University of California

Division of Agriculture and Natural Resources

Request for Proposals

Released February 2011

I. Overview

The Division of Agriculture and Natural Resources' (ANR) mission is to *maintain and enhance connections that fully engage UC with the people of California and to achieve innovation in fundamental and applied research and education 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* (ANR, 2009, p. 2)

By 2025, California will face many complex challenges related to increases in global and domestic populations and changes in climate and land use patterns. To thrive and prosper, Californians must have solutions to a wide range of existing and new challenges. (ANR, 2009, pp. 1-2 Executive Summary).

To address some of these challenges, ANR developed the *Strategic Vision 2025*[1] to identify and meet the statewide scientific, technological, social, and economic demands facing California. As an initial implementation strategy, ANR identified five (of nine) Strategic Initiatives that are favorably positioned within the Division to achieve maximum results. The five Initiatives are:

- Healthy Families and Communities
- Endemic and Invasive Pests and Diseases
- Sustainable Food Systems
- Sustainable Natural Ecosystems
- Water Quality, Quantity and Security [*projects in this area will be solicited after the establishment of the California Water Resources Research Institute (CWRRI) Director*]

ANR will invest in research, education and outreach projects that meet the goals of its mission by conducting an internal competitive grants program aimed to support high priority issues, encourage collaboration among ANR representatives and key players from throughout the state, support short-term high-impact projects, continue to strengthen the research-extension continuum, yield policy relevant outcomes, and achieve significant statewide economic, environmental and social impacts in California.

II. Criteria

Projects should address the following:

1. Clearly define the strategic initiative addressed
2. Opportunity to maximize ANR's strengths
3. Provide well coordinated outcomes for multidisciplinary projects
4. Ability to leverage additional funding
5. Build on the research continuum with science that will benefit California
6. Support science-based decision making and delivery of useful findings to support policy and outreach efforts
7. Use an integrative approach to collaborate with other strategic initiatives

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

In addition to the criteria mentioned above, successful proposals will:

- Provide well-conceived and feasible plans with a capacity to advance scholarship and knowledge

- Bring together well comprised teams that have the capacity to diligently and consciously contribute to the success of the project; especially as demonstrated by the meaningful engagement of PIs, Co-PIs, key contributors, and core staff/personnel

III. Eligibility

- Proposals must be submitted by someone that holds an academic appointment in ANR (campus or county based)

- Strategic Initiative leaders *may not* apply as PIs 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 the grant

- Strategic Initiative panel members *are* eligible to apply as PIs and/or Co-PIs on proposals

- Non-ANR UC academics may contribute to projects only if an ANR academic serves as PI/Co-PI

IV. Award Types

ANR is accepting proposals for two types of award mechanisms: **1) large-scale integrated projects and 2) targeted short-term projects.**

Large-scale integrated projects are long-term multi-year projects (3-5 years) that must draw on expertise in research, education and extension, as well as expertise from key stakeholders and external partners to accomplish the goals and objectives of the proposed work. Topics for potential proposals are described below. Proposals must outline how the project will incorporate extension outreach education and stakeholder partners, describe the potential outcomes of the project, provide a structure, coordination, and implementation plan; and should achieve specific research, education, and extension milestones. Large-scale integrated projects may request up to a maximum of $600,000 USD for the entire duration of the project (up to five years).

Targeted short-term projects are smaller in scale and short-term (1-2 years). Targeted projects may be research only, education and outreach only, or a combination of both. Activities might include fostering collaborations with key stakeholders, developing and publishing policy briefs and papers, and holding policy conferences as part of the collaborative education and outreach efforts. Research projects may expand an existing innovative/novel research area where ANR expertise and contribution will result in the translation of that research for the public good. Projects may request up to a maximum of $50,000 USD for the entire duration of the project (up to two years).

Continuous funding of an award is contingent upon the successful completion and submission of yearly progress reports; which are subject to a rigorous review. Targeted short-term projects are not eligible for funding beyond the two year term.

V. Timeline and Process

a. Competitive grants **call released Tuesday, February 8, 2011**

b. Applicants must **submit a Letter of Intent (LOI) no later than Tuesday, March 15, 2011** *(Submission and approval of an LOI is required to submit a full proposal to this RFP. Once the LOI is approved, applicants will be notified of their eligibility to submit a full proposal by Friday, April 8, 2011.)*

c. If eligible for full submission, applicants must **submit proposals by Friday, May 20th, 2011**

PLEASE NOTE THE NEW EXTENDED DEADLINE, FRIDAY MAY 20TH AT 5:00PM

d. Strategic Initiative (SI) leaders will review proposals and forward them for **technical review (May-August, 2011)**

e. After technical reviews are complete, Program Council (PC) will evaluate and discuss the proposals and make funding recommendations to the Executive Working Group (EWG) **(September, 2011)**

f. **Awards will be announced by VP Dooley in September, 2011**

VI. Solicited Targeted Areas

Proposals must clearly apply to one of the four strategic initiatives; cross-disciplinary or cross-initiative collaborations are strongly encouraged. Specific topics eligible for funding are described under each initiative heading below. For more details on possible research questions, consult the full drafts of the strategic initiative plans, available at: http://ucanr.org/sites/anrstaff/Strategic_Initiatives/ or click on the headers of the strategic initiatives listed below.

