UCDAVIS
AGRICULTURAL SUSTAINABILITY INSTITUTE
College of Agricultural and Environmental Sciences

UNIVERSITY OF CALIFORNIA DAVIS AGRICULTURAL SUSTAINABILITY INSTITUTE (ASI)

STRATEGIC SNAPSHOT AT NOVEMBER 2016

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Version 1.8 of 15 November 2016
(Original Version 1.0 of 8 December 2008)

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OUR INSTITUTE AT A GLANCE

Update: November 2016

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)
- 25 other full and part-time staff of various programs and projects
- 3 post docs, 5 graduate student researchers, 1 teaching assistant, 1 UC Global Food Initiative Fellow, and 17 student assistants
- 9 ASI-affiliated professorships in agroecology, sustainability science, sustainability and society, economics of sustainability, plant disease management/soil microbiology, soil science, pollination ecology, invertebrate community ecology, and sustainable animal systems.
- 17 additional ASI fellows, including faculty from the College of Engineering and the School of Education, as well as the College of Agricultural and Environmental Sciences at UC Davis.
- 15 academic colleagues serving on ASI's Academic Advisory Committee.
- A distinguished external advisory board of 25 leaders, representing diverse stakeholder interests.
- UC Davis CA&ES Dean's Office support in fundraising, events, administration, IT.
- An expanding network of partners, including UC Cooperative Extension specialists and farm advisors, and other partners in various sectors.

Current annual budget: over $3.6 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: 1 November 2016

Re: External Advisory Board Meeting on Tuesday, 15 November, at Russell Ranch Sustainable Agriculture Facility

This will be a year of major milestones for us. As we move through academic year 2016/17, ASI reaches its tenth year, the Century Experiment at our Russell Ranch Sustainable Agriculture Facility will enter its 25th year of continuous monitoring of agroecosystems, our UC Sustainable Agriculture Research and Extension Program (SAREP) turns 30, and our Student Farm at UC Davis reaches a forever-youthful 40 years of age.

As you can see in our proposed agenda for our meeting (Attachment 1), we also will be marking some major transitions this year. I will cover a number of these important changes in my director's update at our meeting. Foremost among these, this meeting will mark an extremely important transition in ASI leadership and governance. **Howard-Yana Shapiro**, who has served and inspired us as chair of our external advisory board since day one (in fact before day one!), will be handing off to our incoming board chair, **Kat Taylor**. Please see Attachment 2 for a sketch of the extraordinary talent and experience Kat brings to ASI.

As part of my annual update, it has become customary to share my personal sample of our highlights. In past years, a "Top Ten" was sufficient. For 2016, our ASI teams had so many noteworthy achievements that I was compelled (and delighted) to expand this list to our "**Top 25**" (Attachment 3).

I am delighted to report that **our two "big ideas" –** which hatched at our 2014 Board meeting – continue to grow and thrive. Because of these efforts, ASI is well positioned for a prominent place in the next UC Davis comprehensive campaign. As additional steps in preparation to participate fully in all of these transformational efforts, our discussions in this meeting will focus on three key areas: (1) service opportunities for board members, (2) communications and (3) fundraising. With ASI reaching its first decade, I believe we have an excellent opportunity to learn from the full cycle of major projects, such as the successful campaign to endow our professorship in agroecology and the successful conclusion and rollout of our California Nitrogen Assessment, which has been a flagship activity at ASI for over seven years.

Particularly if you are new to ASI, you may wish to skim **this year's Strategic Snapshot**, the annual update of our strategic plan. The 2016 Strategic Snapshot and all appendices are available at: http://asi.ucdavis.edu/about/external-advisory-board-meetings-1/2016-external-advisory-board

Perhaps you will notice that this is Strategic Snapshot version 1.8 – at this meeting we will begin the processes of consultation and deliberation over the next 18-24 months to co-create a vision, strategy, and plan culminating in "**ASI Version 2.0**". At the very least, we need to update our strategic plan to fully incorporate our two "Big Ideas". In addition, a number of other exciting (and equally big) ideas are emerging, including in food systems and agroecology.

So, this is an exciting time for reflection and for envisioning new strategic directions. And, from you -- our board members, ASI colleagues, and other guests -- we are seeking exactly what you do best: creative, candid, challenging feedback and advice on ASI's strategic direction.

For all of you who will be joining us on Tuesday, 15 November, best wishes for safe travels to Davis. Please do not hesitate to contact me (cell: 530 574-2503) or Dianne Stassi (dstassi@ucdavis.edu), if you have any questions or concerns regarding our agenda or the meeting arrangements.

ASI Top Twenty-five for 2016

SAREP: Published *The California Nitrogen Assessment: Challenges and Solutions for People, Agriculture, and the Environment* and conducted successful initial rollout of the report. Over 500 copies of the book have been purchased, including 12 ebooks.

SAREP: Completed life cycle greenhouse gas and energy use assessment of California almond production, one of the most comprehensive greenhouse gas footprint assessments conducted to-date for a perennial crop, using innovative methods to assess temporary carbon storage in tree biomass.

SAREP: Completed four youth-led urban agriculture tours in Northern and Southern California with UC ANR and other partners working on social justice in communities of color.

SAREP: Conducted Farm to School tours in Los Angeles and Sacramento for policymakers leading to a roundtable on Farm to School needs with Congressman Garamendi (organized with our Student Farm).

SAREP: Coordinated the first gathering of Northern California food hubs and secured grant funding to continue coordination, provide technical assistance, and explore business opportunities with institutional buyers.

SAREP: The Florida State Department of Agriculture is exploring adoption of the SAREP/Yolo County Department of Agriculture model for analyzing school food service produce data to identify opportunities for more local farmers to grow crops for its school districts.

COMMUNICATION staff recognition: Aubrey White Thompson, our communication coordinator, received the UC ANR "Star Award" for her outstanding performance: "Her persistence, creative energy, and professionalism were instrumental in gaining us a new website that has garnered positive feedback from our stakeholders for appearance and accessibility of information. She has created communications products that are exceptionally effective."

RUSSELL RANCH: Russell Ranch established an irrigation "test bed" to better understand crop water demands and optimize agricultural water use with data flowing from our new water meters, soil moisture probes, and evapotranspiration sensors. Current focus is comparison of subsurface drip versus flood irrigation in alfalfa, and deficit irrigation in processing tomatoes.

RUSSELL RANCH: Irrigation with liquid biodigestate from food waste (but not dairy waste) applied as subsurface drip could support tomatoes at yields similar to those obtained with mineral fertigation systems.

RUSSELL RANCH: Biochar boosted corn yields by 8% in year 2 but not year 4---after that the benefit disappeared. Adding biochar to sandy soil—but not a higher clay soil-- increased soil water holding capacity by 17%.

RUSSELL RANCH staff recognition: Israel Herrera, superintendent of the Russell Ranch Sustainable Agriculture Facility, received a 2016 Award of Distinction, the highest recognition presented by the College of Agricultural and Environmental Sciences at UC Davis.

STUDENT FARM: The new organic plant breeding project (in collaboration with the Department of Plant Sciences) is developing varieties of tomatoes, peppers, common beans, and lima beans for organic farming systems and training students in the practical aspects of plant breeding.

STUDENT FARM: A new UC Global Food Initiative-funded Food Access project addresses food insecurity among UC Davis students. Working with several partners, the project provides fresh, healthy, organic SF produce to students for free and is increasing the diversity of SF participants.

