at the ANR statewide conference

## **2017-2018 RUSSELL RANCH AGRICULTURE, RESOURCES AND THE ENVIRONMENT WORKPLAN**

### **Closing the Loop: Integrating Sustainable Waste Management in Agriculture**

- Expand experiments in small plots evaluating different agricultural waste materials for fertility, carbon sequestration potential, soil structure, drought resilience, and contamination.

### **Sustainable Management of Nutrients and Water in Agricultural Landscapes**

- Create real-time information integration platform (in collaboration with industry and engineers) to improve data collection from our experiments and help develop decision making tools using sensor, GIS and climatic data; fuel use and farm operations; and measurements on crops, inputs, soils, etc.
- Investigate short and long-term effects on agriculture and environment, costs and benefits, of winter cover crop use in conventional and organic row crop systems.
- Compare both experimentally and by modeling the effect of different irrigation management systems on crop resilience and economic return, agronomic properties, soil health, and ecosystem services

### **Harnessing Ecosystem Services to Increase Agricultural Sustainability**

- Soil biodiversity campaign—sequencing of microbial communities in different farming systems of Century Experiment at 20 years; functional analyses of microbial community responses to farming operations and inputs
- Increase data collection from Century Experiment: measure new parameters, more frequent measurements, improve laboratory capabilities, obtain base of funding to support.

### **Responding to Climate Change**

- Launch a climate smart agriculture outreach program at Russell Ranch that includes data collection, surveying grower attitudes about adaptation and mitigation with respect to climate change, and create outreach tools.

## **2. FOOD AND SOCIETY**

### **SAREP 2012-2017 Milestones and Highlights**

We collaborate with our county UCCE partners in all of the projects and programs described below. All projects are funded by extramural grants and gifts.

Sonja Brodt was selected as state co-coordinator (along with Cooperative Extension advisor Jeff Stackhouse), for the Western Sustainable Agriculture Research and Education (WSARE) Professional Development Program, to replace ASI affiliate Morgan Doran. This work entails administering annual funds of approximately \$20,000 for professional development in sustainable agriculture and food systems. The initial activities chosen for funding include professional training on achieving social equity in agriculture and food systems outreach work, to be conducted by SAREP staff, and travel grants to attend a SARE cover crops conference in winter, 2017, and the SARE national conference in spring 2018.

### **BUILDING REGIONAL MARKETS AND COMMUNITY**

#### **Farm to School**

- Expanded farm to school procurement evaluation across the state
- Conducted farm to school tours for policymakers and developed a policy brief
- Participating in evaluating two garden-based learning/nutrition education projects (Shaping Healthy Choices, Calaveras School District)
- Evaluating outcomes of ProCureWorks, a project to expand sustainable food procurement in large school districts and hospitals in California

#### **Values-based Supply Chains**

- Developed research and resources on values-based supply chains and food hubs (available on SAREP's website and in peer-reviewed journals)
- Conducting research with 4 other land grant universities on supporting small and medium-sized producers through values-based supply chains (specialty foods, food hubs)
- Developed a Northern California Food Hub Network

#### **Small, beginning, immigrant farmer marketing assistance**

- Conducted wholesale tours and developed marketing, food safety resources for these farmers
- Convened statewide educators who work with these farmers to target resources and collaborate more effectively together
- Conducting tours for beginning farmers at established farms (CRAFT) in 7 northern California counties.
- Working with Hmong farmers in Fresno to grow, process and build markets for dried Moringa.

### **Urban Agriculture**

- Assessed the state of urban ag work/outreach among extension professionals and urban farmers across the state, identifying needs, challenges and opportunities (peer-reviewed publication)
- Assisted with development of an ANR website on Urban Agriculture resources
- Conducted urban ag tours led by youth with associated curriculum
- Conducted marketing workshops for urban farmers as part of an urban ag workshop series statewide

### **Agritourism**

- Conducting agritourism workshops for ag professionals and developing topical resources guides in Northern and Southern California.

