University of California

**Division of Agriculture and
Natural Resources**

**Competitive Grants Program 2015
Request for Proposals**

Released January 22, 2015

I. Overview

The University of California (UC) Division of Agriculture and Natural Resources (ANR) conducts critical food, agricultural and natural resources research and public outreach activities that serve Californians, the nation and the world. ANR's mission is to maintain and enhance connections that fully engage the University with the people of California to achieve innovation that supports:

- Sustainable, safe, nutritious food production and delivery
- Economic success in a global economy
- A sustainable, healthy, productive environment
- Science literacy and youth development programs

By 2025, California will face many complex challenges related to increases in global and domestic populations, in addition to changes in climate and land use patterns. To tackle some of these challenges, ANR developed the Strategic Vision[1] to address the scientific, technological, social, and economic demands facing California presently and in the future. ANR identified five strategic initiatives of critical importance to California best equipped to achieve maximum results and focus on pressing issues facing the state. The five initiatives are:

1. Endemic and Invasive Pests and Diseases (EIPD)
2. Healthy Families and Communities (HFC)
3. Sustainable Food Systems (SFS)
4. Sustainable Natural Ecosystems (SNE)
5. Water Quality, Quantity and Security (Water)

The Division awarded $4.46 million supporting 21 projects in 2011, $3.8 million supporting 16 projects in 2012, and $3.5 million supporting 15 projects in 2013. ANR continues to invest in short-term, high-impact research, education and outreach projects that address high-priority issues that are consistent with the Strategic Vision; encourage collaboration among academics; strengthen the research-extension network; and demonstrate relevance and likelihood of impact on significant agricultural, economic, environmental and social issues in California.

II. Criteria
The criteria to be considered in reviewing proposals for funding are:

- **Alignment with strategic initiatives**
  - To what extent does the proposal address one or more of the strategic initiative priority areas that are articulated in this RFP?

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[1] *Strategic Vision 2025--* http://ucanr.org/sites/anrstaff/files/1006.pdf

- **Technical merit**
    - Is the science sound?
    - Are the design and methods adequate and appropriate? Are extension/outreach/engagement plans well thought out?

- **Relevance to California and likelihood of impact**
    - How important are the issues being addressed in light of California needs, issues, and concerns?
    - Will the project produce a product or lead to recommendations that have relevance to California's residents and decision makers?
    - Will the project support science-based decision making and delivery of useful findings to inform policy and outreach efforts?

- **Feasibility**
    - Does the project team have the expertise and capacity to contribute to the success of the project?
    - Is the project doable?
    - Can the work produce results/outcomes over the duration of the project?

- **Collaboration and integration**
    - Does the proposed project build connections that strengthen the research and extension network within and across the strategic initiatives?
    - Does the project leverage additional funding?
    - Does the project foster collaborations with key stakeholders?

Note: applicants are strongly encouraged to consider how their projects cross-cut with other initiatives in a meaningful way, and make the necessary linkages that lead to a more robust proposal with higher potential for significant policy or behavioral impacts.

III. Eligibility

- Proposals must be submitted by someone that holds an academic appointment in ANR with Principal Investigator (PI) status such as Cooperative Extension (CE) Advisors, CE Specialists or Agricultural Experiment Station (AES) Faculty. Early career academics are strongly encouraged to apply.[2]
- Strategic initiative leaders may not apply as Principal Investigators (PI) or Co-PIs of a proposal, but they are eligible to contribute to projects as collaborators. Strategic initiative leaders may not receive funds directly from this competitive grants program.
- Strategic initiative panel members are eligible to apply as PIs and/or Co-PIs on proposals, but will not be involved in the review of their own proposals.
- We encourage non-ANR UC academics to collaborate on project proposals.

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[2]Early career academics have held their appointments with ANR 6 years or less

IV. Projects and Funding

Investigators may select a project start date from two options—April 2016 or August 2016. The flexibility in start date is intended to provide the time needed to find graduate students, modify project goals to align with seasonal considerations, and facilitate the collaboration between PIs and partners, both internal and external.

- Applicants may request funding for projects up to $500,000 for a term not to exceed five years (projects have been funded from $5,000 - $500,000 in past cycles).
- Projects may address research or extension work.
- All research proposals must include an effective outreach component.

ANR is strongly encouraging the submission of proposals with budgets in the range of $20,000 - $250,000 to generate compelling and relevant outcomes that create opportunities for leveraging additional funding and/or develop meaningful products. This change has resulted from recommendations made by investigators and collaborators over the last three cycles.

V. Timeline and Process

Please note: the following deadlines and processes are applicable for both the April 2016 and August 2016 project start dates.