STUDENT FARM: With support from the UC Global Food Initiative, Student Farm staff collaborated with colleagues from other UC campuses to host two workshops (one in Davis, one at UCLA) on experiential learning in sustainable agriculture and food systems.

STUDENT FARM: Co-sponsored the Sustainable Agriculture Education Association's national conference at UC Santa Cruz in July.

STUDENT FARM staff recognition: Mark Van Horn, director of our Student Farm, received two major honors in the past year: the "Mark Van Horn Outstanding Student Farm Educator" Award from the Sustainable Agriculture Education Association and the UC Davis Foundation Stewardship Award, for his outstanding stewardship of donors.

SUSTAINABLE SOURCING: Established IC-FOODS -- the International Center for Food Ontology, Operability, Data & Semantics -- to promote the study of food system, food, and health informatics in partnership with the Department of Food Science and Technology, with a seed grant from the UC Davis Innovation Institute for Food and Health (IIFH).

SUSTAINABLE SOURCING: IC-FOODS hosted the first International Conference for Food Ontology, Operability, Data & Semantics at UC Davis in November.

INFAS: The Interinstitutional Network on Food, Agriculture, and Sustainability published its first collaborative journal publication entitled "Labor in the Food System: A view from INFAS", in the *Journal of Agriculture, Food Systems, and Community Development*.

INFAS: there has been a surge of interest, with several new institutional members seeking to join this national network hosted by ASI.

SUSTAINABLE AGRICULTURE & FOOD SYSTEMS MAJOR: 33 students graduated with BS degrees in Sustainable Agriculture and Food Systems (SA&FS) in the 2015/2016 academic year, the largest number (by far) in any year to date.

Recognition of SA&FS STUDENTS: Feifan Yang received the Knowles A. Ryerson Award in Agriculture for excellence in academic achievements.

FUNDRAISING: ASI secured $1.4 million in competitive grants from 15 different proposals, exceeding our goal of $1 million per year. This means that ASI almost certainly will exceed last year's record budget of more than $3.6 million.

FUNDRAISING: Both of ASI's 'Big Ideas' ($50 M transformative initiatives) moved forward in the selection process and were presented to campus development officers, UC Davis Foundation Board members, and a sample of potential donors on October 31. These are entitled: "Living Laboratory for Agroecology" and "Sustainable Living and Learning Communities."

FUNDRAISING: The Student Farm received a 7 figure bequest.

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 additional to international exchanges and global networks, our two regional priorities are linkages with programs in the Mediterranean, arid, and semi-arid agro-climatic zones (e.g., Australia, Chile, Egypt, Italy, South Africa, Spain, and the International Centre for Agricultural Research in Dry Areas) and with sub-Saharan Africa. (At this time, we do not anticipate creating capacity for international project implementation; instead ASI will collaborate with the CA&ES International Agricultural Programs Office at UC Davis.)

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

I.6. Our operational principles

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

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

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

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

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

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

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

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

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

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

II - INSTITUTIONAL ASSETS

ASI's foundations

II.1. Land Grant Heritage

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

II.2. Programs and Facilities

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

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

INFAS currently has scholar participants at over 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,

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 11th, 2010.

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

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

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

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

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

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

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

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

SAREP Solution Centers: Looking ahead to the next generation of BIFS. SAREP's leadership and collaboration in BIFS projects showed that growers can be willing partners in developing a more sustainable food and agriculture system. As ASI and SAREP agendas shift in response to stakeholder priorities and other developments, such as newer emphases on research and outreach at landscape level issues (in our Agriculture, Resources and Environment theme) and the community level (in our Food and Society theme) our work nevertheless must remain linked with (and grounded in) practical "grass-roots" experience

exemplified by BIFS. Thus, SAREP's legacy of experience with collaborative innovation processes through BIFS that are designed, led and implemented by groups of farmers is an important component of ASI's institutional repertoire that compliments researcher-designed and implemented experiments at the Russell Ranch Sustainable Agriculture Facility and student-led initiatives at the Student Farm at UC Davis. The first SAREP Solution Center for water and nutrient management was launched in 2013 with a portion of funding from a USDA NIFA AFRI grant received by ASI affiliated faculty member Will Horwath.

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

<u>Integrative research at Russell Ranch:</u>
-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)

<u>Education at Russell Ranch:</u>
-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

<u>Russell Ranch communication as a two-way flow:</u>
-Create two-way channels of communication both to deliver and listen to science from users and practitioners, policy makers, extension specialists, NGOs

-Engage public on climate change and role of agriculture, resource conservation, food safety and security by hosting field days and hands-on workshops.

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

In response to increasing student participation in Student Farm activities and higher levels of knowledge, skills and interests on the part of many of these students, the Student Farm launched a program planning and development project in early 2011. In the last 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 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 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 9 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: Four new ASI Fellows were announced in 2016, Assist. Professor of Soil Science and Pedologist Randy Dalgren (Land, Air and Water Resources), Director of Center for Regional Change and Associate Professor Jonathan London (Human and Community Development), Assistant CE Specialist Mark Lundy (Plant Sciences), and Associate Professor of Environmental Economics & Policy and the Associate Provost at UC Riverside Ken Baerenklau (Public Policy), our first faculty Fellow outside of the UC Davis campus. 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 (2016/17) will be $1,239,170, *slightly above our funding level from previous years.* Note: beginning in FY 13/14, the core funding income totals shown on Appendix 5 include funds designated for payroll benefits that previously were not included in core funding allocations. Therefore, the apparent increase of core funds is the result of a change in accounting practices and does not reflect a real increase in core funding.

We project total annual funding for ASI will be about $3.4 million for 2016/17. ASI's budget includes core funding from CA&ES and ANR, endowment income, current use gifts, earned income from operations at the Student Farm and the Russell Ranch Sustainable Agriculture

Facility, indirect overhead returns from CA&ES, and expenditures from grants. These budget figures do not include salaries of ASI affiliated faculty. Please see Section III.5 below and Appendix 5 for additional financial information.

III – STRATEGIES FOR ACTION

How ASI works

III.1. Priority Setting and Accountability

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

Engagement with stakeholders

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

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

- **Online surveys.** ASI used a Web-based survey initiative to provide for large-scale stakeholder input and to create a first-cut for identification of priority issues for sustainable agriculture and food systems in CA. Results of the 2008 online survey (Appendix 14) have informed development of our portfolio of initiatives.

- **Consultation**. Our communication strategy will enable us to take a more systematic approach to our ongoing process of consultation and engagement with stakeholders.

Scientific input to priority setting processes

- **Scientific assessment for priority setting.** Scientifically-validated indicators will be developed for use by many stakeholders to benchmark trends in sustainability in California's agriculture and food system. These indicators will reveal where there has been progress toward sustainability and where there are problems; whether there are tradeoffs across sustainability objectives; which strategies and responses can be most effective in addressing problems and balancing tradeoffs; and where knowledge gaps matter most. Creation of the set of indicators also will create capacity to monitor changes, assess risks, and anticipate emerging sustainability challenges and opportunities. In addition to providing the scientific foundation for an operational definition of "sustainability" for California's agriculture and food system, the sets of sustainability indicators will inform ASI priority setting and could contribute to development of agricultural sustainability standards and a long-term strategic vision for the future of California's food system.

