

**UCDAVIS**

**AGRICULTURAL SUSTAINABILITY INSTITUTE**

*College of Agricultural and Environmental Sciences*



UNIVERSITY OF CALIFORNIA DAVIS  
AGRICULTURAL SUSTAINABILITY INSTITUTE (ASI)

STRATEGIC SNAPSHOT AT NOVEMBER 2015

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Version 1.7 of 3 November 2015

(Original Version 1.0 of 8 December 2008)

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## OUR INSTITUTE AT A GLANCE

Update: November 2015

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

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

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

### *Thematic areas*

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

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

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

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

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

### *Programs and facilities*

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

Russell Ranch Sustainable Agriculture Facility at UC Davis

Student Farm at UC Davis

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

### *Team and associates*

- ◆ Director of ASI and SAREP: Tom Tomich (since 2007)
- ◆ ASI Deputy Director: Ermias Kebreab (since 2014)
- ◆ Russell Ranch Sustainable Agriculture Facility Director: Kate Scow (since 2008)
- ◆ Student Farm Director: Mark Van Horn (since 1987)
- ◆ SAREP Deputy Director: Gail Feenstra (since 2014)
- ◆ Sustainable Sourcing Initiative Director: Jim Quinn (since 2015)
- ◆ 30 other full and part-time staff of various programs and projects
- ◆ 2 post docs, 8 graduate student researchers, 3 teaching assistants, 1 research associate, and 21 student assistants

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- ◆ 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 27 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 \$3.4 million; campaign underway to increase to \$6 million.

## DIRECTOR'S MESSAGE

To: ASI External Advisory Board members, our guests, staff, and affiliated faculty  
From: Tom Tomich, Director, ASI & SAREP  
Date: 5 November 2015  
Re: External Advisory Board Meeting on Tuesday, 10 November, at UC Davis

My ASI colleagues have brought great energy and enthusiasm to preparations for our meeting with you on Tuesday. We look forward to a fun, fruitful day of big ideas and stimulating discussion. And, from you -- our board members and other guests -- we are seeking exactly what you do best: creative, candid, challenging feedback and advice on ASI's strategic direction.

As you can see in our proposed agenda (Attachment 1), to complement staff presentations, we are featuring some special guests. As is our tradition, our Board Chair, **Howard Shapiro**, of **Mars Incorporated**, will kick off the day with his inspirational welcoming remarks. **Glenda Humiston**, our new **Vice President of the UC Division of Agriculture and Natural Resources (ANR)**, will present her vision of SAREP's evolving roles as a statewide program of UC ANR. **Joann Lo**, **Co-Director, Food Chain Workers Alliance**, brings her practical insights on persistent social injustice in the food system to the challenging question: how to enact social justice and racial equity agendas in practice within ASI? And **Shaun Keister**, **Vice Chancellor for Development and Alumni Relations at UC Davis**, will brief us on plans for the next UC Davis campaign, which will be built upon "big ideas", as well as the indispensable roles that volunteers play in the success of such comprehensive campaigns. A one-page message (Attachment 2) from UC Davis Chancellor **Katehi** and Provost **Hexter** introduces the campaign and explains what is meant by "big ideas."

A significant portion of our day together will focus on further development of the "big ideas" that emerged from the brainstorming at our 2014 Board meeting. The work we launched with you in 2014 has been refined further over the past year, culminating in a pair of two-page white papers (Attachments 3 and 4), which were prepared for your review and critique.

I believe that, coming out of our meeting next Tuesday, ASI will be very well positioned to participate fully in the next UC Davis comprehensive campaign. Together we have the opportunity to take ASI to the next level, creating something both lasting and transformational for UC Davis, for California, and for our planet. *To prepare for our meeting, I request that everyone read the five pages of background on "big ideas" (Attachments 2, 3, and 4).*

These aspirations are grounded in our record of success over many years. Indeed, I believe this has been a year of new heights in ASI accomplishments. It is my pleasure to share my personal sample of our "top ten" for 2015 (Attachment 5). And, particularly if you are new to

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ASI, you may wish to skim this year's Strategic Snapshot, the annual update of our strategic plan. The 2015 Strategic Snapshot and all appendices are available at:

<http://asi.ucdavis.edu/about/external-advisory-board-meetings-1/2015-external-advisory-board>

For all of you who will be joining us next Tuesday, best wishes for safe travels to Davis. Please do not hesitate to contact me (cell: 530 574-2503) or Dianne Stassi ([dstassi@ucdavis.edu](mailto:dstassi@ucdavis.edu)), if you have any questions or concerns regarding our agenda or the meeting arrangements.

## I – STRATEGIC FRAMEWORK

### What distinguishes ASI?

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

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

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

**I.2. Our vision for food and agriculture:**

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

**I.3. Our vision for ASI:**

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

#### I.4. Geographic scope of ASI:

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

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

#### I.6. Our operational principles

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

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

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

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



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

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

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

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

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

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

## II - INSTITUTIONAL ASSETS

### ASI's foundations

#### II.1. Land Grant Heritage

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

#### II.2. Programs and Facilities

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

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

*INFAS currently has scholar participants at 24 institutions spanning 20 states and is in the process of expanding to encompass institutions in more states, including areas currently underrepresented in food systems and sustainable agriculture efforts, and more diverse populations.* Because it includes scholars from different disciplines, INFAS has the capacity to consolidate data and raise visibility about complex food system challenges and opportunities. Furthermore, individually we network extensively with diverse populations to link knowledge with action.

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

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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.”