RFP released (Thursday, January 22, 2015)

Letter of Intent (LOI) due (Monday, March 16, 2015)

Applicants must submit LOIs no later than Monday, March 16, 2015 by 5pm (Pacific Time) in the Universal Review System (URS). Submission and approval of an LOI is required to submit a full proposal to this RFP. The LOI is reviewed by the appropriate strategic initiative panel(s) to determine applicability to initiative priority area goals.

Applicants notified of LOI decisions (Friday, April 24, 2015)

Notifications will be generated from the Universal Review System (URS), sent via email to PIs, and circulated in ANR Update.

Full proposals due (Monday, June 22, 2015)

Applicants must submit all requirements via the Universal Review System (URS) by Monday, June 22, 2015, 5pm (Pacific Time).

After PIs have been notified of their approved LOIs, project teams will be granted access to the full application cycle and templates in the URS, found within the ANR Portal.

The online submission system will have materials and instructions that address technical and application requirements.

Technical reviews (mid-June to early September, 2015)
Strategic initiative leaders will assign a minimum of two technical reviewers to evaluate each proposal. Reviewers that are deemed to have a conflict of interest (COI) with lead project PIs/ Co-PIs will not assess those grants.

For this process, reviewers are deemed to have a conflict of interest if they have been a co-author of a published paper within the last three years with the lead PI or Co-PI of the proposal, or have been a PI or Co-PI on a grant with the lead PI or Co-PI of the proposal. To facilitate the recruitment of technical reviewers, applicants will be asked to recommend potential reviewers that do not share a COI during the LOI and application submission phases.

Strategic initiative leader reviews (end of September, 2015)
The strategic initiative (SI) leaders will collectively discuss technical reviews, and categorize proposals into high, medium and low priority groups using the criteria outlined on pages 2-3.

Program Council reviews and makes recommendations (October/November, 2015)
All proposals will be reviewed by Program Council review teams. The review teams will consist of primary and secondary reviewers, in addition to utilizing the expertise of the respective strategic initiative leader.

Program Council will also use the criteria outlined in pages 2-3 to generate a list of recommended projects to fund for the Vice President's consideration.

Vice President announces awards (November or December, 2015)
Applicants will be notified via the Universal Review System (URS) and email of the funding decisions, in addition to disseminating the information via ANR Update.

Contracts and agreements executed (January to February 2016)
The Office of Program Planning and Evaluation (OPPE) will contact PI's to undergo relevant post-award processes.

VI. Solicited Targeted Areas
Proposals must clearly apply to the priority issue areas described under the strategic initiative headers listed below. For questions about the appropriateness of your proposed work, please contact the strategic initiative leaders:

- Endemic and Invasive Pests and Diseases (EIPD)—Cheryl Wilen, cawilen@ucanr.edu
- Healthy Families and Communities (HFC)—Keith Nathaniel, kcnathaniel@ucanr.edu
- Sustainable Food Systems (SFS)—David Doll, dadoll@ucanr.edu
- Sustainable Natural Ecosystems (SNE)—John Harper, jmharper@ucanr.edu
- Water Quality, Quantity and Security (Water)—Doug Parker, doug.parker@ucop.edu

<h1 style="text-align:center">ENDEMIC AND INVASIVE PESTS AND DISEASES</h1>

The Endemic and Invasive Pests and Diseases (EIPD) initiative is interested in proposals that address detection, biology, and management of pests and diseases that can impact human, animal or plant health, stored products, postharvest products, buildings or those that affect natural systems such as wildlands and waterways. Pests and diseases need to be addressed in order to protect animal health, plant health, public health, food security, food safety and the environment. More detail can be found in the <u>EIPD Strategic Plan</u>.

We seek proposals that address one or more of the following priority issue areas identified by the EIPD initiative panel.

Priority Issue Areas:
- Exclusion of Pests and Pathogens
- Emerging and Re-emerging Problems with Pests and Diseases
- Integrated Management

Exclusion of Pests and Pathogens
The first step in controlling the damage of any pest or pathogen is to exclude it from entering a new region. Exclusion includes diagnostics, detection and interception.

Special Considerations for this priority issue area:
- Development of surveillance or monitoring plans and risk assessments for new pests and pathogens
- Development or testing of epidemiological tools (e.g. surveys, modeling) to better understand pest or pathogen movement
- Development of early detection tools
- First detector training and new technologies to enhance outreach to stakeholders
- Improved diagnostic methodology

Emerging and Re-emerging Problems with Pests and Diseases
New pests and diseases are problems because they lack natural control agents, creating devastating problems as they spread. Endemic pests and diseases can also develop into more serious problems because of external factors such as changes in management practices, landscapes, or climate.