- **Monitoring, evaluation, and impact assessment.** To establish an adaptive, learning organization that can effectively incorporate lessons from experience, ASI needs to develop, implement, and institutionalize processes that monitor and evaluate the quantity and quality of our outputs and that assesses outcomes and impacts on our goals. Some relevant mechanisms are in place in SAREP, but much more needs to be done over the years ahead to create a learning organization. (Also see Section V below, Indicators of Success.)

- **International board of science advisors.** To ensure that ASI's agenda is on the cutting edge of sustainability science, experts in this field have suggested that ASI institutionalize periodic input to the director from a network of international scientific leaders. Thanks to the Packard Foundation, input of this type was obtained in development of the California

Nitrogen Assessment; that experience proved very valuable. Using a somewhat different approach, we created a technical advisory committee for the project on Sustainable Sourcing of Agricultural Raw Materials.

III.2. Interdisciplinary, integrative activities

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

- **Research**. ASI assembles and coordinates interdisciplinary teams to design, seek funding, and implement major sustainability science projects, hosted and managed by ASI. These research projects have the primary goal of identifying scientific principles and practices that enhance sustainability of agriculture and the food system. Priorities include (a) identification of emerging, scientifically-valid innovations and help move them from the margins to the mainstream, (b) coordination and support for long-term research, and (c) knowledge management to ensure that research methods, protocols, and results are archived, synthesized and made available for use by other researchers. For details, see sections IV.1, IV.2, IV.4.

- **Education**. ASI supports programs to educate students of any age, professionals, and the public regarding science-based sustainability principles and practices, exposing them to a variety of ideas, practical experiences, and divergent viewpoints on questions that remain controversial. For details, see section IV.3.

- **Grantmaking**. SAREP grants are a top program responsibility and a key ingredient in building support for sustainable agriculture and food systems activities. From 1987 – 2011, these grants have taken a variety of forms, including (but not limited to) both competitive grants and targeted "academic venture capital" grants for new initiatives. A list of awarded grant projects is available on SAREP's website. For several years, lack of funds has precluded an effective grant program. As a result, current problems include both lack of sufficient size to attract attention and unreliability from year to year, which also affects the number and quality of potential grantees.

- **Communication, translation and dissemination**. ASI produces and disseminates science-based information that responds to stakeholders' needs and improves sustainability of agriculture and the food system through uptake and use by a diverse clientele, including all segments of agriculture across a diversity of scales and systems, agricultural labor and rural communities, and bridging the rural-urban interface. Fenton Associates provided recommendations for ASI's communication strategy in February 2009.
- **Distinguished speakers and seminar series**. Graduate students and faculty have expressed interest in a regular series sponsored by ASI, which could serve as a means to bring

colleagues together for stimulating, rewarding, and enjoyable exchanges of ideas at the forefront of sustainability science. The series was inaugurated with a seminar by Professor Jules Pretty of the University of Essex, speaking on "Sustainability and the State of the World Food System" on 3 November 2010.

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

III.3. Leadership, collaboration, and coordination

Internal accountability and coordination

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

- **Accountability to UC Davis College of Agriculture and Environmental Sciences (CA&ES) and UC Division of Agriculture and Natural Resources (ANR).** The ASI director also serves as SAREP director and reports to the Dean of CA&ES and the Vice President of ANR. A memorandum of understanding between CA&ES and ANR (see Appendix 11) delegates management and administrative support of SAREP to CA&ES.

- **ASI/SAREP core support team.** All core support team positions serve ASI as a whole in order to achieve synergies in strategic planning, priority setting, stakeholder engagement and accountability; budgeting and financial controls; fundraising and proposal preparation, and grant management; communication and public awareness; and monitoring and evaluation.

- **Internal steering committee.** This group includes ASI unit heads and academic coordinators, members of the core support team, affiliated faculty, and student representatives. The committee exists to facilitate synergistic communication, cooperation and collaboration among ASI programs and projects. It focuses on the day-to-day operation and management of ASI and affiliated units. Meetings are open to all staff and

agendas typically are distributed in advance. The committee meets as needed, typically about once every six to eight weeks.

Collaboration and coordination with students, faculty and cooperative extension

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

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

- **Domes Academic Advisory Committee (DAAC).** DAAC had its inaugural meeting of faculty and Domes affiliates on May 30, 2014. The DAAC provides a forum for discussions around, and coordination of, future academic directions of research and learning at the Domes, and serves to advise the ASI director on all Domes academic activities. The DAAC focuses on the nature of the Domes Academic Plan as well as the past, present, and future academic practices and community-based academic activities that exist at the Domes and in other sustainable living communities on campus.

- **Faculty leadership**. The deputy director for ASI is a CA&ES faculty member and advises the director on CA&ES linkages and issues, including involvement with the other ASI-affiliated faculty positions designated in CA&ES. The director is in frequent contact with counterparts at UCSC and has participated in events at UCB and UCR, but much more time will be required to develop full potential for faculty engagement to tap into talent across California. Status: From January 2014, Professor Ermias Kebreab graciously has agreed to serve as ASI deputy director and we are pleased that Professor Kate Scow now will be able to focus her scientific leadership on RR.

- **Faculty engagement.** In a survey conducted some years ago, approximately 150 UC Davis faculty members identified themselves as strongly interested in sustainable agriculture. This likely understates interest on the Davis campus and does not include faculty on campuses elsewhere in California, including other UC campuses (especially UC Agricultural Experiment Station faculty at UC Berkeley and UC Riverside and also our colleagues at UC Santa Cruz); California State Universities, community colleges, and other

institutions where collegial relationships exist, such as Stanford and Santa Clara. We have been experimenting with different approaches tied to specific opportunities (e.g., requests for proposals) and need to continue to develop our repertoire for engagement and follow up with colleagues on the UC Davis campus. Plans for a "Faculty and UCCE Advisory Committee" were considered as a general means of communication and coordination, but seemed to be unworkable (too many meetings, no pressing purpose) in 2007 when ASI was a smaller organization. *Status:* In 2013, the first CA&ES faculty review of ASI suggested: "At this point the ASI should focus on increasing faculty involvement. While this can be somewhat tricky, with an appropriate mission and appointment by the Dean, an advisory committee could support the ASI on all facets, including RR, the Student Farm and to some extent, SAREP. This committee could both advise the director and advocate for the institute. The members of this committee should include those heavily involved in ASI activities which may not necessarily be the faculty designated as the Sustainable Ag faculty presently, but most likely identified via involvement in ASI related research. There are different models of faculty involvement on institute/center boards on campus that can be considered." Among other benefits, we share the review committee's view that expanding faculty involvement is one (of several) important roles for the ASI faculty advisory committee. We also agree that this is an opportune time to create this important academic counterpart to ASI's external advisory board. Director Tomich has worked with Professor Kebreab, in his capacity as ASI deputy director, and other ASI leaders to create guidelines on the purpose and operation of an Academic Advisory Committee for ASI (Appendix 7B) and to appoint its initial 12 members in October 2014 (Appendix 7C).

- **Collaboration with UC DANR strategic initiatives, other statewide programs, and centers.** ASI has established relationships with faculty and UC statewide programs working on complementary issues (e.g., the DANR strategic initiatives on sustainable food systems, healthy families and healthy communities, and water as well as the Agricultural Issues Center and the Statewide Integrated Pest Management Program).