### **FOOD SYSTEM ASSESSMENTS/ FOOD POLICY**

- Completed two countywide food system assessments (San Luis Obispo, Kern), available on SAREP's website
- Partnering on a Food Policy Council research and outreach project, focusing on 10 case studies of food policy councils in California

### **FARM AND FOOD SYSTEM WORKERS AND HEALTHY RURAL COMMUNITIES**

- Completed two farmworker time and activity studies for DPR to update their data on pesticide exposure in caneberries and broccoli

### **SOCIAL AND RACIAL JUSTICE IN THE FOOD SYSTEM**

- Convening regular staff meetings about how to better address social and racial justice in our programming.
- Conducting a social/racial justice internal assessment
- Building community relationships to strengthen SAREP's capacity to better incorporate social/racial justice in its research and outreach
- Helped organize a national extension convening on Dismantling Racism in the Food System

## **2017-2018 SAREP FOOD AND SOCIETY WORKPLAN**

### **BUILDING REGIONAL MARKETS AND COMMUNITIES**

- Continue evaluation of farm to school and garden based learning projects (Calaveras, ProCureWorks); share results widely.
- Organize outreach for 2 AFRI projects (surveys of small and mid-scale farms) about participation in values-based supply chains.

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- Continue tours, outreach for small and medium-sized farms (wholesale tours, workshops, mixers); focus some on university/college food service, engage students.
- Continue working with Hmong farmers in Fresno, especially on developing buyer networks for Moringa.
- Continue coordinating Northern CA Food Hub Learning Community and increasing capacity for individual hubs to become more profitable. Explore new, viable markets.
- Participate in Urban Ag workshops for urban farmers, providing expertise on marketing.
- Develop and expand agritourism in California. Explore linkages with Art Councils
- Explore opportunities for small and medium-sized farms to work with food security initiatives on campuses.
- Explore opportunities to engage with CropMobster and ANR to build statewide food systems platform.

#### **FOOD SYSTEM ASSESSMENT/FOOD POLICY**

- Work with Kern County on using results of completed Kern County Food System Assessment
- Complete food policy council case studies and collaborate on statewide food policy council survey on use of research/information to inform policy.

#### **FARM AND FOOD SYSTEM WORKER HEALTH AND COMMUNITY WELLBEING**

- No plans to start new projects

#### **SOCIAL/RACIAL JUSTICE IN THE FOOD SYSTEM**

- Pursue internal and external capacity building on Social/Racial Justice in the Food System with funding (20% FTE total) from WSARE and ANR.
- SAREP Cross-cutting activity:
- Western SARE Professional Development Program, California statewide co-coordination (with UC Cooperative Extension Co-coordinator Jeff Stackhouse): select an advisory committee and administer travel grants for the National SARE conference and cover crops conference.

### **3. EDUCATION AND LEADERSHIP – INCLUDES STUDENT FARM**

#### **2012-2017 Milestones and Highlights**

##### **Recognizing leaders in the field of Sustainability**

- ASI has consistently brought together leaders in the field of sustainability by recognizing 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. Since 2012, the Bradford-Rominger Sustainability Leadership Award has gone to: Kenneth Tate (Extension Specialist, UC Davis, 2012), Rose Hayden-Smith (Ventura County UCCE, 2013), Mary Bianchi (San Luis Obispo UCCE, 2014), Dr. Isao Fujimoto (UC Davis Community Development and Asian Studies Senior Lecturer Emeritus, 2015), Dr. Daniel Mountjoy, (UC Alumnus currently with Sustainable Conservation, 2015), and David Lewis (Napa County UCCE, 2016). In addition to awardees, the following keynote speakers participated in this event: Craig McNamara (Sierra Orchards), LaDonna Redmund, (Food Justice Activist), Navina Khanna (Food Justice Activist), Patrick Mulvaney (Sacramento Farm to Fork), and Anya Fernald (Bel Campo).
- ASI also administers the Shapiro Family Award for best dissertation in agroecology or a related field.
- The Constant M. and Tempest B. van Vlierden Scholarship in Sustainable Agriculture were also awarded during this period; three SA&FS students were among the ten inaugural recipients during the 2011/2012 academic year.

##### **Student Farm**

- 2017 marked three significant events at the Student Farm: the farm's 40th anniversary, Mark Van Horn's retirement after 30 years of service and hiring of the new Student Farm Director, Katharina Ullmann.
- SF and ASI promoted Carol Hillhouse into role of Student Farm Associate Director in order to meet the Student Farm's growth and expansion while articulating and assessing learning within our expanding internships, by developing and rolling out the Leadership Development Training Program (LDTP), and by providing leadership in expanding new projects such as the Sustainable Living and Learning Communities (SLLC), the Community Table Project (CTP), and additional work with other UC partners in experiential learning in food and agriculture systems.
- The Student Farm experienced tremendous growth between 2012 and 2017; during this time period the number of students completing internships for academic credit rose from 50 students/year to 125 students/year. The total number of students engaged at the SF on a weekly basis for an academic quarter - as course enrollees, employees, volunteers or interns – is approximately 500/year. Additionally, we continue to employ between 12 to 20 students as Lead Student Farmers and Gardeners each quarter, funded in part through increased Market Garden sales and grant funds from the True North Foundation. In order to manage this growth, we have formalized and expanded the experiential learning opportunities available at the Student Farm.