Special Considerations for this priority issue area:
- Development of sampling methods and control strategies based on pest and host biology
- Epidemiological studies for plant and animal diseases
- Prediction—modeling and analytical tools for outbreak analysis

Integrated Management

Special Considerations for this priority issue area:
- Tactics for prevention or treatment of disease such as vaccines for animal health, environmental manipulation for plant health; or development and evaluation of disease resistant or tolerant cultivars
- Mitigation of development or management of pesticide resistant pest populations
- Modeling, economic analysis and/or field studies to determine benefit of various mitigation strategies
- Impacts of management approaches on non-target organisms

HEALTHY FAMILIES AND COMMUNITIES

Across the three priority issue areas, the Healthy Families and Communities (HFC) initiative is interested in research and extension projects that address emerging issues and opportunities such as the role of culture and diversity in designing effective interventions; long-term strategies for expanding ANR outreach to underrepresented youth, families, and communities; and research that documents the impact of existing extension activities (e.g. such as developing a longitudinal analysis of existing program data. These are detailed in in the HFC Strategic Plan.

We seek proposals that address one or more of the following priority issue areas identified by the HFC initiative panel.

Priority Issue Areas:
- Promoting healthy behaviors for childhood obesity prevention
- Youth scientific literacy
- Promoting positive youth development

Promoting Healthy Behaviors for Childhood Obesity Prevention
Intervention models grounded in a socio-ecological approach to obesity prevention are deemed to be most effective. Programs that utilize a comprehensive programmatic approach integrating nutrition, health and local agriculture should be developed and evaluated for individual, family, school, and community systems. This approach recognizes that health-related behaviors are influenced by a number of different factors, including education and supportive programs and policies in the key settings in which children make decisions about eating and physical activity - school, afterschool programs, and the home.

Special considerations for this priority issue area:
- Approaches should be built upon existing research and programs in California communities that include participatory inclusion of key stakeholders.
- The research will identify promising practices and lessons learned to inform nutrition, youth, health and school administrative professionals and state and community decision makers.

Youth Scientific Literacy
Adapt/design effective non-formal science programs (e.g., science camps, after school programs) for youth that include workshops to train science educators. Outcome assessments will compare achievement and attitudes before and after participation of these non-formal science programs and measure possible differences between those who participate in the programs and those who do not.

Special Considerations for this priority issue area:
- In youth scientific literacy, adapting and or designing professional development programs for science educators (paid staff, volunteers, pre-service teachers and in-service teachers) using methods and strategies drawn from the literature and measuring the impacts on participants' understanding and use of effective pedagogy, science content knowledge and attitudes toward science is critical.

Promoting Positive Youth Development
Examine comparative case study research on the effectiveness of 4-H and other youth development programs and the impact on positive youth development. Research conducted using a sample of California communities reflecting the state's diversity and building on and synthesizing a growing body of research, including that by ANR academic staff and workgroups and by other researchers as deemed to be effective.

Special considerations for this priority issue area:
- Positive youth development is defined as "a process that prepares young people to meet the challenges of adolescence and adulthood through a coordinated, progressive series of activities and experiences, which help them to become socially, morally, emotionally, physically, and cognitively competent. It addresses the broader developmental needs of youth, in contrast to deficit-based models, which focus solely on youth problems" (*National Collaboration for Youth Members, 1998*). Thus, the goal is to assess whether and how existing programs promote positive youth development, and in turn, to improve important outcomes for participating youth, families, youth-serving organizations, and communities.

SUSTAINABLE FOOD SYSTEMS

The current work of the Sustainable Food Systems (SFS) initiative is described here. This site includes information about the panel of individuals that provides leadership for the initiative, some of the research that has been funded by ANR in this area, publications, outreach, and some news items. To read the strategic plan drafted at the initiative's inception, see the SFS Strategic Plan.

California agriculture must remain competitive. This will require mitigating the impacts of increasing climate variability, managing increased regulations and reducing negative impacts to the environment. Success will depend upon the development of new tools, technologies, methods, and practices to address the critical, varied, and evolving challenges facing California producers and communities.

Challenges within agricultural production also vary due to the size and location of farm operations, in which differing scales and locations may require specific advances to maintain a diverse, productive farm base.

We seek proposals that address one or more of the following priority issue areas identified by the SFS initiative panel.