- **UC Cooperative Extension specialists and farm advisors.** SAREP has built working relationships with a number of UCCE specialists and county-based farm advisors (who in total comprise over 400 UC professionals across the state) through support for collaboration among county, regional and campus-based researchers. Competitive grants are one means to build collaborative links across organizational boundaries, but working groups, communities of practice, collaborative proposals and symposia are other means to that end. Through active participation in various ANR initiatives, workgroups, programs and events, we seek to broaden and strengthen relationships between ASI/SAREP and UCCE. Adding two UCCE professionals to the external advisory board also was a step toward greater statewide collaboration. In due course, it is anticipated that a new category of Agricultural Experiment Station Affiliates of ASI will be created, with the CA&ES Dean's 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 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 Mars-funded project was completed successfully in 2013. A $50,000 gift from Kraft Foods in 2014 has supported further work.

III.5. Fundraising

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

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

We are implementing a multi-year campaign to pursue three ambitious fundraising goals (listed below). *Status: Please see Appendix 5 for data on annual 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 used the November 2015 meeting of the External Advisory Board to discuss campaigns developed from two "big concepts" (of roughly $50 million each in endowment and current gifts). The Associate Vice Chancellor for Campus Planning is continuing to collaborate with us on development of these place-based concepts.*

Plans, priorities and current status on ASI endowment efforts:

- Our first-ever **year-end appeal for ASI** was conducted in 2012. *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 the current fiscal 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 October 2016: the endowment stands at $63,812. 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 October 2016: $114,300 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 part-time proposal coordinator, to support efforts by faculty and other partners to produce high-quality proposals for competitive extramural grants. *Status: Our part-time proposal coordinator began working in January 2010 at half-time and increased to 0.8 time in October 2016. This capacity boost will improve our ability to ramp ASI's grant activity. ASI secured $1.4 million in new grant funds during fiscal year 2015/2016. Fifteen of the Twenty-five proposals ASI submitted were successful. Please see Appendix 33 for additional detail on our current funding proposal status and trends over time.*

Goal 3. Sustain UC support above $1 million per year. Despite continued cuts and uncertainty in the overall budget situation, leadership from the CA&ES Dean's office and the UC DANR Vice President's office has helped ASI maintain core funding. Continuing support signals strong commitment by CA&ES and ANR to our agricultural sustainability initiatives and, as such, these are powerful assets in our fundraising efforts in addition to being the foundation for the viability of ASI. However, the crisis in California State funding since 2008

has meant it was not possible to sustain UC support (from CA&ES and ANR) above $1 million per year. SAREP's base budget from UC DANR was cut 20% (approximately $100,000) in fiscal year 2009/10 (proportional to the overall cut faced by DANR), but it is a pleasure to be able to report that ANR has been able to continue the same level of funding for SAREP in 2010/11 and there is reason for optimism that this funding may stabilize going forward. Although the Russell Ranch budget from CA&ES was cut 6% (about $14,000) in the 2011/12 fiscal year (the same rate as all CA&ES departments), the Student Farm budget was spared these cuts because of the CA&ES Dean's commitment of about $198,000 from the annual payout of the Bixby Endowment to funding the base budget of the Student Farm (discussed above under Goal 1). Because of this mix of changes, it seemed appropriate to recast Goal 3 as "Sustain UC support above $750,000 per year" (from the original $1 million). 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 2015/2016 milestones. Green text indicates 2016/17 workplans.**

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

Milestones and Progress on 2015/2016 Workplans

- Final data collection completed for analysis of energy use and greenhouse gas emissions in almond processing and distribution networks.

- Published 2-part paper on life cycle greenhouse gas and energy use assessment of California almond production (up to and including hulling and shelling) in the Journal of Industrial Ecology and conducted outreach on the results to media and to other professional audiences. This study constitutes one of the most comprehensive greenhouse gas footprint assessments conducted to-date for a long-lived perennial crop and pioneers application of new methods to assess the value of temporary carbon storage in tree biomass for the lifespan of an orchard.

- Began data collection and model development for Barilla-funded comprehensive life cycle assessment of environmental impacts from past and present-day tomato production and processing.

- Initiated discussion with Janaki Jaganath of the Community Alliance for Agroecology, a consortium of California social and environmental justice organizations, on how to frame outputs of life cycle assessment studies to be more relevant to local-scale environmental justice efforts.

- The California Nitrogen Assessment: Challenges and Solutions for People, Agriculture, and the Environment was published by UC Press in 2016. We conducted separate meetings with 11 distinct groups of stakeholder representatives from our CNA advisory committee and others, and used their input and feedback to create an Executive Summary for wider distribution. Distributed over 200 copies of the book to partners and relevant audiences.

- Created several new informational webpages for the Solution Center for Nutrient Management website, on the following topics: reduction of N2O emissions, soil health, nitrogen mineralization, organic sources of nitrogen, resources for on-farm nitrogen management and budgeting, and irrigation management. We also created an

additional farmer profile and added approximately 25 more entries into the research database. The website currently receives approximately 1000 unique visits per year.

- ASI-funded researcher Margaret Lloyd completed a farmer-oriented factsheet on results of research on use of cover crops to control disease in strawberry production (as alternatives to methyl bromide).

Russell Ranch Sustainable Agriculture Facility

- Russell Ranch field day, "Farm Water Management in Times of Scarcity" on June 8, brought together researchers, growers and other stakeholders with a total of 170 attendees.

- Russell Ranch hired an additional staff member who is a mechanic and designer of equipment to work on developing prototypes for improved agricultural equipment that is efficient and less disruptive of the environment.

- Our Russell Ranch staff installed a concrete floor in our barn to improve the workplace for both equipment maintenance and sample processing, as well as to create a machine shop to build research and farming equipment.

- We are the 23rd year of our tomato-corn under organic, conventional and a mixed management system. The 6 year rotation that includes 3 year alfalfa followed by tomato-corn-tomato has just moved shifted from alfalfa to tomatoes. A longterm statistical analysis that compares system differences in variation in crop yields, and factors driving these differences, is underway.

- Analyses are continuing for the twenty-year soil survey of Century Experiment (3400 samples in 8 depth increments to 3 meters deep in 72 plots) for the following properties: total carbon and nitrogen, Fourier Throughput Infrared Spectroscopy (FTIR), Permanganate oxidizable carbon (POXc) and Olsen P. These data wil provide valuable information about the potential for California agricultural soils to sequester carbon and offset greenhouse gas emissions (Jessica Chiartas, Kate Scow, Amelie Gaudin, Toby O'Geen UCD)

- We are investigating if we can reduce fossil fuel based mineral N inputs using legume sources of N in 2 ongoing experiments in the Century Experiment
    - How much N can be provided by the winter cover crop (vetch, bell bean, oats) to tomatoes and corn in the mixed system (compare yields and soil N in strips with different mineral N inputs)
    - How much N can be provided to tomatoes following 3 years of alfalfa in a rotation (compare yields and soil N in strips with different mineral N inputs)
- We have installed subsurface drip irrigation in the Century Experiment in almost all irrigated rotational plots. A working group of our farmers, faculty, extension specialists and postdocs have used data collected from installed water meters, soil moisture probes, and evapotranspiration sensors to better understand crop water demands and optimize water use in our different systems and crops. We continue

work on the strengths and weaknesses of the surface renewal method for determination of how much water to apply using drip irrigation.