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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

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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

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-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 2 - 3 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. In the past year, the Farm’s Leadership Development Training Program for its student employees included 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

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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 Community Development Unit of the Department of Human Ecology 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** (See Appendix 3 for ASI personnel list)

*Thirty-three staff* (full- and part-time), including a five-person core support team serving ASI, SAREP and all affiliated facilities and programs. ASI typically employs 2-3 postdoctoral scholars, 5-12 graduate student researchers and 10-20 undergraduate student assistants. *Status: As shown in Appendix 4, our core staffing levels have remained relatively steady at about 16 FTE over the last five years. We currently have the highest level (13 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. *Status: three new ASI Fellows were announced in 2015, Assist. Professor of Agroecology Amelie Gaudin (Plant Sciences), Professor of Entrepreneurship and Innovation Andy Hargadon (Graduate School of Management), and Professor of Sociology William Lacy (Human Ecology). 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 (2015/16) will be \$1,181,120, basically maintaining 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 increase to about \$3.4 million for 2015/16.* 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)

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connecting ASI to new constituencies and resources; (c) staying aware of the difference between their roles as external advisory board members and, in several cases, their roles as ASI partners; and (d) bringing multiple perspectives. A gradual process of transitions began in 2011, with some new members joining and some founding external advisory board members completing their service each year. Departing board members will be designated “board emeriti” and we look forward to their continuing involvement with ASI.

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

### *Scientific input to priority setting processes*

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

**III.2. Interdisciplinary, integrative activities**

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

- **Research.** ASI assembles and coordinates interdisciplinary teams to design, seek funding, and implement major sustainability science projects, hosted and managed by ASI. These research projects have the primary goal of identifying scientific principles and practices that enhance sustainability of agriculture and the food system. Priorities include (a) identification of emerging, scientifically-valid innovations and help move them from the margins to the mainstream, (b) coordination and support for long-term research, and (c) knowledge management to ensure that research methods, protocols, and results are archived, synthesized and made available for use by other researchers. For details, see sections IV.1, IV.2, IV.4.
- **Education.** ASI supports programs to educate students of any age, professionals, and the public regarding science-based sustainability principles and practices, exposing them to a variety of ideas, practical experiences, and divergent viewpoints on questions that remain controversial. For details, see section IV.3.
- **Grantmaking.** SAREP grants are a top program responsibility and a key ingredient in building support for sustainable agriculture and food systems activities. From 1987 – 2011, these grants have taken a variety of forms, including (but not limited to) both competitive grants and targeted “academic venture capital” grants for new initiatives. A list of awarded grant projects is available on [SAREP's 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.

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- **Meetings, conferences, symposia and other events.** ASI hosts a variety of scientific and social events, providing forums for stakeholder consultations, formation of collaborative partnerships, and implementation of research education and outreach activities. ASI events provide a “safe space” to convene people with differing (even conflicting) views, unveil controversy, deepen understanding, and to build consensus for action or support public discussion where no consensus yet exists. ASI has institutionalized “working agreements” to ensure interactions are based on mutual respect.

### III.3. Leadership, collaboration, and coordination

#### **Internal accountability and coordination**

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

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

*Collaboration and coordination with students, faculty and cooperative extension*

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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 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. *Status: 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

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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 new Inter-institutional Network for Food and Agricultural Sustainability (INFAS).** The INFAS network was endowed by the W.K. Kellogg Foundation with a \$1.5 million gift in 2010. ASI hosts and coordinates INFAS, which is a national network of more than 24 academic leaders in sustainable agriculture and food systems, including directors of counterpart centers and holders of endowed chairs at land grant universities and other academic institutions across the US. A national coordinator for INFAS was recruited in 2012 and is based with ASI. With unanimous support from members of the INFAS executive committee, the half-time national coordinator position was made permanent in 2013 and is funded with INFAS endowment income.
- **Global connections.** The ASI Director and other UC faculty have extensive professional relationships internationally that will provide the basis for an envisioned international network of leaders in sustainable agriculture and food systems. In collaboration with the Information Center for the Environment (ICE) at UC Davis, ASI launched its first global project in 2011 with \$875,000 from Mars Incorporated to develop a framework for indicators of environmental, social, and economic sustainability of crops and raw materials being sourced by global food companies. This project engaged representatives of multiple stakeholders in global supply chains for key crops and livestock products and has coordinated closely with Mars' evolving sustainability initiative. The first phase of the

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Mars-funded project was completed successfully in 2013. A \$50,000 gift from Kraft Foods in 2014 has supported further work. *Status: a new partnership with Johan Six's group in the World Food Systems Center at ETH-Zurich has been supporting a one-year ASI-ETH joint appointment for Ruthie Musker's work with our continuing Sustainable Sourcing work. Ruthie's time in Zurich has also provided a launch pad for building and expanding ASI's collaboration with the informatics wing of the UN's Food and Agricultural Organization (FAO), and building relations with a variety of new partners, including a budding new partnership with Barilla Group.*

### III.5. Fundraising

Fundraising is a major preoccupation for the entire ASI team. Our Directors of Major Gifts from the CA&ES Dean's office, our Communication Coordinator, Proposal Coordinator, and Budget and Finance Officer each play indispensable roles in providing support to the ASI Director, Deputy Director, Program Manager, Academic Coordinators, and faculty affiliates in these efforts. In addition to the team effort, implementation of our fundraising strategy must be supported by a compelling, socially relevant vision and mission, a results-oriented plan of activities, and an exciting strategy for communication, public awareness and engagement. Success also will depend crucially on active involvement and support from our advisory board members, UC leadership, and other friends and partners of ASI. ASI units and programs increasingly are viewed as campus-wide assets, which has opened opportunities to gain attention from "central" campus development. 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. Patrick Nolan joined the CA&ES development team in April 2014 and devotes a majority of his attention to ASI development prospects. Patrick focuses on fundraising for the Student Farm and Experiential Learning programs, enabling Melissa to focus on the Russell Ranch Sustainable Agriculture Facility and other ASI endowments, including the campaign to endow an agroecology professorship.