Priority Issue Areas:
- Tools, technologies, methods and practices that improve the competitiveness and productivity of California plant and animal agriculture
- Farm management systems (plant and animal) that address issues of varying operational scale, including food safety and reduction of food waste, from farm to fork

Project proposals within these areas should include ideas that address issues of production resiliency given climate variability and water and other resource constraints. Projects that crosscut with other Strategic Initiatives will be given strong consideration and should be able to leverage strategic opportunities for funding at the state and federal level (ex: USDA, EPA). Project deliverables must be clearly stated with short-, mid, and long-term outcomes highlighted.

Potential topics that address one of more of the priority areas above include:
- Any topic relating to improving agricultural production and resiliency given climate variability, water and other resource constraints in California
- Projects that develop or identify tools and strategies that increase soil health and resiliency or develop new techniques or cropping systems that will improve soil organic matter, reduction of compaction or losses from erosion (wind, water, etc.)
- Projects that produce strategies that address the management of soil salinity, determination of crop tolerances or feasibility of new cropping systems in saline soils
- Projects that focus on the reduction of pesticide use
- Projects that address on-farm safety issues
- Projects that identify improved management practices for emerging or new crop and animal production systems suited to resource limits
- Projects that seek to add value for less than premium fruits and vegetables, improve post-harvest quality, and which also address the growing issue of food waste
- Projects that add value to animal production systems; small to large scale
- Projects that help develop strategies for food producers and processors to prevent and detect food borne contamination or work that evaluates technologies that are thought to reduce contamination as food moves from farm to processor, handler and to consumer
- Projects that facilitate the development of systems to allow for rapid and cost-effective trace-back/trace-forward of contaminated products to their source/markets in order to remove them from possible consumption
- Projects that will improve and support regulatory decisions that will positively impact California producers, while increasing food security and safety for consumers
- Projects that include or implement new, emerging and adapted technologies with the intent of industry adoption

<p align="center">__SUSTAINABLE NATURAL ECOSYSTEMS__</p>

The Sustainable Natural Ecosystems (SNE) initiative works to preserve forests, rangelands and wetlands. SNE research and extension efforts aim to identify and prioritize issues and solutions affecting these regions. Some of those issues include understanding and valuing ecosystem services, maintaining working landscapes, biodiversity, energy, water quality and quantity, climate change, regulations, land use change and fragmentation and education. These are detailed in the SNE Strategic Plan. For additional detail about the areas for research and extension see 2015 SNE SI Grant Proposal Additional Details.

We seek proposals that address one or more of the following priority issue areas identified by the SNE initiative panel.

Priority Issue Areas:
- Balancing multiple ecosystem services and biotic diversity on California's landscapes
- Causes and consequences of changes in community composition, biodiversity and species range shifts and species interactions in a changing environment
- The shifting spatial structure of California's natural resources under environmental and change
- Tools for land change science
- Promote the understanding and importance of ecosystem services provided by California's working landscapes and assist land managers with regulatory compliance. Promote additional collaborations and discussions between natural resource/conservation managers/restorationists and research and extension professionals to help build, evaluate or strengthen relationships between them and to improve the whole natural ecosystems extension network to include working, leisure and urban landscapes.

Potential topics that address one of more of the priority areas above include:
- How do environment and management interact to affect the sustainability of individual ecosystem services and biotic diversity?
- What are the impacts of any given management practice or set of practices on multiple ecosystem services? What are the impacts of lack of management (e.g., subdivided rangelands) on multiple services?
- The importance of key species, diverse communities and community interactions in providing resilience of ecosystem structure and/or function in response to environmental variability and/or land use change
- How are the potential changes in ecosystem services influenced by invasive plants, pests or other exotic species?
- How do the costs of managing for ecosystem services compare to their economic benefits? What are the economic costs of changes in ecosystem services in response to management or environmental changes?
- Develop improved frameworks for evaluating and analyzing impacts of fragmentation across spatial scales (local, county and regional), dynamics (temporal dimensions and sustainability), processes, drivers and systems (landscapes, wildlands, crop/animal agriculture, and urban and suburban communities)

- Success or failure of citizen science tools and/or social media for monitoring and broadening Cooperative Extension network
- Proposals that develop and evaluate management and policy synergies and practices and policies that enhance production of multiple ecosystem services as well as goods for the market. For example the use of prescribed burning in forests can improve forest health, reduce the risk of catastrophic wildfires, restore Native American management practices and increase biodiversity. Livestock grazing can be used to improve habitat for endangered butterflies, flowers, kangaroo rats and many other species.
- Proposals that evaluate the current networks or identify factors that promote the success or failure of linking land managers and restorationists with extension professionals and researchers.

<u>WATER QUALITY, QUANTITY, AND SECURITY</u>

The Water Quality, Quantity, and Security (Water) initiative strategic plan outlines three goals:
- Increase system understanding and characterization of water quality and quantity conditions;
- Develop and implement management practices to achieve water quality and quantity objectives; and
- Facilitate integrative research and extension program delivery.