- One new challenge is integrating subsurface drip irrigation in our organic system for which the source of fertility is cover crops and composted poultry manure. For this reason, we have maintained a comparison of furrow and subsurface drip (single and double lines) irigation in the organic plots to evaluate irrigation strategies. We have found there is less microbial activity and lower aggregate stability in the subsurface drip surface systems than in the furrow system (Daniel Zaccaria, Tim Hartz, Mark Lundy, Amelie Gaudin, Kate Scow, UCD and UC ANR--funding from Wells Fargo and UC Water Center)

- Russell Ranch collaborated on $416,150 grant "Irrigation optimization and well pump monitoring leveraging smart meter data" from the California Energy Commission as a collaborator with PowWow Energy, Co. We have implement demonstration fields at Russell Ranch, as well as collaborated with four other commercial farms.

- Russell Ranch has established two sets of plots investigating irrigation management, including: i) comparison of subsurface drip (including different drip tapes, spacing of emitters) versus flood check in alfalfa; ii) effect of deficit irrigation in processing tomatoes

- Two 30 feet towers for thermal radiometers have been installed in larger research plots (wheat and tomato) adjacent to Russell Ranch. Plans exist for 2016 for UAV flights within the Century Experiment. Collaboration with Ustin lab has led to the Century Experiment being selected as a demonstration site for weekly measurements of visible, IR, and thermal data over the past 3 years. (Darren Drewry, Simon Hook NASA; Susan Ustin UCD)

- We have been investigating if biodigestate—the by-product of biogas generation--from dairy manure and food wastes can provide sufficient N fertility to grow tomatoes and corn. We are measuring how both anaerobically digested food waste and dairy manure perform as fertilizer sources. We found that irrigation with liquid biodigestate from food waste but not dairy waste applied as subsurface drip could support tomatoes at yields similar to those obtained with mineral fertigation systems. We are testing the efficacy of using solid forms of biodigestate in furrow irrigated corn. (Rhuihong Zhang, Sungpyo Kim, Kate Scow UCD; funded by California Department of Food and Agriculture (CDFA))

- We are in the 5th year of our long term biochar experiment looking at effects of this soil amendment made from pyrolyzed walnut hulls (from Dixon Ridge farm) on a tomato-corn rotation. We found biochar (10 tons/ha) boosted corn yields by 8% in year 2 but not year 4---after that the benefit disappeared. In tomatoes there was no effect on yield until year 5 with small increase due to biochar in mineral fertilized tomatoes. In addition there is an effect of biochar amendment on water relations in soil: adding biochar (20 tons/ha) to sandy soil—but not a higher clay soil-- increased soil water holding capacity by 17%. (Deirdre Griffin, Daoyuan Wang, Sanjai Parikh, Kate Scow, UCD).

- Soil phosphorus budgets--including major stocks, inputs and outputs--were compiled to compare the different Russell Ranch farming systems and also compare to longterm vegetable experiment in the Salinas Valley(Gabriel Maltais-Landry, Peter Vitousek, Stanford University).

- We are in the third year of testing different varieties of drought resistant wheat as well as perennial wheat varieties from the Land Institute in Kansas, with the goal of identifying new varieties that may be resistant to drought and other aspects of climate change. We are measuring water and N productivity and changes, as well as soil N and soil C as a function of productivity differences in perennial wheatgrass Anza. This is a unique type of crop that could have multiple purposes (grain-though low productivity, forage, and C farming) and it survived its first season in California without any irrigation in the driest year on record (Mark Lundy UCD)

- In wheat plots in Century Experiment we compare water productivity in SDI versus furrow irrigated wheat (in rotation with tomatoes) and compare how injected versus broadcast application of N improves grain protein content and apparent fertilizer recovery. The overall goal is to figure out if small grains rotated with crops like tomatoes could leverage the existing SDI setups of those crops to improve water and nitrogen use efficiency. (Mark Lundy UCD)

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

- Research on milkweed habitat for monarch butterflies is in its 3rd year with an extensive corridor of milkweed plantings. In addition to monarch butterflies, milkweed provides a habitat to a community of herbivores, predators, pollinators, parasites and other organisms. Investigations focus on identifying factors determining consequences of species interactions, with a specific emphasis on factors that change over time. For example, monarch caterpillars do best on milkweed in the late spring and early fall and researchers are exploring roles of climatic factors, predator communities and changes in plant quality/defense (Louie Yang, UCD).

- The effect of corn seed treatment (clothianidin, a neonicotinoid insecticide and various fungicides) on abundance of ground-nesting bees (Lasioglossum (Dialectus) spp.) is being studied in conventional and organic corn plots. (Valerie Fournier and Neal Williams, UCD).

- A number of laboratories that are part of UCD courses have adopted one or two field trips to Russell Ranch, including SSC 100 (Southard, Introduction to Soil Science), SSC 109 (Horwath, Soil Nutrient Management), SSC 111 (Scow, Soil Microbiology), SSC 211 (Scow, Advanced Soil Microbiology). Students found differences in soil aggregate stability, soil carbon, and biodiversity in the following ranking: native grassland > organic > conventional. We encourage more courses at UCD to utilize Russell Ranch for field trips and class projects.

2016/2017 Workplans

Energy and Climate Footprinting

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

Responding to Climate Change

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

Sustainable Management of Nutrients and Water in Agricultural Landscapes

- Assess need for additional outreach products for the California Nitrogen Assessment, and collaborate with Cooperative Extension and other colleagues and external partners to create outreach events around the state.
- Conduct an online survey to evaluate usefulness of SAREP Solution Center for Nutrient Management and identify critical information gaps to fill.
- Pursue new funding opportunities to continue work on 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 (20th 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

- Analyze data from exploratory survey on agroforestry (integration of mixed cropping systems that integrate perennial crops with annuals and/or livestock) in California and assess feasibility of developing a research and outreach network. Develop a research and outreach framework and identify funding sources.
- Prepare a journal article draft on potential for and constraints of agroforestry systems in California.

- Publish a concept paper on current status and benefits of agroforestry systems, utilizing lessons from international case studies, and establish a web presence for this work on SAREP's website.
- 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 2015/2016 Workplans

BREAKING NEWS: We were successful in receiving 4 CDFA grants (3 in which SAREP was principal PI; one in which we are a subcontractor) to expand our work in Building Regional Markets and Communities. Total = $450,000.

BUILDING REGIONAL MARKETS AND COMMUNITY

Farm to School

- Conducted 2 Farm to School tours (Los Angeles and Sacramento) for policymakers (fall 2015) leading to a Roundtable with Congressman Garamendi that we helped organize with Carol Hillhouse (School Garden Program/Student Farm). We are finishing a farm to school policy brief about challenges, opportunities and policy options for farm to school.
- Finishing an evaluation of two years of procurement data for 5 school districts in Yolo County to be used by Yolo County Ag Commissioner's office to create forward contracts with local farmers and increase local procurement.

Values-based Supply Chains

- Completed a survey of 1,000 farmers with partners in OR and MN about markets for small and mid-scale producers in the specialty food industry. Published an article with Shermain Hardesty in Agriculture about some of the results.
- Worked with colleagues in MN and KY to prepare another survey of up to 3,000 farmers about their experiences in values-based supply chains.
- Conducted two more Farmer Wholesale tours (farmers in San Diego and Los Angeles) to LA wholesalers and markets.
- Organized a Farmer Educator Summit of California organizations and institutions to strategically collaborate on future outreach.

- Coordinated the first gathering of 6 Northern California food hubs; conducted an assessment of their businesses; organizing ongoing monthly calls, wrote 2 grants to continue coordination, providing technical assistance and exploring business opportunities with institutional buyers.