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

We are implementing a multi-year campaign to pursue three ambitious fundraising goals (listed below). *Status: Please see Appendix 5 for data on annual income since fiscal year 2007/08, Appendix 33 for information on our grant proposal submissions, and Appendix 34 on cumulative totals for ASI endowments. Public documentation of our multiple sources of funding is available on our ASI website at <http://asi.ucdavis.edu/about/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 will use the October 2014 meeting of the External Advisory Board to begin this discussion, by envisioning campaigns developed from two "big concepts" (of roughly \$50 million each in endowment and current gifts). The Associate Vice Chancellor for Campus Planning is collaborating with us on development of these place-based concepts. We will be elaborating these and testing their feasibility over the coming year.*

**Plans, priorities and current status on ASI endowment efforts:**

- Our first-ever year-end appeal for ASI was conducted in 2012. *Status: the year-end appeals have had some success and will be repeated.*
- Grow the **Sustainable Agriculture and Food Systems Endowment to support the Agricultural Sustainability Institute** in perpetuity. The Sustainable Agriculture and Food Systems Endowment to support the Agricultural Sustainability Institute is a general endowment fund to be used at the discretion of the ASI Director to support all aspects of the ASI program. **ASI urgently needs to replace a significant source of income from the Rosenberg Endowment (committed by CA&ES for just 1 more year, at \$75,000 annually).** Endowments are critical resources for building ASI programs. The reliability and flexibility of these significant flows of income is essential if ASI is to be proactive in setting the agenda for sustainability science and action rather than merely reacting to agendas set by others. *Status as of November 2015: the endowment stands at \$52,335. This is the fund that receives online gifts to ASI; building this endowment continues to be a priority.*

*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. *Status as of November 2015: \$97,200 has been raised for this endowment. 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 half-time proposal coordinator, to support efforts by faculty and other partners to produce high-quality proposals for competitive extramural grants. Our half-time proposal coordinator began working in January 2010, and numbers show that ASI’s grant activity has steadily increased. *Status: As a positive follow to last year’s somewhat disappointing grant cycle, ASI is back on track and has secured \$1.9 million in new grant funds during fiscal year 2014/2015. Twenty-two of the 37 proposals ASI submitted were successful, which is a large number of proposals for us. 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

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

## IV – THEMES, MILESTONES, INITIATIVES, & CURRENT WORKPLANS

### Next Steps for ASI work

Overall status: the current thematic structure and priorities for ASI initiatives is working well, though it will be some time before ASI has resources sufficient to pursue all proposed initiatives. *Blue text below indicates 2014/2015 milestones. Green text indicates 2015/16 workplans.*

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

##### Milestones and Progress on 2014/2015 Workplans

*Completed all baseline models for California almond, walnut, peaches and plums for a CDFA-funded project on Life Cycle Assessment of Air Emissions and Greenhouse Gas Offset Potentials in Perennial Fruit and Nut Crops. These models indicate that nutrient management and irrigation contribute the most to orchard life cycle emissions and that strategic use of woody biomass can provide very substantial offsets (Elias Marvinney PhD project).*

*Presented results of the orchard crops life cycle assessment at several grower and commodity group meetings around California, and at the California Climate and Agriculture Summit. Completed website and policy-oriented factsheets on project results and collaborated with the California Climate and Agriculture Network to disseminate them.*

*Received a new gift from Barilla to conduct a comprehensive life cycle assessment of historical changes in environmental and human health impacts of the processing tomato production and processing industry in California.*

*Conducted a strategic assessment and brainstorming meeting with internal and external colleagues to strategize future work priorities for the Climate Footprinting Initiative.*

*Completed stakeholder review and revisions of all remaining chapters of the California Nitrogen Assessment (CNA) report, and submitted the finalized book manuscript to UC Press, for publication in Spring 2016.*

*Completed new informational webpages, farmer profiles, and close to 100 database entries for the website of the Solution Center for Nutrient Management. Launched new online discussion forum with 100 members, and organized 2 grower roundtable meetings. Reached out to over 50 faculty and Cooperative Extension colleagues to solicit their engagement and input.*

*Completed funding of PhD work (Margaret Lloyd) to investigate alternatives to methyl bromide, focusing on compost and crop rotation, for managing disease in strawberry production. Margaret Lloyd was recently hired as the new Small Farms Advisor for UC Cooperative Extension.*

## Russell Ranch Sustainable Agriculture Facility

*Russell Ranch field day, “Nitrogen through soil, space and time: Using tools to improve N cycling” on May 21st, brought together researchers, growers and other stakeholders with a total of 160 attendees.*

*Analyses are continuing for the ten-year soil survey of Century Experiment (3400 samples in 8 depth increments to 3 meters deep in 72 plots) for the following properties: total and available carbon and nitrogen, Fourier Throughput Infrared Spectroscopy (FTIR), phosphorus.*

*A working group of faculty, extension specialists and a post-doctoral scholar completed an initial year of data collection with seven installed water meters (Hydropass and MagMeter), soil moisture probes, and Tule evapotranspiration sensors with the Wells Fargo Water and Irrigation Initiative. Drip irrigation was successfully installed in the conventional corn-tomato rotations and a drip-furrow comparison was conducted in the long-term organic rotations with Dr. Amelie Gaudin (Plant Sciences) to study the effect of lateral soil moisture on the nitrogen mineralization of cover crops and uptake by field corn and processing tomatoes.*

*Russell Ranch received funding of \$416,150 from the California Energy Commission as a collaborator with PowWow Energy, Co., for a grant on “Irrigation optimization and well pump monitoring leveraging smart meter data”. We will implement demonstration fields at Russell Ranch for water savings in tomato and alfalfa, as well as collaborate with four other farms.*

*Russell Ranch received funding (\$30K) for a grant to the UC Water program for “Application of innovative technologies for estimating water use in irrigated row crops for use in water resource management and planning” that will allow for increased instrumentation and water meters in the Century Experiment.*