The plan also details four key areas of inquiry -- surface water quantity, groundwater quantity, surface water quality, and groundwater quality. Each area of inquiry identifies preferred areas for research and extension projects and areas in which to engage in policy and decision-making. These are detailed in the <u>Water Strategic Plan</u>.

We seek proposals that address one or more of the following priority issue areas identified by the Water initiative panel.

Priority Issue Areas:
- Assess agricultural adaptation strategies to climate change and their impacts on water supply, cropping patterns and pest management
- Develop options for managing use of low quality (recycled) water
- Lessen impacts from nitrogen use in agricultural and urban environments
- Increase drought preparedness
- Promote sustainable groundwater management

Potential topics that address one of more of the priority areas above include:
- Improve agricultural irrigation water management, including irrigation scheduling and irrigation system operation and management
- Improve urban water use efficiency with emphasis on landscape irrigation water management
- Improve management of recycled water contaminants in urban and agricultural irrigated lands recharge
- Develop effective monitoring methods to assess nitrate and salt leaching to groundwater

- Evaluate combinations of management practices to address diversity of contaminants in agricultural runoff
- Assess and develop urban landscape management practices that reduce leaching of salts, nutrients, pesticides, and emerging contaminants into groundwater.
- Assess the interaction between surface water and groundwater, including conjunctive management
- Develop new groundwater banking alternatives, particularly in agricultural regions
- Evaluate socioeconomic aspects of water management systems
- Evaluate hydrology and ecosystem function, including impacts of climate change
- Evaluate vulnerability of Sierra snowpack in relation to climate change, land use and forest management
- Advance understanding of the role forest and rangeland watershed management has in providing California's surface water
- Improve management practices for concentrated animal feeding operations and their accumulated manure to minimize discharge and leaching

Letter of Intent Submission Instructions

Submission and approval of a letter of intent (LOI) is required to submit a full proposal to this RFP. The deadline for submitting an LOI via the Universal Review System (URS) is **Monday, March 16, 2015 by 5pm (Pacific Time).** Once the LOI is approved applicants will be notified of their eligibility to submit a full proposal by April 24, 2015. The deadline for submitting a full proposal is June 22, 2015.

Required elements for the LOI:

Name of Principal Investigator (PI) and **affiliation** (e.g. UCCE County Office or Campus and Department)

Name of Co-PI(s) and **affiliation** (if applicable)

Name(s) of **collaborator(s) and affiliation (if known)**

Title of proposed project

Strategic Initiative(s): Describe the target area(s) the proposed work will focus on and choose a strategic initiative priority issue area with which your proposal best fits. For cross-initiative proposals, clearly articulate the specific link between strategic initiatives.

Estimated Start and End Date: Indicate an estimated start and end date for the entire duration of the project. Projects in this RFP are expected to start April 2016 or August 2016.

Estimated Budget: Specify the estimated total budget for the proposed project and a brief summary explaining the allocation and use of funds over the course of the entire project.

Key Words: List 3-5 keywords most relevant to your proposed project.

Potential Technical Reviewers: Please provide a list of potential reviewers that can evaluate your proposed project. Reviewers may be UC or non-UC.

Please note: Do not recommend reviewers if you anticipate that someone may potentially serve as a Co-PI or collaborator on your project or you are aware of a known conflict of interest. In addition, please be aware that only initiative panel members review LOIs; technical reviewers evaluate the full proposals.

Project Summary: Please provide a summary that presents an overview of the proposed project. It is not necessary to discuss the specific scientific components; rather the LOI should address how the project meets the criteria specified in the RFP. Your summary may be up to one page in length.

To begin your LOI, please log into your ANR Portal and locate the Universal Review System (URS). Under Open Systems you can click on ANR Competitive Grants 2015 to begin your submission.

For more information please visit:
http://ucanr.edu/sites/anrstaff/Divisionwide_Programs/2015_ANR_Competitive_Grants_Program/

If you have questions about the proposal solicitation process and/or technical requirements you may contact:

Melanie Caruso: (530) 750-1254 or mmcaruso@ucanr.edu

For questions related to the strategic initiative priority issue areas please contact:

- (EIPD) Cheryl Wilen: cawilen@ucanr.edu
- (HFC) Keith Nathaniel: kcnathaniel@ucanr.edu
- (SFS) David Doll: dadoll@ucanr.edu
- (SNE) John Harper: jmharper@ucanr.edu
- (Water) Doug Parker: doug.parker@ucop.edu