Urban Agriculture

- Conducted final 2 youth-led urban ag tours and youth training (Sacramento and Los Angeles) with ANR colleagues, Rachel Surls and Keith Nathaniel (UCCE LA) and community partners.
- In the final stages of completing 2 urban ag videos based on youth and programs on these tours.

Regional Economic Impact Study

- Completed qualitative interviews with food system stakeholders in 4 counties in the Sacramento region about the benefits of a regional food system. This is part of an economic impact study (IMPLAN) led by Shermain Hardesty, now completed, in this region.

Social and Racial Justice in the Food System

- Submitted a $1.3M proposal to the Kellogg Foundation to strengthen the capacity of university and community actors to work together to increase racial equity in the food system. [unsuccessful]

FOOD SYSTEM ASSESSMENTS/ FOOD POLICY

- In the final stages of our Kern County Food System Assessment being conducted collaboratively with the Kern County Food Policy Council
- Conducting case studies of 3 food policy councils to assess the extent to which they are using research-based information in policy development, particularly with UC partners. This is part of a larger study on food policy councils led by Clare Gupta, UCD public policy specialist.

FARM AND FOOD SYSTEM WORKERS AND HEALTHY RURAL COMMUNITIES

- Working on the second time/activity study for farmworkers working in broccoli (DPR funded)

2016/2017 Workplans

The SAREP Food and Society retreat identified (1) social/racial justice in the food system and (2) food system labor issues as two areas we want to focus on in existing and new areas of research, outreach and fundraising. We will continue fundraising across the Food and Society priority areas.

BUILDING REGIONAL MARKETS AND COMMUNITIES

- Focus on outreach, sharing results and lessons learned from our farm to school procurement research, youth-led urban agriculture (trainings), food hub assessment. Potential publications in CA Ag, Journal of Extension, other peer-reviewed journals
- Organize outreach for 2 AFRI projects (surveys of small and mid-scale farms) about participation in values-based supply chains, specialty food markets
- Continue coordinating Northern CA Food Hub Learning Community and increasing capacity for individual hubs to become more profitable. Explore new, viable markets.
- Participate in Urban Ag workshops for urban farmers, especially providing expertise on marketing.
- Collaborate in the MacArthur Foundation $100M and Change proposal with colleagues at UCD and UCSF (Type I diabetes reduction, youth empowerment through the food system)

FOOD SYSTEM ASSESSMENT/FOOD POLICY

- Complete Kern County Food System Assessment and advise Kern County Food Policy Council on action plans and outreach
- Complete food policy council case studies and collaborate on statewide food policy council survey on use of research/information to inform policy

FARM AND FOOD SYSTEM WORKER HEALTH AND COMMUNITY WELLBEING

- Complete broccoli time/activity study and share results with DPR.

STRENGTHEN INSTITUTIONAL AND COMMUNITY RELATIONSHIPS

- Continue participation in GFI Subcommittee (Slusser: K-12 Sustainable Eating Options)
- Build new relationships with colleagues at UCSF
- Strengthen ANR relationships through joint HFC-SFS meetings, fundraising. Focus on identifying strategic leveraging, innovation.
- Strengthen relationships with community partners, especially in underserved communities (urban and rural). Identify opportunities for collaboration (urban ag; rural infrastructure; markets)

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

Milestones and Progress on 2016/2017 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 Alumnus, Dr. Daniel Mountjoy, Director of Resource Stewardship at Sustainable Conservation. 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. Sacramento Farm to Fork pioneer chef and restaurant owner Patrick Mulvaney, provided an inspiring presentation to award attendees.

- The Student Farm continued to make advancements in our Leadership Development Training Program (LDTP) for our Lead Student Farmers and Gardeners (LSF/Gs), i.e., student employees. This included progress in our strategy of enlisting our LSF/Gs employees to help us maintain and enhance our educational program to serve the rapidly increasing number of students involved in the program. In the past year, our LDTP work included offering seven workshops for 16 LSF/Gs and refining several of these workshops. In addition, six student employees benefitted greatly from their participation in a significant multi-UC campus workshop that focused on experiential learning that we hosted at UC Davis in February and eight of our students attended the 3-day national Sustainable Agriculture Education Association conference that was held in Santa Cruz in July (see below for details on our roles in these events). These events allowed our student employees to learn from, and interact professionally with, staff and students from campuses around the state and country who are engaged in similar work supporting experiential learning in sustainable agriculture on student farms. These efforts continue to result in very positive growth in our student employees' skill levels, confidence and performance, which have also improved the overall sense of community and functioning of the Student Farm.
- Carol Hillhouse worked with staff to develop a new field assessment method to better meet the needs of the second and third quarter interns at the SF and led a new effort to examine our current methods for assessing experiential learning and explore new practices and protocols for this work at the SF.
- SF staff continued to played leadership roles in the ongoing development of the UC Davis Sustainable Living and Learning Community (SLLC) a new campus neighborhood focused on farming, food, the built environment and sustainability. Coordination within the SLLC is an important part of the SF's growth and development planning, including programs, infrastructure and fundraising, over the next several years and the current revision of the campus Long Range Development Plan will position the SF at the heart of the SLLC. SF staff continued to meet with faculty involved or interested in the SLLC to explore academic, curricular, and research objectives for the SLLC. They have hosted and facilitate several meetings and workshops of SLLC community members to keep students, faculty and other campus community members informed and involved. They have taken the lead to represent the project within the "Big Ideas" campus fundraising campaign and it has been accepted through the recent round of Big Idea vetting and has moved forward for further review this fall.
- We completed our first field season of our new organic plant breeding project funded by a $1 million grant from USDA Organic Research and Extension Initiative with colleagues from the Plant Sciences department. The project is developing crop varieties of tomatoes, peppers, common beans and lima beans for organic farming systems and simultaneously train graduate and undergraduate students in the practical aspects of plant breeding.

- With support from the UC Global Food Initiative we collaborated with colleagues from other UC campuses to host two workshops (one at our facility in Davis, one at UCLA) on experiential learning in sustainable agriculture and food systems within UC. With the same group, we also co-sponsored the Sustainable Agriculture Education Association's national conference at UC Santa Cruz in July. Finally, the UC Davis students developing videos on experiential learning with financial support from UC GFI completed their three videos this year (see: https://vimeo.com/170428922, https://vimeo.com/172073045, and https://vimeo.com/149216540)
- The SF started a new GFI-funded project to Food Access project to address food insecurity among UC Davis students. Working with several partners, including the Pantry and Fruit and Veggie Up programs we will provide fresh, healthy organic SF produce to students for free. We will also work with several partners to expand our outreach efforts to try increase the level of diversity of SF participant as part of this effort.
- New SF Program Rep Julia Schreiber started spearheading a new Flower Project working in both the Ecological Garden and Market Garden. Each quarter several interns work within this project learning to grow, harvest, arrange and market cut flowers for the campus market.
- 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 second time in winter 2016 and again received high marks and praise from enrollees. This fall we are doing regularly scheduled Kids in the Garden tours for the first time. This work is being done in collaboration with Yolo Farm to School.
- Students continue to organize various activities and events such as social events, 'farm dialogues,' and student-led skills workshops in areas outside normal SF activities. In addition to helping students learn from one another and develop their leadership capacity, these events strengthen the SF community and students' voice in the Farm's development.
- SF 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.

- 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.