*In collaboration with the Jet Propulsion Laboratory (JPL) at NASA, two 30 feet towers were installed in surrounding fields for thermal radiometers, and plans exist for 2016 for UAV flights. Collaboration with Susan Ustin’s lab led to Russell Ranch selected as demonstration site by TerrAvion and weekly visible, IR, and thermal data are available for past 2 years’ growing seasons.*

*As part of RR’s “close the loop” objective, we evaluated the use of anaerobically digested food waste and dairy manure as fertilizer sources in a project funded by the California Department of Food and Agriculture (CDFA) in collaboration with Professor Ruihong Zhang (Biological and Agricultural Engineering) in 2015 and will continue in 2016. A visiting professor, Sungpyo Kim, from Korea is investigating the potential to extract mineral fertilizer from the biodigestate.*

*Addition of biochar to soil from our long term biochar plots resulted in improved soil aggregate structure, small increases in water retention, and reduced mobility of pesticides. Addition of biochar had no effect on corn yields in the long term biochar plots in 2015, in contrast to an*

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*8% increase in yields in 2013. (Daoyuan Wang from China and UCD grad student Deirdre Griffin)*

*Research on soil phosphorus in the Century Experiment revealed soil phosphorus build-up in the organic system due to constrained stoichiometry of the manure amendment (Gabriel Maltais-Landry, Peter Vitousek, Stanford University, paper submitted to Agriculture Ecosystems and Environment, 2015).*

*Research on the effect of irrigation and annual rainfall on the isotopic composition of cellulose in the long-term irrigated and rainfed wheat plots.*

*Ten undergraduates participated in a special 2 quarter seminar entitled “Soil Sampling internship” led by LAWR Professors Toby O’Geen and Randy Dahlgren and analyzed four systems (nine samples each) for a range of soil properties. The students found higher extractable sodium in the tomato-corn rotations as compared to the wheat rotations and higher nitrate at depth in the organic corn-tomato system compared to the other systems.*

*A visiting professor from Brazil, Ademir Araujo, is researching the effect of soil history of legumes on nodulation of different bean varieties from different continents.*

*A researcher from USDA-ARS is using Russell Ranch soils to study the effect of organic and conventional soil on microbial pathogen survival in a greenhouse experiment with lettuce.*

*A research scientist at UC Davis discovered that an addition of a nitrogen source (urea) to Russell Ranch soils led to increases in water stable microaggregates in organic system soils and decreases in conventional soils.*

*A graduate student found that when composted manure was added to Russell Ranch soils, microbial communities from soils with lower initial microbial biomass and nutrients (especially the no input wheat soil) increased respiration more slowly than organic soils, but approached organic rates within 2-4 days.*

*Milkweed research plots studied by Professor Louie Yang were expanded at the edge of the Century Experiment, due to the successful establishment and monitoring of monarch butterfly grazing patterns.*

*A native plant front entry garden was installed in collaboration with the UC Davis Arboretum and Public Garden.*

*Whole wheat flour was milled for UC Davis’s Dining Service for a second year and 14,000 lbs. was delivered for the campus bakery and pizza production.*

*A number of laboratories associated with UCD courses have been developed that include one or two field trips to Russell Ranch including SSC 100 (Introduction to Soil Science), SSC 109*

## 2015/2016 Workplans

### Energy and Climate Footprinting

- *Complete analysis of energy use and greenhouse gas emissions in almond processing and distribution networks.*
- *Begin data collection and analysis for Barilla-funded comprehensive life cycle assessment of past and present-day tomato production and processing.*

### Responding to Climate Change

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

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

- *Work with UC Press production process to complete the California Nitrogen Assessment paper and online book, The California Nitrogen Assessment: Challenges and Solutions for People, Agriculture, and the Environment, with anticipated publication date in Spring, 2016.*
- *Continue to develop outreach products for the California Nitrogen Assessment, and incorporate into Solution Center for Nutrient Management.*
- *Continue work on website content and networking events for SAREP Solution Center for Nutrient Management.*
- *Continue development of strategy for instrumentation of Century Experiment for research on water use, nitrate leaching and greenhouse gas emissions, using sensor technology and wireless data collection, through collaboration with UCD faculty, private sector, and NASA.*
- *Analyze the long-term soil samples (20<sup>th</sup> year) of the century experiment for multiple depths and properties, including microbial communities, soil carbon, nitrogen and other elements.*
  - *Support collaborative research projects of UCCE specialists and advisors at Russell Ranch*

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

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

### Harnessing Ecosystem Services to Increase Agricultural Sustainability

- *Create communications products on alternatives to methyl bromide for managing disease and improving soil health, and integrate relevant content on compost amendments and crop rotation into Solution Center for Nutrient Management website.*
- *Initiate pilot project to explore feasibility of building a new California-based on-farm research and outreach network on the agroecosystem benefits and challenges of mixed cropping systems that integrate perennial crops with annuals and/or livestock.*

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- *Collect on farm data for supporting groundwater modelling for Russell Ranch and surrounding area, using real-time groundwater level data, in collaboration with Graham Fogg.*
- *Obtain water meters and soil sensors for more plots at Russell Ranch (target 50% equipped).*
- *Upgrade Russell Ranch database to include real-time data from weather station and soil moisture probes, increased operational data on fuel use and tillage, and develop capacity to record data on farm operations in the field.*
- *Launch a soil health outreach program at Russell Ranch that includes data collection, surveying grower attitudes about soil biodiversity, and create outreach tools.*



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

### Milestones and Progress on 2014/2015 Workplans

- *Hired 2 new very competent employees—Shosha Capps, community food systems analyst (fall 2014) and Gwenael Engelskirchen, sustainable supply chain analyst (fall 2015). Our current sustainable supply chain analyst, Thomas Nelson, is leaving at the end of the year.*