**Formalizing opportunities:**

- Between 2012 and 2017 we initiated and made significant advancements in our Leadership Development Training Program (LDTP) for our Lead Student Farmers and Gardeners (LSF/Gs), i.e., student employees. This enhances the abilities of our LSF/Gs to effectively serve the rapidly increasing number of students involved at the SF.
- The SF's Kids in the Garden program expanded our winter training program for the students leading spring and fall tours into a formal 2-unit winter quarter course titled Garden and Farm-Based Experiential Education Methods (PLS 193). The class has consistently received high marks and praise from enrollees. Since 2012, roughly 10,000 of primary school children and 1,000 parent and teacher chaperones have participated in Kids in the Garden field trips to the Student Farm.
- We worked with SF staff and Assessment Lead from the Center for Educational Effectiveness, Dr. Kara Moloney, to create a curriculum map of SF's educational offerings. We also developed a new learning assessment method that we call the Field Learning Demonstration, or FLD, to better meet the needs of second and third quarter interns. The SF continues to partner with Dr. Moloney to study and improve our methods of assessing experiential learning.
- With support from the UC Global Food Initiative SF staff worked with UC colleagues to document experiential learning opportunities in sustainable agriculture and food systems across the UC. These were documented in a series of student-produced videos from several UC campuses, including three produced at UC Davis, and summarized in the GFI published guide: "Learning from the Ground Up". Additionally, this group hosted two workshops (one at our facility in Davis, one at UCLA) on experiential learning in sustainable agriculture and food systems within UC and co-sponsored the Sustainable Agriculture Education Association's national conference at UC Santa Cruz in July, 2016. Several student employees participated in the Davis workshop and the national conference in Santa Cruz. These events allowed our students to learn from, and interact professionally with, staff and students from campuses around the state and country who are engaged in similar work supporting experiential learning in sustainable agriculture on student farms.
- New support from UC GFI was awarded in May 2017. This is allowing us to work further with colleagues at UCB and UCSC to expand our experiential learning work in food and agriculture systems and develop best practices tool kits that can be shared with other UC and non-UC campuses that are newly engaging in this area.

**Expanding opportunities:**

- The 7-acre organic Market Garden increased the number of interns it can support, in part because sales almost doubled during the 2012-2015 time period. The Market Garden also continues to provide experiential learning opportunities through its compost program.
- Each quarter six interns work with the Flower Project learning to grow, harvest, arrange and market cut flowers for the campus market. The Flower Project is led by SF Program Rep Julia Schreiber.
- In 2016, the SF started a new GFI-funded Food Access project called the Community Table Project (CTP) to address food insecurity among UC Davis students. SF program staff and interns, working with several partners - including the Pantry and Fruit and

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Veggie Up, donated over 10,000 pounds of fresh, healthy organic SF produce to students. Simultaneously, SF staff and interns are expanding outreach efforts to increase the diversity of SF student participants and broaden the representation of those participating in the UC Davis food system. CTP currently provides approximately 10 student internships per quarter.

- Both graduate and undergraduate students are leading the development of new crop varieties of tomatoes, peppers, common beans and lima beans for organic farming systems. This is part of a \$1 million, four year grant from USDA Organic Research and Extension Initiative with colleagues from the Plant Sciences department and the Organic Seed Alliance.

**SF staff continue to cultivate a community where students have a voice.**

- Students have leadership roles at the Student Farm and organize 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.

**SF continues to be a leader in school gardens and the farm-to-school movement.**

- In collaboration 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 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. Funding from state agencies for these projects ended in 2013. More recently this work has been reflected in new partnerships with Yolo Farm to Fork to expand field trip offerings to older children and with Soil Born Farms to participate in their annual School Garden Symposiums as workshop leaders, coordinators. And finally, the new GFI Experiential Learning funding is allowing us to work with UCSC and UCB to develop a model for a campus-based school garden internship program placing college student interns from universities in surrounding communities.
- SF staff collaborated with research partners in the UCD Department of Nutrition to roll-out a multi-component farm to school 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. Carol Hillhouse supported school garden development at the research sites and led teacher workshops there. Gail Feenstra (SAREP) led the produce procurement research in the school districts studied and provided technical assistance.
- A SF and SAREP team planned a highly successful Farm to School bus tour that highlighted strong regional programs. The event allowed for leaders in this region to learn together and network with local, state, and national officials or their staff. This resulted in conversations between ASI staff, UCCE personnel, and staff for US Congressman John

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Garamendi and ultimately resulted in ASI hosting a roundtable with Congressman Garamendi, other regional officials and experienced stakeholders from his district. In this venue we are able to dialog and offer strategies for strengthening farm to school efforts here.