2016/2017 Workplans

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

- Advance the Student Farm program planning and development process. In particular, continue refining the LDTP and the new Food Access project. In particular, continue refining the LDTP and the new Food Access project.
- Further the development of the SLLC concept in collaboration with the different SLLC entities, faculty, departments and campus leadership in areas of planning and development. Continue engaging with campus planners and development staff and potential donors to move the SLLC forward.
- Continue to develop the Flower Project and explore ways to increase the quantity and quality of internships and other learning opportunities at the Student Farm and elsewhere within ASI.
- 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 nearly 2000 regional primary and secondary 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 2017 winner for the Bradford-Rominger Sustainability Leadership Award
- Identify 2017 winner for the Shapiro Family Agroecology Award

IV.4. Crosscutting Initiatives

Milestones and Progress on 2015/2016 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

- Over the past year we launched a project with the Sacramento Area Council of Governments (SACOG). This use case is designed to evaluate the potential use of the "Sustainable Sourcing Checklist Generator" in an inclusive regional setting rather than a commodity-specific context. The goals of the project are to use input from a wide variety of stakeholders in the Sacramento region to identify the most important sustainability issues that the region faces and to identify a suite of indicators that efficiently and effectively provide metrics for tracking these issues. A large amount of information concerning many issues has been assembled into a spatial database. New California-specific indicators have been added to the original Sustainable Sourcing database and associated with specific issues. The database itself has been reformatted for more effective use. Marxan optimization software has been used to provide a baseline view of spatially-explicit patterns that can inform future management for sustainability. Unfortunately, the stakeholder process itself has been difficult to fully launch in order to bring a full suite of interested parties to the table. This is an ongoing process and we hope to see progress in the coming months.
- A second case study that was recently launched is the Bay Area Regional Advance Mitigation Planning (RAMP) project. RAMP is an ongoing statewide effort to develop a

framework for conducting mitigation for impacts from infrastructure projects in a more systematic, effective manner. This effort is a collaboration between state and federal resource and infrastructure agencies, environmental non-profit organizations, and UC Davis. Working landscapes are a key part of these planning efforts, both for compensation for loss of farmland and through agricultural areas potentially serving as habitat for listed species. Funding from Bechtel Foundation (via The Nature Conservancy) was granted to ASI to help assess the 9-county Bay Area for future transportation project impacts and to help identify key areas that could serve to mitigate these impacts. Bay Area RAMP is also closely linked with recent legislation (AB 2087) that establishes the development of Regional Conservation Investment Strategies (RCIS) as a goal for California. Two of four pilot projects to test implementation of the legislation are in the Bay Area and linked with RAMP.

- Over the past year, we have worked on integrating our data collection into a unified database platform, a web-enabled system built on top of the highly successful open source graph database Neo4j. We intend to continue and further develop these efforts by a) providing web-accessible APIs for retrieval of our information sets b) developing ontologies to express the interrelationships among entities and actors across the entirety of the food system, and c) collaborating with organizations such as the FAO and GODAN in work on developing information standards for the food system.
- Grants and fundraising: this year we pursued several very large grant proposals to support the broader vision of our sustainable food systems work: $10 million to Agropolis Foundation, $100 million to Welcome Trust, and $500,000 to NSF, which, although longshots that didn't come in this year, significantly helped us develop our broader workplan and expand our partner networks in this arena. One important grant that did get funded in support of this vision was in the form of $150,000 in seed funding from the UC Davis Innovation Institute for Food and Health (IIFH), which our team applied for in partnership with Matthew Lange and others. The funding is being used to establish IC-FOODS, a center designed to promote the study of food system, food, and health informatics. We also received funding for our regional assessment work, namely $160,000 from Sacramento Area Council of Governments, mentioned above, and have several other related proposals currently in grant the pipeline,
- One of the first actions of IC-FOODS will be the hosting of the International Conference for Food Ontology, Operability, Data & Semantics at UC Davis in November 2016. This conference is designed to bring together researchers from around the world to help guide the research directives of this new food system informatics field. The IC-FOODS effort is intended to foster relationships between not only other researchers but with the corporate sector as well. One outcome from the November conference will be the launch of a consortium for engagement with corporate and other entities that will ideally lead to substantial funding to advance the food system sustainability research program.

2016/2017 Workplans

Benchmarks for Food System Sustainability

- Continue working with state agencies and other organizations in the development of integrated regional planning protocols and case studies that will include sustainability in California's working landscapes in assessments of conservation and development needs.
- Enhance the current information platform through integration of new sustainability issues, indicators, and other data types identified through case studies and other efforts.
- Continue as a full partner and part of the leadership team for the IC-FOODS effort.
- Submit one or more large competitive grant proposal 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, in part through IC-FOODS activities.
- 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 2015/2016 Workplans

- The Network published its first collaborative journal publication entitled "Labor in the Food System: A view from INFAS", Journal of Agriculture, Food Systems, and Community Development; http://dx.doi.org/10.5304/jafscd.2016.062.023
    - INFAS sponsored the open-access special issue of this journal: Labor in the Food System from Farm to Table; which contained 25 diverse topics such as farmworker justice, economic development, food systems impacts, policy analysis, and food chain activists. 7 of the articles were authored (or co-authored) by an INFAS member or partner
    - http://www.agdevjournal.com/volume-6-issue-2.html
- Convened two INFAS gatherings to: develop the network's focus on structural racism in the food system; expand the Network collaborations to additional members; implement Network activities reflecting the structural racism focus.
    - INFAS's priority for the past year was to more broadly engage members of the Network and community organizations. Our main event, and first gathering, was a weekend-long workshop entitled "INFAS Workshop on Food System Equity and Action from the Individual to the Network". The 28 participants

were comprised of 22 INFAS network members, 3 invited participants from non-profit organizations that are active in structural racism and anti-racism programs, 2 professional Structural Racism, and 1 network facilitator.

- Key outcomes: (1) the workshop began with a ½ day structural racism training session which provided shared experience and language; (2) participants collaboratively developed proposals for network action (some are underway); (3) the workshop trainers have been engaged for structural racism training at the local level by at least 1 INFAS member.

- The second gathering was the annual INFAS network meeting that took place during the Sustainable Agriculture Education Association conference. There were 7 invited guests including 4 potential new INFAS members, 2 from Real Food Challenge, and 1 INFAS fellow (working with a Network member)

  - Key outcomes: (1) University of Hawai'i applied for INFAS membership (approved by the executive committee); (2) Network members developed a strategy for informing the next presidential administration's food security policy; (3) INFAS made new connections with relevant non-profit and community organizations for future collaborative work; (4) Several Network activities were approved for engagement in the next workplan (see workplan, below).

- INFAS held a panel entitled "Building Racial Equity into Higher Education for Sustainable Agriculture" at the Sustainable Agriculture Education Association conference.
- Several INFAS and (non-INFAS) ASI members developed a joint funding proposal to link sustainable agriculture and structural racism activities in California's Central Valley and in North Carolina, and impact a national food systems leadership training program (the proposal is not yet funded.)
- Joanna Friesner, INFAS Coordinator, continued to promote racial and social equity locally through co-leadership of the ASI Committee on Racial Equity/Social Justice.