### Building Regional Markets and Communities

- *We successfully raised \$333,000 from 2 USDA AFRI grants to conduct new research and outreach supporting values-based supply chains and \$175,000 from 3 Global Food Initiative (UCOP) grants to support farm to school and urban agriculture outreach and a Food Hub Learning Community. For one of the AFRI grants, we surveyed 300+ Specialty Food Businesses to determine markets for small and mid-scale producers (dairy, produce, charcuterie, grains).*
- *We conducted 2 Farmer Wholesale Tours (one in the Bay Area; one in Fresno) to introduce small, beginning and immigrant farmers to new markets. We followed up with 2 Fresno workshops for Hmong farmers on food safety and labeling. We are collecting six-month follow-up outcome/impact data from the tours. We are building our relationship with Farm Credit.*
- *We continued to support farm-to-school programs with evaluation research in all Yolo County school districts and summarized results for funders, school districts, community partners, the public and policy makers. We shared the Farm to School Evaluation Framework with California farm to school practitioners. We are currently working on a peer-reviewed article and UC Delivers with the Nutrition Dept on the Shaping Healthy Choices project.*
- *We conducted 2 Farm to School Tours for Policymakers (one in Riverside; one in Sacramento). We are currently working with Congressman Garamendi's office to convene a roundtable of district stakeholders to discuss possible policy directions to support farm to school.*
- *We collaborated on and disseminated a Policy Brief on Urban Agriculture with Rachel Surls (UCCE, Los Angeles) and Claire Napawan (UCD Environmental Design).*
- *We completed 2 Youth-led Urban Ag Tours (one in the Bay Area; one in LA) with Rachel Surls (UCCE LA) and community partners (WOW Farms; Social Justice Learning Institute).*
- *Worked with UCD graduate student to conduct qualitative interviews of food system practitioners about their perceptions of a regional food system—benefits, roles, directions for change. This will be part of an economic impact analysis of the regional food systems in 4 counties-Yolo, Sacramento, Placer and El Dorado.*

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- *We are participating in a new Economic Development Task Force formed by ANR VP, Glenda Humiston, to explore the connections with CA Agriculture and sustainable food systems.*

### **Community Food Security**

- *We are building relationships with food systems practitioners and public agencies in Kern County to document the state of food insecurity, map trends, and describe efforts to improve access to food resources and build entrepreneurial food enterprises.*

### **Food System Assessments/Food Policy**

- *We are working with the Kern County Food Policy Council to conduct a countywide Food System Assessment using food system indicators to show progress toward community selected goals.*
- *We are participating in the Yolo Ag and Food Systems Alliance, on the UC Davis Connection Committee to facilitate more robust connections with UC Davis research.*

### **2015/2016 Workplans**

- *Overall fundraising across all initiatives in Food and Society. Include social justice component in as many proposals as possible.*

### **Building Regional Markets and Communities/Community Food Security**

- *Continue supporting farm-to-school programs and evaluation research in Yolo and Sacramento County school districts and statewide. Write policy briefs, UC Delivers and peer-reviewed articles.*
- *Expand collaboration with Nutrition Dept. and UC CalFresh linking our procurement/cafeteria evaluations and nutrition education, garden-based learning, and community education to reduce obesity.*
- *Conduct 2 Farmer Wholesale Tours (LA; San Diego farmers). Follow-up with farmers from small, beginning, ethnic farmer tours with consultations and farmer-to-farmer meetings; gather outcome and impact data. Build relationship with Farm Credit.*
- *Organize a statewide Summit of organizations that are helping small, beginning, immigrant farmers to discuss strategic directions.*
- *Expand values-based supply chain initiative through collaborative research and extension projects on a) farmers' experiences with values-based supply chains/ food hubs and b) farmers' participation in the specialty processed foods industry (AFRI grants).*
- *Expand Urban Agriculture research and outreach in California with 2 additional UA tours led by youth. Include video component in next 2 tours (possibly created by youth).*
- *Write up and disseminate collaborative research on the economic impact of regional food systems, focusing on the qualitative impacts of regional food systems for communities.*

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**Community Food Security**

- *Link food security with ag and community economic development opportunities through various projects (Kern County Food System Assessment is one example).*

**Food System Assessments/ Food Policy**

- *Work with the Ag, Resources and Environment team to test the indicator generator framework by applying it to several existing county food system assessments.*
- *Complete and do outreach around the Kern County Food System Assessment.*
- *Discuss doing a Food System Assessment with the Sonoma Food Policy Council.*

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

#### Milestones and Progress on 2014/2015 Workplans

- *We continued our traditions of recognition by awarding the annual **Bradford- Rominger Sustainability Leadership Award** and the **Shapiro Family Award** for best dissertation in agroecology or a related field. We were very pleased to present the 2015 Eric Bradford and Charlie Rominger Agricultural Sustainability Leadership Award to UC Davis Senior Lecturer Emeritus, Dr. Isao Fujimoto. The award recognizes the work of a UC colleague who epitomizes the qualities of two great figures in California agriculture -- livestock geneticist Eric Bradford and sustainable farmer Charlie Rominger. Food Justice Activist and UC Davis alumna Navina Khanna gave a thought-provoking speech entitled *Claim Your Superpower* and the Student Farm hosted her for a morning potluck to continue the discussion with students.*