### **SF continues to play a leadership role in the ongoing development of the UC Davis Sustainable Living and Learning Community (SLLC)**

- The SLLC is a new campus neighborhood focused on farming, food, the built environment and sustainability. Coordination within the SLLC is an important part of the SF's growth and development planning, including programs, infrastructure and fundraising. The SLLC was one of two CAES projects supported and a semifinalist in the "Big Ideas" campus fundraising campaign. Currently, SF staff are working with faculty in Landscape Design and Architecture to secure funding for a community planning/visioning process while also communicating with those leading the campus Long Range Development Plan. SF has facilitated ongoing SLLC community member meetings for the last several years. In 2016, Carol Hillhouse organized a fall series of community workshops and students, with support from SF staff, organized a spring seminar both focused on the SLLC process.

### **Sustainable Agriculture and Food Systems major**

- In fall 2012, the first group of incoming freshman SA&FS majors started their studies. The program continues to grow and currently has more than 100 students enrolled. During this period, the SA&FS major was selected as winner of the MacArthur Foundation-funded Digital media learning grant competition and featured in an article in the Chronicle of Higher Education. ASI plays a key role in offering courses that are required for all SAF majors (e.g. PLS 15, 190 and the Senior Capstone Course – ESP191A and B) or can help SAF majors meet requirements of the curriculum (e.g. PLS 49, 193, and various internships)

## **2017-2018 STUDENT FARM WORKPLAN**

### **Post-Secondary Experiential Learning and Formal Post-Secondary Education**

- Maintain management practices and non-student staff positions in order to continue to offer effective mentoring and transformative experiences for the recently expanded SF student population.
- Advance the Student Farm program planning and development process. In particular, continue refining the LDTP and record best practices.
- Continue to develop the Community Table Project and the Flower Project and explore ways to increase the quantity and quality of internships and other learning opportunities at the Student Farm and elsewhere within ASI. Develop a plan for sustaining CTP past conclusion of GFI funding in September 2018.
- Continue supporting the organic breeding project SCOPE and other research and learning opportunities for graduate and undergraduate students.

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- Continue shepherding and contributing to the Sustainable Agriculture & Food Systems major by contributing to academic advising, teaching several core and other required courses, and providing in numerous internships for SA&FS majors.
- Further the development of the SLLC concept in collaboration with the different SLLC entities, faculty, departments and campus leadership in areas of planning and development. Continue engaging with campus planners and development staff and potential donors to move the SLLC forward.

#### **Education for Primary and Secondary School Audiences**

- Provide on-campus, hands-on educational programs in food, nutrition, agriculture and ecology to 2000 or more regional primary and secondary school students and their teachers and chaperones.
- In collaboration with researchers in taxonomy and crop development, offer fall tours for upper elementary students that provide basis for understanding how humans develop diverse food crops.
- Continue to collaborate with faculty within the School of Education to provide site and content for teacher credential program students in their science teaching methods class as well as for students in the environmental education course.
- 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.
- With other UC campuses develop effective programs for placing and mentoring UC students as interns in school garden programs within the region

#### **Cultivating Leadership in Sustainable Agriculture and Food Systems**

- Identify 2018 winner for the Bradford-Rominger Sustainability Leadership Award

#### 4. FOOD SYSTEM INFORMATICS (FORMERLY “SUSTAINABILITY BENCHMARKS”)

##### MILESTONES 2012-2017

Launched in late 2011 with a major gift from Mars Incorporated to support ASI’s Sustainable Sourcing of Agricultural Raw Materials project, from 2012 through 2017 this initiative has grown into a rich work area comprising information management and the development of decision-making tools to improve sustainability, complemented by a series of landscape level assessments that not only provide information for use in decision-making by food system actors, but which both use and are used to improve decision-making tools.