2016/2017 Workplan

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

- Big picture, national scope, "top down" activities

  - Scholarship activities that further legitimize agroecology in the US/world.
  - Regional project to collate datasets of indicators derived as a subset of the 17 Sustainable Development Goals, with respect to vulnerable US groups,

to allow cross region, cross stakeholder, and cross demographic comparisons.
  - National Conference on climate change and equitable agri-food systems with planned outcome of team-developed regional food security risk assessments and food system resiliency plans and implementation over next 3-5 years

- Community-up, grassroots activities

  - Op-ed article based on INFAS member's participation on all Working Groups of the APLUs 2050 Commission on Food Security to ensure that all three sustainability facets (social, environmental, economic), including agroecological and equity considerations, are presented publicly.
  - Explore synergistic activities with the national student-led Real Food Challenge organization, in support of local/community-based, fair, ecologically sound and humane food sources.
  - Support for regionally-based graduate students (located with INFAS members) to engage in INFAS activities as 'INFAS Fellows'.

- *Expansion of INFAS membership, particularly in the Southeast US*

IV.6. FUNDRAISING

Milestones and Progress on 2015/2016 Workplans

- Identify three paying supporters of the Sustainable Sourcing of Global Agricultural Raw Materials Project. *Completed. Project will be supported by SACOG, Sustainable Conservation, and the UC Davis Innovation Institute for Food and Health in 2016–2017.*

- Reach $100,000 for Russell Ranch Endowment via Adopt-an-Acre or other gifts. *Completed. A total of $114,000 has been donated to the Russell Ranch Endowment to date.*

- Shift focus to endowments and other gifts through campus wide collaboration. *Both of ASI's 'Big Ideas' ($25M+ transformative initiatives) moved forward in the selection process and were presented to the campus on October 31.*

- Bring in at least $1 million in competitive grant funding, emphasizing pursuit of larger grant opportunities and building strategic partnerships. *Completed. Secured $1.4 million from 15 different proposals. See Appendix 33 for more details.*

- *Barbara Pearce, a local farmer who learned a great deal at the Student Farm, has made a $2.5 million estate gift commitment to ASI. As an estate gift the timing of the gift realization is uncertain but the money will ultimately create an endowment for the Student Farm.*

2016/2017 Workplans

- Continue moving forward with campus-wide 'Big Ideas' fundraising initiative. *Ten to fifteen Big Ideas will ultimately be chosen as priorities for the campaign; a decision will be announced in mid-December 2016.*
- Bring in at least $1 million in competitive grant funding, emphasizing pursuit of larger grant opportunities and building strategic partnerships.
- Bring in at least $500,000 in various gifts for ASI programs.
- Pursue at least one 7-figure competitive grant for ASI.
- Secure $500,000+ to support new center for food system & health informatics.
- Secure $200,000+ to meet increasing student demand for hands-on agricultural training at Student Farm.
- Continue fundraising for Russell Ranch Endowment via Adopt-an-Acre or other gifts.
- Continue to secure philanthropic funding for projects focusing on socially disadvantaged farmers and ranchers and identify additional SAREP programs with philanthropic funding potential.

IV.7. COMMUNICATION

Milestones and Progress on 2016/2017 Workplans

- New staff member Laura Crothers has been an extremely valuable member to the communications team, bringing strong design and science writing, as well as great new ideas for how to move communications forward at ASI. With a three person team (though under 2 FTE), communications at ASI has had a strong year and has developed creative plans for how to move our work forward.
- Successfully completed the roll out of the California Nitrogen Assessment. Our communications team led the efforts to write the Executive Summary, press release, op-ed for the CNA, created new and compelling graphics to describe CNA data, and built a new presentation to share CNA findings. We convened a team of UC Davis and ANR communications and government relations staff to advise and assist us in the planning and implementation of the report's rollout.
- We co-hosted and facilitated a roundtable discussion at the Sustainable Groundwater Conference with Thomas Harter to discuss nitrate contamination in groundwater challenges and solutions being implemented internationally. We are currently working to develop a white paper with lessons from the discussion.
- Completed a catalog of programs across the UC system that are working on sustainable agriculture and food systems, and developed an initial website structure and page designs

to present the catalog alongside highlights of high-impact UC work in this field, along with a summary of the social network of sustainable agriculture in California.

- Increased online engagement with ASI. Website page views increased 35% over the past year. With small adjustments in our social media presence and more consistency in posting to social media platforms, we've seen significant growth in our social network. To compare March 2015 with March 2016 on Twitter shows a lot of improvement especially in the impressions, the number of Twitter accounts that saw our tweets:

Twitter March 2015

- Posted 7 tweets
- 2,653 impressions
- 91 profile views

Twitter March 2016:

- 11 tweets
- 11.4k impressions
- 237 profile views
- 160% growth in profile visits

Facebook has seen a 9% growth in followers. While growth in social media followers does not in itself mean much, focusing on building an audience is a step in building a more active online network. We are gradually building our capacity to use social media as an effective way to promote events, share our research findings, and help connect people with our resources and relevant UC resources.

- Created several new videos, advised on creation of four student-created videos, contributed to ANR blogs, regularly updated ASI blog, and supported ASI programs in creating materials and refining messages about our programs.
- Redesigned brochures for each of ASI's programs
- Worked with UC Davis Strategic Communications to ensure journalists attending the Society for Environmental Journalists conference in Sacramento were aware of ASI. This included hosting a tour Russell Ranch, bringing conference agenda ideas to the conference planning committee that included ASI, and making ASI materials available at tabling opportunities.
- Made strides in developing a contact management database that can be used as a central outreach tool for ASI.

2016/2017 Workplans

- Evaluate the success of ASI communications efforts to date through:
  - Interviews with staff
  - Interviews/surveys with faculty affiliates, UCCE advisors, external partners
  - Survey with our contacts
  - ASI website surveys
  - Assessing regional and topic areas of our contacts to determine what ASI's network looks like

  - Using Mark Lubell's sustainable agriculture survey to assess how well-aligned our communications priorities and language are with CA's sustainable ag network
- Build Contact Management database that can be easily accessed by all ASI staff, updated regularly, and provide clear insights into ASI's external network
- Finalize new ASI brochures and continue to improve outreach materials
- Increase ASI staff capacity for undertaking communications work
- Build our network and reach with effective avenues for outreach through:
  - Actively engaging staff in writing for ASI blog
  - Identifying opportunities to contribute op-eds to news outlets
  - Holding California Nitrogen Assessment meetings around the state
- Focusing attention on a limited number of events that reach the audiences we intend to reach. Particular attention on:
  - CNA meetings
  - Bradford Rominger Ceremony
  - Russell Ranch Field Day
- Plan communications involvement with grant funded projects well in advance
  - Meet with teams to plan 2016–2017 communications work
  - Create list of ASI communications deliverables that programs can incorporate into grant proposals and workplans

IV.8. MONITORING AND EVALUATION

Milestones and Progress on 2015/2016 Workplans

- Established 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. Designed 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. *[not completed]*

2016/17 Workplan

- Identify opportunities to incorporate key indicators of progress within the thematic area initiatives and increase ASI's capacity for program monitoring and evaluation.

V - INDICATORS OF SUCCESS

Where are we going?

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

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

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

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

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

3. **ASI Incubates Leaders, Producers, Consumers and Advocates**
   - Track SA&FS graduates
   - Track # of students participating in Student Farm activities. Consider follow-up w/ some.

- Track # of K-12 students & school district personnel trained in eco-garden trained.

4. ASI Collaborates with Strategic Partners

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

5. ASI Leverages Resources

- Track external funding

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

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

VI – LIST OF APPENDICES

Appendices can be accessed at: http://asi.ucdavis.edu/about/external-advisory-board-meetings-1/2016-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 16/17)
Appendix 5: ASI Annual Income (FY 07/08 – FY 16/17)
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