#### Student Farm

- *The Student Farm made new and significant advancements in student mentoring and leadership development this year. Our strategy of enlisting our more experienced and advanced students as employees to help us maintain and enhance our educational program to serve the rapidly increasing number of students involved in the program has really come to fruition in the last year. In the past year, our Leadership Development Training Program included weekly group meetings with all student employees and a series of nine workshops in two broad areas: technical skills, which focus on practical aspects of farming and gardening, and communication skills, which focus on the student employees' developing and maintaining positive relationships with the students they are helping mentor. This effort has resulted in very positive changes in our student employees' skill levels, confidence and performance, which have also improved the overall sense of community and functioning of the Student Farm.*
- *Students also organized various activities and events such as social events, 'farm dialogues,' and student-led skills workshops in areas outside normal SF activities. In addition to helping students learn from one another and develop their leadership capacity, these events strengthen the SF community and students' voice in the Farm's development.*
- *The SF's Kids in the Garden program offered our winter training program for the students leading these tours as a formal course (PLS 193) for the first time in winter 2015. The course was very successful and received high marks and praise from the enrollees.*
- *SF staff played important roles in the ongoing development of the UC Davis Sustainable Living and Learning Community (SLLC). Coordination within the SLLC is an important part of the SF's growth and development planning, including programs, infrastructure and fundraising, over the next several years.*
- *Within the UC Global Food Initiative we collaborated with colleagues from other UC campuses to develop a report and inventory highlighting experiential learning in sustainable agriculture and food systems in the UC. With the same group we began planning a northern California workshop on experiential learning at UC Davis and a conference on the same topic*

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*at UC Santa Cruz. We also mentored UC Davis students who are developing videos on this topic with financial support from UC GFI.*

- *SF launched a new project funded by a \$1 million grant from USDA Organic Research and Extension Initiative with colleagues from the Plant Sciences department. The project will develop crop varieties for organic farming systems and simultaneously train graduate and undergraduate students in the practical aspects of plant breeding.*
- *SF staff collaborated with partners on campus and around the state on several of grant-funded projects focused on school gardens, garden-based education and farm-to-school. These have included train-the-trainer programs to reach diverse communities and provide professional development, training and support for teachers, nutritionists, garden educators, food service providers, farmers and others involved in developing regional farm to school networks and school garden programs. With our partners, we have awarded 90 mini-grants over three years for trainers to deliver our school garden trainings in their own regions. We developed and used a webinar format for the first time to connect our network of new trainers and communicate more efficiently with colleagues around the state.*
- *SF staff supported the work of our research partners in the UCD Department of Nutrition to roll-out a multi-component intervention program in schools called “Shaping Healthy Choices” that impacts children’s wellness through procurement of regional produce, nutrition education, school gardens and family involvement.*
- *SF staff worked with partner Soil Born Farms to plan and present at the first Sacramento School Garden symposium in February of 2015.*
- *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.*
- *The same SF and SAREP team began planning for a roundtable with US Congressman John Garamendi to bring together stakeholders from his district with experience and suggestions for strengthening farm to school efforts here.*

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

- *23 students graduated with BS degrees in Sustainable Agriculture and Food Systems (SA&FS) major in from Fall 2014 through Summer 2015, the largest number of graduates in a year to date. Enrollments in the five SA&FS core courses continue to grow and enrollment in the Senior Capstone sequence has increased from 30 in 2014 to 37 in 2015.*

## **2015/2016 Workplans**

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

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- *Advance the Student Farm program planning and development process. In particular, continue refining the new leadership development program for advanced student employees.*
- *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 guiding the development of plans and documents for the campus Long Range Development Plan process and fundraising strategies and plans for the SLLC*
- *Begin first year of organic plant breeding education and research project with colleagues from Plant Sciences.*
- *Continue shepherding and contributing to the Sustainable Agriculture & Food Systems major by assisting with aspects of program administration, contributing to academic advising, teaching several core and other required courses, and providing in numerous internships for SA&FS majors.*

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

- *Provide on-campus, hands-on educational programs in food, nutrition, agriculture and ecology to over 1700 regional primary and middle school students.*
- *Work with partners to provide field-based experiences for traditionally underrepresented high school students and increase their awareness of college and career futures in sustainable agriculture.*
- *Participate in a national school gardening leadership team that has formed during the last two years with the goal of working with the National Farm to School Network to establish an effective school gardening presence with potential to impact policy and influence institutional changes to support development and use of instructional gardens in public schools.*
- *Continue with recent successful efforts to convene state policymakers to discuss effective support for school garden and farm to school in California schools.*
- *Continue to provide support to active research projects that evaluate and quantify the impact of school gardens on children's learning and wellness.*
- *With our statewide colleagues and campus fundraisers strategize to secure new funding for continued professional development that supports and promotes school gardening efforts in California*
- *With other UC campuses work to develop effect programs for placing and mentoring UC students as interns in nearby school garden programs*

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

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

#### IV.4. Crosscutting Initiatives

##### Milestones and Progress on 2013/2014 Workplans

##### Farm and Food System Workers and Healthy Rural Communities

- *Completed the first time/activity study for farmworkers working in caneberries, and presented a summary to DPR. They asked us to apply for funds to conduct another study (broccoli) that we have received and are now beginning.*

##### Benchmarks for Food System Sustainability

*This past year has been a reinvigorating launch to a new phase of our sustainable sourcing work, with a focus on depth, breadth, and usability of our previous work. Key milestones include:*