*Some major milestones and accomplishments during this period include:*

- Completion of a global food system sustainability benchmarking study in 2014, providing a backbone for defining and measuring food system sustainability and a comprehensive definition of sustainability through the lens of global commodity sourcing, synthesized from three perspectives: major international sustainability initiatives, global food manufacturers and business, and grassroots/livelihoods perspectives. This body of work includes standardization and cross-definition of both the issues related to sustainability (things we care about), and the indicators that can be used to measure them, evaluated through 2 distinct but related frameworks: impact (how agricultural supply chains effect the world around them) and vulnerability (how the world effects the sustainability of supply chains and/or the food system).
  - Major outputs from this benchmarking study include:
    - Global food system stakeholder consultations in 2011 and 2012
    - Food System Sustainability Ontology development & launch
    - Partnerships with myriad technology and food system actors. (See <http://asi.ucdavis.edu/programs/sustainable-sourcing> for list.)
- Development and launch of a “checklist generator” decision-making tool in 2015, using the “Food System Sustainability Ontology” as a basis for optimization algorithms that determine a minimum set of indicators that can be used to give comprehensive understanding of sustainability for a specific case. (Supported by Mars + supplementary funding from Kraft and Barilla). A California processing tomato workshop to test the prototype “checklist generator” with a wide range of stakeholders was held in August 2015 (with funding and participation by Barilla.)
- Four (4) peer reviewed publications and 1 op-ed piece (2014-2015. See ASI publications: <http://asi.ucdavis.edu/resources/asi-publications>)
- Launch of IC-FOODS in 2016. ASI is a founding partner of IC-FOODS, the “International Conference/Center/Consortium on Food Ontology Operability and Data Semantics” (<https://www.ic-foods.org/>), led by Matthew Lange in UC Davis Food, Science, and Technology Department, and supported through seed funding from the UC Davis Innovation Institute for Food and Health (IIFH). IC-FOODS is developing an informational platform that enables interconnection of technologies and datasets capable of supporting decision-making and automation, as well as appropriate levels of traceability and transparency. Our Food System Sustainability Ontology provides a cornerstone of the information continuum. A highly successful inaugural conference was held in November 2016, and the second annual conference is Nov. 6-8, 2017.

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- In partnership with Oxford University and Pace University Law School, ASI co-sponsored two workshops in what is foreseen as an annual series: “Modelling Food Systems for Sustainability” in July 2016 and “Food System Impact Valuation” in April 2017. Each of these initial workshops occurred at Oxford; in future the venue may rotate among partners. It also is envisioned that there will continue to be significant cross-over participation between these workshops and IC-FOODS.
- Food System Informatics is providing the scientific underpinnings for the burgeoning Internet of Food. Through the Oxford and IC-FOODS partnerships, ASI is leading the way in leveraging the resources mentioned above to further the design, assembly, and articulation of computable, international standard vocabularies for agriculture, food, and health, particularly as these relate to vulnerability, sustainability, and resilience of our food systems.
- A growing portfolio of inter-related regionally-focused activities:
  - In 2015 we secured funding and launched a project with the **Sacramento Area Council of Governments (SACOG)**. This use case is designed to evaluate the potential use of the “Sustainable Sourcing Checklist Generator” in an inclusive regional setting rather than a commodity-specific context. The goals of the project are to use input from a wide variety of stakeholders in the Sacramento region to identify the most important sustainability issues that the region faces and to identify a suite of indicators that efficiently and effectively provide metrics for tracking these issues.
  - In 2016-2017 we undertook the **Bay Area Regional Advance Mitigation Planning (RAMP)** project. RAMP is an ongoing statewide effort to develop a framework for conducting mitigation for impacts from infrastructure projects in a more systematic, effective manner. This effort is a collaboration between state and federal resource and infrastructure agencies, environmental non-profit organizations, and UC Davis. Working landscapes are a key part of these planning efforts, both for compensation for loss of farmland and through agricultural areas potentially serving as habitat for listed species.
  - ASI secured funding from the **Strategic Growth Council (SGC)** to collaborate with them and Conservation Biology Institute to develop **guidelines for development of Regional Conservation Assessments (RCA)**. RCA are an element of California state legislation AB 2087 and are being used to help guide conservation and infrastructure development in California. This project started in July 2017 and will continue into 2018.
  - In 2016 we successfully applied for major funding from the U.S. EPA to investigate links between human health, ecosystem service valuation, and sustainability indicators in the Sacramento region. This two-year project launched in October 2017.
  - We applied for funding from the **Southeast Connector JPA** for funding to augment the work conducted under the SACOG grant. A contract is currently being finalized for this stakeholder-focused work to begin.
  - The ASI team, in collaboration with other UC Davis researchers, SGC, and CBI submitted a funding proposal to the **California Landscape Conservation Cooperative (LCC)** to provide technical assistance for the LCC’s Central Valley Landscape Conservation Project. This ongoing project is an effort to coordinate planning and

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conservation efforts by multiple agencies and organizations in the working landscapes of the Central Valley. We expect to hear shortly whether or not the proposal was successful.