- *Launching a new partnership with the World Food Systems Center at ETH-Zurich, jointly employing a full time staff member (Ruthie Musker), who has focused her research on resilience aspects of sustainability and helped build and expand ASI's collaboration with ETH and other European partners.*
- *Receiving a grant from the Sacramento Area County of Governments (SACOG), to conduct a landscape-level assessment, prioritizing and evaluating sustainability attributes for the 6 county region at a fine scale. Led by Patrick Huber, this work will both build on our Sustainable Sourcing tools and databases and help develop them further.*
- *Building and launching an easy-to-use portable computer application to enable issue and indicator selection using our "Sustainable Sourcing Checklist Generator" protocol. The app uses the project's semantic data linkages to provide real-time lists showing the fewest number of acceptable indicators that comprehensively cover selected sustainability issues.*
- *Testing and demo-ing our "Checklist Generator" tool with a variety of potential users, including Mars (conducted by Mars intern Jenny Heberts from UCD's GSM), Nestle, and Barilla. This fall (FY 15/16) we also hosted our first multi-stakeholder test process using the tool as part of a conversation on sustainability challenges for CA processing tomatoes, supported by Barilla Foods. Results were mixed, showing additional work needed to improve the process, but it was a promising beginning. OUR THANKS to board members Jo Ann Lo and Ashley Boren, plus all the other great partners who participated in the conversation!*
- *Publication of two journal articles: "Sustainable Sourcing of Global Agricultural Raw Materials: Assessing Gaps in Key Impact and Vulnerability Issues and Indicators" in PLoS ONE (2015) and "Indicators of global sustainable sourcing as a set covering problem: an integrated approach to sustainability" in Ecosystem Health and Sustainability (2015); and one conference paper: "Mars Corp. as a business use case for a new sustainability indicators platform" presented at the Ecological Society of America annual meeting (2014).*
- *Presented our work and networked with potential partners at a variety of professional events, including the World Food Systems Conference in Ascona, Italy; Expo Milano 2015; Food and Agricultural Organization of the United Nations: Semantics in Agriculture Workshop; Agricultural Data Interest Group (IGAD) – Research Data Alliance, Paris, France; and at the 2<sup>nd</sup> International Conference on Global Food Security, Cornell, NY; and for Barilla Company, Parma Italy; and Nestle Research Centre, Lausanne, Switzerland.*

### **Farm and Food System Workers and Healthy Rural Communities**

- *Expand and build colleagues in this area in order to identify highest priority collaborative projects. Explore market-based solution and food security projects involving farm and food system labor.*
- *Complete the second Time/Activity study and assess outcomes with DPR.*

### **Benchmarks for Food System Sustainability**

#### *Sustainable Sourcing of Global Agricultural Raw Materials project:*

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



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

##### Milestones and Progress on 2014/2015 Workplans

- *Convened four INFAS gatherings that expanded the network's design process and outreach efforts. The first was a November workshop that included the 9-member core design team in Raleigh, NC. Key milestones were: (1) drafting of a new process for participating in the Network and (2) commitment to compiling publicly- available data sets on food system inequities. The second gathering was an INFAS community workshop during the December Professional Agricultural Workers Conference (PAWC) at Tuskegee University. Key outcomes included incorporating valuable community input into the Network's outreach approach, messaging and activities. The third activity was a panel presentation by INFAS members entitled 'The Role of Academic Institutions in Creating Equitable Food Hubs and Food Systems' during the April W.K. Kellogg Foundation 'Food Hubs' meeting in Louisville, KY. Key outcomes were revised drafts of both the INFAS statement on equity in the food system and the INFAS participant process based on constructive community input and recommendations. The final gathering was the June INFAS annual meeting convened during the Annual Agriculture, Food, and Human Values Society Conference in Philadelphia, PA. INFAS members convened a roundtable within main Conference program entitled 'Roundtable on Collaborations for Equity in the Food System: Progress, Challenges, and Priorities.' The workshop was well attended and involved significant engagement between INFAS presenters/conveners and conference participants. It also allowed Network outreach and engagement and contributed to new collaborations. The annual INFAS general meeting, including participants that joined remotely, followed the roundtable. Core discussion topics were: Progress and next steps on INFAS network design, Examples of equity activities from network participants, Network contribution and sponsorship of a journal issue (see below), Discussion of INFAS new participant process and network expansion to new partners, and Next steps on co-creation of the INFAS action agenda.*
- *Finalized the new INFAS participant process following a yearlong collaborative participant-driven process. The revised process articulates the responsibilities and expectations of participants in the network including, briefly: support of the INFAS Mission, Vision, Statement on Equity in the Food System, Responsibilities and Expectations of Participants, and a Preamble that articulates the complex and inter-connected facets of food and agricultural sustainability. The process can be found at: <http://asi.ucdavis.edu/networks/infas/join-infas>*
- *The collaborative INFAS design process has accomplished a shift in the network's focus to collective action on inequities in the food system. In the past year INFAS committed to sponsoring a special issue of the Journal of Agriculture, Food Systems, and Community*

*Development (JAFSCD), entitled 'Labor in the Food System from Farm to Table'. Members of the INFAS Core Design Team will author an opening editorial/commentary which will include the Network's statement on equity in the food system and information about the INFAS network and its activities. Progress on this effort to date: the journal editor has received at least 12 submissions for publication so far. The review process is underway and publication is expected in early 2016.*

- *Joanna Friesner, INFAS Coordinator, has pursued the previous year's INFAS work plan to assist ASI in promoting racial and social equity in a number of ways. Progress includes: co-leading the ASI Committee on Racial Equity/Social Justice, helping to convene regular formal and informal educational and discussion meetings at ASI, responding to colleague requests for assistance with various relevant Institute efforts, and connecting ASI with campus-wide efforts such as serving on the UC Davis Staff Diversity Administrative Advisory Committee and co-organizing a campus forum entitled 'Food Equity in California: Practice and Scholarship in the Central Valley', with support from the UC Global Food Initiative.*

### 2015/2016 Workplans

- *This year's work plan will focus significantly on engagement (1) of the broader INFAS network, (2) to new network participants, and (3) to community stakeholders. This engagement will lead to collective development of a network action plan that reflects our focus on the three pillars of sustainability: Social, Economic, and Environmental. The action agenda will be developed intentionally through the lens of racial and social inequities in the food system.*
- *An ongoing task will be develop and refine a shared understanding of the leverage points and pathways that we can use as a Network for creating change within our respective institutions, both academic and nonacademic, and in society as a whole and how these approaches could intersect.*
- *The involvement of diverse stakeholders will be key to developing an INFAS action agenda. In the next year our work plan involves several collaborative activities including:*
  - *A broader-engagement workshop with an open invitation extended to all current INFAS participants.*
  - *Additional stakeholders will be invited to participate and co-lead parts of the activity including expert trainers on systemic and institutional oppression and racism, and practitioners that work on various levels of policy from the local to the national level to help guide and ground our developing action agenda. Their input will be vital to articulating where this academic network can best serve, and work with, the communities that are most affected by systemic food system inequities.*
  - *Following the expanded INFAS engagement workshop we will convene the annual INFAS meeting. This may align with the next major activity for this year's work plan: Engaging communities of color, expanding beyond land-grant universities (e.g. 1890s, tribal colleges), relevant activists, government/policy collaborators, and allied academic initiatives.*
  - *Key outcomes from these activities:*

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- *Articulation of how we address/respond to inequitable situations individually, and as a Network, and how those approaches may connect.*
- *Development of possible activities and actions on various levels (individual, regional, Network, national, international)*
- *Network participants will be encouraged to continue 'internal work' on structural racism and inequities at individual institutions, communities, and regions.*

*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.*

#### IV.6. FUNDRAISING

##### Milestones and Progress on 2014/2015 Workplans

- *Reach \$1 million for Agroecology Endowed Professorship. Complete*
- *Bring in 3 paying supporters of the Sustainable Sourcing of Global Agricultural Raw Materials Project. In progress--receiving one \$160K grant from SACOG, plus some in kind support from Mars Inc, and minor support is promised from Barilla Group.*
- *Work with academic leadership on building Russell Ranch Endowment through Adopt-an-Acre and larger proposals. Current endowment is over \$70,000 ... new acre adoption by McClarty Family, Yang Family, and Elite Energy Systems (Bob Medearis).*
- *Secure at least one 7-figure gift to ASI program. Still in progress.*
- *Secure major gifts. (\$25,000 minimum) from at least 10 donors who have not previously supported ASI. Secured major gifts from Arlene Pinkerton (Planned Gift to Student Farm)*
- *Identify at least two planned gift commitments for ASI. See above.*
- *Bring in at least \$1 million in competitive grant funding, emphasizing pursuit of larger grant opportunities. Successful. Awarded \$1.6M in new grants for 24 proposals. (See appendix 33 for more detail)..*

##### 2015/2016 Workplans

- *Identify three paying supporters of the Sustainable Sourcing of Global Agricultural Raw Materials Project.*
  - *Reach \$100,000 for Russell Ranch Endowment via Adopt-an-Acre or other gifts.*
  - *Shift focus to principal gifts through campus wide collaboration.*
- Bring in at least \$1 million in competitive grant funding, emphasizing pursuit of larger grant opportunities and building strategic partnerships.*



## IV.7. COMMUNICATION

### Milestones and Progress on 2014/2015 Workplans

- *Completed a redesign of the ASI website and launched in September. The website redesign includes creation of a searchable publications/resources database, new opportunities for blogging and storytelling, clear explanations of our programs and projects, and simplified access to information.*
    - *Supported innovative communications and outreach efforts across ASI programs including development of online discussions and a research database with the Solution Center for Nutrient Management, and social media outreach for events*
    - *Improved communication staff's ability to support each program's needs, and improved ways for staff to actively engage in communications, outreach, and engagement.*
- Accomplishments included:*
- *Incorporated communications staff budget into several grant proposals to build communications staff capacity.*
  - *Developed communications templates and develop improved language to describe our programs and work.*
  - *Co-hosted a workshop on "Harnessing Social Networks for improved Extension" with ANR colleagues and Environmental Science and Policy faculty Mark Lubell. The workshop focused on ways to use and build social networks (actual and virtual) to better share knowledge outside of the university.*

### 2015/2016 Workplans

- *Strategically develop content for website and social media outlets.*
  - *Regularly update web content to showcase our work and actively participate in conversation about California agriculture and food systems issues.*
  - *Strengthen our social media presence and continue to try social media-based outreach and engagement strategies.*
- *Build a contact management system and assess our existing network in order to improve outreach efforts and clearly see how our network can grow.*
- *In collaboration with SAREP programmatic staff, host a successful rollout of the California Nitrogen Assessment that highlights the breadth of ASI work related to nutrient management.*

## IV.8. MONITORING AND EVALUATION

## Milestones and Progress on 2014/2015 Workplans

- *Initiated multi-campus inventory of UC sustainable agriculture and food systems programs and practices for the UC Global Food Initiative (GFI). Modeled multi-campus collaboration and student engagement by employing undergraduate student assistants from four UC campuses and using cloud-based shared documents and teleconferencing. This project enhances the documentation of SAREP and ASI research and networking, and provides system-wide visibility to our role in connecting stakeholders to UC resources.*
- *ASI team members routinely demonstrate an overall learning orientation with protocols that provide regular opportunities to assess process successes and challenges, with the expectation of informing future work. For instance, following most projects and events, team members debrief to identify what worked well and areas for improvement. The practice of taking time to reflect and share our experiences, and learn from them, has strengthened the effectiveness and confidence of our teams.*

## 2015/16 Workplans

- *Establish a web-based portal for the GFI Inventory, including a process for on-going updating and expansion of the Inventory by UC researchers and outreach staff. Design portal to enhance SAREP and ASI's ability to connect stakeholders to scientifically based and useful information on sustainable agriculture and food systems.*
- *Refine overall ASI outcome statements and define theories of change for key desired outcomes. Establish process to document key indicators of progress in thematic area initiatives.*

## 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.

ASI Strategic Snapshot at November 2015

- 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-1/2015-external-advisory-board>

### **Institutional Framework and Assets**

- Appendix 1: Organizational Structure
- Appendix 2: Programs and Facilities
- Appendix 3: Personnel
- Appendix 4: Core Staff and Grant Funded Staff (FY 06/07- FY 15/16)
- Appendix 5: ASI Annual Income (FY 07/08 – FY 15/16)
- 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, 30 October 2014

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

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

### **Themes and Possible Priorities**

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

### **Education and Leadership Theme – Concept Notes**

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

**Food 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