- The ASI team, in collaboration with Ohio State University, successfully applied for a 4-year grant from the **National Science Foundation** in 2017, to launch a Research Coordination Network on “Smart Regional Foodsheds”, which starts January 2018.

## 2017-2018 FOOD SYSTEMS INFORMATICS WORKPLAN

In 2017, ASI was awarded 2 major complementary grants funded by the National Science Foundation (NSF) and the Environmental Protection Agency (EPA) supporting this work, which will be implemented in combination with several smaller related grant projects already underway. Our workplan for 2017-18 is:

- Launch *NSF Smart Regional Foodsheds* project in January 2018, collaborating with various other workstreams.
- Continue work on the EPA-funded project. This will continue through the end of October 2018 (and beyond).
- Continue work on the SGC-funded project. This will be completed at the end of June 2018.
- Finalize the contract for the JPA project. Once finalized it will likely be a four month project, ending in the first half of 2018.
- Submit a funding proposal to California Department of Fish and Wildlife to assess the reintroduction of tule elk and pronghorn to the working landscapes of Solano County.
- Develop a manuscript for submission to a peer-reviewed publication describing the work undertaken for the SACOG and JPA projects.
- Continue as a full partner and part of the leadership team for the IC-FOODS effort and continue to build our strategic partnerships with Ohio State, Oxford, Pace University and others.
- Through these projects, the Food System Informatics team will:
  - Enhance the current information platform through integration of new sustainability issues, indicators, and other data types identified through case studies and other efforts.
  - Continue to design and focus the next phase of activity with key stakeholder collaborators.
  - Submit one or more large competitive grant proposals to fund further development of the informatics platform and case studies that demonstrate feasibility and proof of concept.
  - Continue to explore opportunities for further funding and in-kind support with corporate and philanthropic partners, and through competitive grants programs.
  - Develop a writing and publication plan to build the emerging field of food system informatics.
  - Begin to explore organizational options and possibilities to create a graduate degree program in food systems analysis at UC Davis.

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

### 2012-2017 Milestones and Highlights

2011-2012:

- Hired first staff member and elected the Executive Committee.
- Established communications via INFAS webpage and email list.

2012-2013:

- First in-person network meeting; Executive Committee co-chairs appointed.
- First mission statement and work-plan drafted.
- First group research activity convened.

2013-2014:

- Network elects to undertake a Network Design process.
- First workshop engagement with external food systems colleagues and activists: 'Ensuring Equity: The Potential of Activist-Academic Collaborations'
- First Network-coordinated publications by members.
- Coordinator establishes ASI Committee on Racial Equity/Social Justice

2014-2015:

- Network Design completed: collaborative efforts redefined to focus on "structural equality in the food system".
- INFAS "Statement on Equity in the Food System" publicly released.
- INFAS Vision Statement revised to reflect focus on structural equality.
- First public panel: "Perspectives on race, ethnicity, class, and gender in the food system."
- First engagement at a non-traditional setting: Professional Agricultural Workers Conference (PAWC) at Tuskegee University. Members hold a stakeholder engagement and listening session.

2015-2016:

- INFAS membership expands to 26 institutions.
- INFAS sponsors special journal issue on "Labor in the Food System" in JAFSCD; publishes first INFAS-authored article (by/about INFAS).
- First INFAS fellow completes project: member interviews/write-ups.
- First Network training on structural racism convened.

2016-2017:

- Two INFAS members appointed to APLUs 2050 Commission on Food Security; network acts to engage additional INFAS members on all working groups to ensure inclusion of sustainability in agriculture, food systems.
- Members meet to craft a response (for broad dissemination) to the APLU Commission report to highlight where the report fell short in addressing inequities and to provide recommendations for Universities to consider.
- INFAS joins NSAC (National Sustainable Agriculture Coalition)

## 2017-2018 INFAS WORKPLAN

The INFAS Coordinator will continue to assist ASI in promoting the value of racial and social equity on an Institute-wide level and seek input from a variety of stakeholders within and outside of ASI. Pending final discussion and budget approval from the INFAS Executive Committee (INFAS's governing body), the following areas of activity have been prioritized:

- Coordinate completion of INFAS written responses to the APLU's 2050 Commission on Food Security and disseminate in multiple outlets (audiences under discussion: (1) short blog aimed at the public; (2) mid-length white paper for academic networks, including Deans and University administration; (3) longer-length article intended for publication in a peer reviewed journal.
- Develop pilot INFAS Graduate Fellowship Program focusing on supporting early career scholars that engage in scholarship in the context of sustainable food systems in the areas of: racial inequity; social justice; structural inequality; structural racism; and/or intersectionality of oppression. Key objectives for this activity include to recognize and encourage future leaders and contributors in food systems work, with a focus on scholars that work in areas of social sustainability, and to cultivate new, creative thinking and approaches that will give new insights and perspectives to practitioners working with, and in, institutions of higher learning.
- Coordinate INFAS engagement and cultivate relationships with food systems and/or agriculture practitioners outside of the current network and in underrepresented areas, particularly the Southeast US.
- Continue to prioritize structural racism and inequities in the food system as network activities are considered and selected for engagement.

## **6. SOCIAL EQUITY**

2012-2017 Activities are detailed within each Program's milestones, above.

### **2017-2018 WORKPLAN**

- ASI will develop a Racial Equity Improvement plan with clearly defined goals and metrics. Progress on the Improvement Plan will be reported to the EAB and ASI's senior leadership annually.
- We will develop an organization-wide training plan to expand the abilities of all ASI employees in cultural responsiveness that is revised annual by the Social Equity Team, reviewed by Executive Leadership and submitted to the EAB for feedback.

#### **Resource Allocation and Contracting Practices**

- ASI will update our annual strategic report to the External Advisory Board and list how financial resources are directed to funded partnerships with community-based organizations and how funding is allocated to reduce specific disparities. We currently write about SAREP's funded partnerships in our Strategic Snapshot, we will add a list of community groups funded through SAREP's projects and partnerships.
- ASI will review our practices of choosing vendors and contractors to see if we can do more to engage with to minority-owned businesses, women-owned businesses, and emerging small businesses. We will ask existing UCD-created resources—Communicator's Network Vendors, Approved Caterers—to include this information in their lists.

#### **Data, Metrics and Quality Improvement**

- Data collection and analysis will be done annually to document progress and accountability on the standards in the Improvement Plan; Data is reviewed and endorsed by the Social Equity Committee with the final plan submitted to the ASI Director and EAB.
- ASI will develop mechanisms to track and document the race, ethnicity, and language status of our workforce (by program and rank), program participants, and event attendees. We will assign responsibility for data collection and analysis to at least one employee, and file this report with the Social Equity Committee. The Committee reviews and analyzes the report and shares findings with the ASI Director and EAB.

#### **Organizational Climate, Culture and Communications**

- Work with the CAES Dean's Office to ensure time sheets and official University communications are available in Spanish.

#### **Service Based Equity**

- Develop a relationship with a multilingual translation service and provide translation services to non-English speaking staff and program participants, as needed. Plan for translation costs in grant proposal planning for projects with a community outreach component.

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**Workforce Composition and Quality**

- ASI HR Staff develops a plan to diversify ASI's workforce, presents it to the Social Equity Committee, the ASI Director and the EAB, and integrate their feedback into a Diversification Plan that is filed annually with the EAB.

## 7. FUNDRAISING

### 2012-2017 FUNDRAISING MILESTONES AND HIGHLIGHTS

- Continue to build ASI's Sustainable Agriculture and Food Systems Endowment. Currently the corpus of the general endowment is at \$66,000. Income from this endowment can be used at the discretion of the Director to advance ASI. There were no new major (5+ figure) gifts in 16/17 though there are regular contributions at lower levels. ASI does have other endowed funds but our goal is to build this unrestricted endowment.
- Continue moving forward with campus-wide 'Big Ideas' fundraising initiative. While ASI's two 'Big Ideas' (Living Laboratory for Agroecology and Sustainable Living & Learning Communities at UC Davis) were not selected for the campus-level fundraising initiative, they were selected as priorities for College of Agricultural & Environmental Sciences-wide fundraising.
- Bring in at least \$1 million in competitive grant funding, emphasizing pursuit of larger grant opportunities and building strategic partnerships.  
Due to delays in federal funding, an award intended for FY16/17 year was instead awarded to ASI in FY17/18. Thus our competitive grant funding for 16/17 was \$946,000, rather than the expected \$1.5M.
- Bring in at least \$500,000 in various gifts for ASI programs.  
In FY16/17 ASI programs collectively received \$177,000 in gifts for various programs. We continue to work to build philanthropic support.
- Pursue at least one 7-figure competitive grant for ASI.  
We pursued numerous 6-figure grants but did not identify any suitable and timely 7-figure calls during FY16/17.
- Secure \$500,000+ to help establish the center for food system & health informatics.  
Completed. We recently secured a \$500,000 award from the National Science Foundation to build a network of researchers and food system stakeholders who will explore how to use informatics to build smart and connected foodsheds. This project will greatly enhance our efforts to establish this center.
- Secure \$200,000+ to meet increasing student demand for hands-on agricultural training at Student Farm.  
Student Farm secured ~\$138,000 in grants in FY16/17 and \$4,300 in unrestricted gifts to the program.
- Continue to build the Russell Ranch Endowment via Adopt-an-Acre or other gifts.  
We raised \$6,500 through the Adopt-an-Acre program.
- Continue to secure philanthropic funding for Ethnic Farmer Project and identify additional SAREP programs with philanthropic funding potential.  
We secured \$22,000 for this program.

**2017-2018 FUNDRAISING WORKPLAN**

- Bring in at least \$1 million in competitive grant funding, emphasizing the pursuit of larger grant opportunities and building strategic partnerships.  
We have already raised ~\$1.7M in competitive grant funding in 17/18, including a ~\$600,000 award that came late for 16/17.
- Bring in at least \$300,000 in various gifts for ASI programs, with emphasis on unrestricted funding or ASI endowment.  
Continue to build ASI's Sustainable Agriculture and Food Systems Endowment. This endowment must eventually exceed \$1 million and may be built through a mix of gifts from individuals, industry, foundations, and estate giving.
- Bring in at least one competitive grant and/or gift for ASI's healthy soils initiative.
- Continue to build funding for ASI's food system and health informatics initiative.

## **8. COMMUNICATIONS**

### **2012-2017 Milestones and Highlights**

- Greatly improved communications materials to reflect our programs and impact. This includes a redesign of our website, ASI program brochures, and templates to streamline the look of ASI outreach materials. ASI website page views have grown dramatically since the launch of our new website.
- Regularly produced high quality content on each of our programs highlighting research findings and impact as well as our partners and stakeholders. Content has included video production, blog posts on the ASI and UC ANR blogs, press releases, magazine articles, op-eds, and infographics. Nearly 57,000 people have viewed the videos ASI has produced, our ASI Blog posts have been viewed a total of 15,000 times, and blog posts on ANR blogs have received nearly 134,000 hits. We've seen moderate growth in media attention, including national media coverage for the California Nitrogen Assessment and stories on Soil Health featuring Russell Ranch.
- Developed a strong social media presence on major social media channels (Facebook, Twitter, Instagram), but there is still lots of room to grow our presence and better engage audiences.
- Developed the Solution Center for Nutrient Management and conducted rollout campaign for the California Nitrogen Assessment, including press release and op-ed, stakeholder input on development of executive summary, stakeholder meetings, and partnership with campus and ANR communications teams.
- Developed Contact Management Database (nearly complete) to better target audiences, track the growth of our network, and communicate more frequently with our audiences. In our 2017 communications evaluation, many people stated that they did not hear from ASI enough and would like more frequent communication.
- In a project funded by the UC Global Food Initiative, UC SAREP worked with undergraduate students from different UC campuses to compile an inventory of sustainable agriculture research happening around the different campuses. The project includes a database of research centers and institutes working on sustainable agriculture, highlights of different sustainable agriculture issues and how the UC is working on them, and an interactive map for users to explore the variety of topics the together comprise sustainable agriculture. The work is in its final stages and will soon become a new landing page for our "what is sustainable agriculture" webpage, the most visited page on the ASI website receiving over 200,000 pageviews each year.

### **2017-2018 COMMUNICATIONS WORKPLAN**

- Use findings from Communications Evaluation to direct the work of the ASI communications team. Focus on building stronger presence in media by developing relationships with journalists, looking for opportunities to write op-eds and other media stories.
- Complete our contact management database and train staff to use database.

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- Develop ASI newsletter to regularly communicate with our audiences. Newsletter will highlight high level research findings, opportunities to engage with ASI, and staff/faculty expertise.

## **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.

#### **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/external-advisory-board-meetings-1/2017-external-advisory-board>

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- Appendix 1: Organizational Structure
- Appendix 2: Programs and Facilities
- Appendix 3: Personnel
- Appendix 4: Core Staff and Grant Funded Staff (FY 06/07- FY 15/16)
- Appendix 5: ASI Annual Revenue (FY 07/08 – FY 16/18)
- 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 7th External Advisory Board Meeting, 15 November 2016

### **UC ANR and CA&ES Documents**

- Appendix 11A: MOU between UC DANR and UC Davis CA&ES
- Appendix 11B: Food and Agricultural Code Change
- 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 Agricultural 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