Healthy Families and Communities Initiative

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.

Approaches should be built upon existing research and programs in California communities which 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.

Concentration in this area may include:

a) Does a multifaceted, multi-level, school-centered environmental intervention targeting culturally diverse children promote healthful dietary and activity habits, reduce obesity and support more regional agriculture? What kinds, how, why?

Youth Science 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.

In youth science 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.

Concentration in this area may include:

a) What are the impacts of participation in community-based (non-formal) youth development programs on the science knowledge, science process skills, and attitudes toward science among K-12 youth?

b) What are the impacts of professional development in science on the pedagogical and content knowledge and skills of non-formal, pre-service, and in-service science educators?

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 is deemed to be effective.

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.

Concentration in this area may include:

a) How can the 4-H YD Program and other youth development programs best promote positive youth development with demonstrated impacts on individuals, families and communities?

Endemic and Invasive Pests and Diseases Initiative

Arthropod Vectors of Diseases

Arthropods and the diseases they transmit have a direct impact on agricultural productivity, the food supply, natural resources and in some cases, animal, plant and human health. With improved transportation and globalization of trade, the risk of introduction and spread of non-native arthropod species and diseases has increased. Once established and endemic in an area, on-going costs of control can be substantial and the continued presence of a pest or disease can have major on-going negative effects on trade and quality of life.

The overarching goal is to develop sustainable and cost-effective options for control of arthropods and diseases that are transmitted by these insect vectors in California. Seven example systems are given in the EIPD strategic plan. This list is not exhaustive and proposals involving arthropod-borne diseases affecting animal and human health, and other critical industries will be considered.

Concentration in this area may include:

a. Both translational (e.g. integrated pest management approaches and evaluation of cost-effectiveness of control options: eradication, containment and management) and basic research (e.g. host range testing).

Systems for early detection of pests and diseases

Early detection and rapid response are fundamental to effective containment of new incursions of diseases, weeds, insects, and other invasive pests which can have broad-ranging effects on health, food security and safety, trade and natural resources in California. Effective responses are enhanced by the use of accurate diagnostic methods that can be applied in the field or in diagnostic laboratories. Many agencies and networks in California are involved in these activities although to date, there has been no effort to rank or prioritize risks across all pests for the purposes of resource allocation, or to ensure that the overall plan collectively serves our diverse animal and plant agricultural and natural resources.

This target area aims to facilitate development and evaluation of risk-based approaches to an integrated, statewide biosecurity plan linking existing resources and considering animal and plant risks. Co-ordination with neighboring states, agencies, on-going programs such as the National Plant Diagnostic Network (NPDN) and the National Animal Health Laboratory Network (NAHLN),

data networks (e.g. CDFG, USGS) and existing groups (e.g. California Invasive Species Advisory Committee) is envisioned.

Concentration in this area may include:

a. Development of an integrated program linking animal and plant systems and new validated tools for early detection and identification of pests and diseases, and certification of pest freedom.

Sustainable Food Systems Initiative

Tools to improve the relative competitiveness and productivity of California agriculture today and with projected climate changes

The continued competitiveness of California agriculture, and mitigation of the impacts of climate change, will depend upon the development of new technologies and the use of the best ecological management practices to optimize food production per unit of inputs. Advances are needed in production practices (producers, processors and marketers) to increase the competitive ability of California livestock and plant food producers. These advances may include improvements in the quality and value of food products, development of value-added agricultural products, technologies to improve production efficiency and resource use efficiency (water, feed, nutrients, fuel, labor) while addressing pest and disease management and ecological concerns, identification of new crops or animal production systems suited to natural resource limits, and techniques to produce new germplasm or varieties for plant or animal agriculture better-adapted to current and projected situations in California agriculture.

Meeting the range of expectations of products and production practices in state, national and international markets is an important strategy for California's producers. How will we meet the global demand for food produced in a robust California system including demands for various qualities, costs, production locations and production methods? How does California balance between these various market segments to sustain the future viability of California agriculture? What are the new threats and opportunities that would benefit from UC activity?

Concentration in this area may include:

a) Development of new crops, animals, and forest species that will thrive in California as the climate changes. This may include innovations in genetics, genomics, biotechnology, and/or traditional breeding approaches.

b) Farm products to support development of biofuels, medicines and other value-added markets increasing the value of agriculture.

c) New crops that enhance nutrition and reduce chronic diseases and specific health conditions.

d) Genetically improved crops to increase yields, introduce novel traits, and adapt plants to water-limited conditions.

e) Science-based information and marketing strategies to enhance California agricultural products locally, nationally, and globally.

Food safety
Food safety issues can include both plant and animals systems. Contamination of animal production systems, plant commodities, public health implications, and quality and profitability of cropping and livestock systems are important concerns. There is a decided lack of information on the epidemiology, ecology, and biology of food borne pathogens (such as Shiga toxin-producing *E. coli* (STEC) and *Salmonella* spp.). In addition, while pesticides, fertilizers, and other agricultural chemicals remain an important component of integrated pest management programs, there are a number of opportunities to improve the economic and environmental sustainability of plant agricultural systems through more judicious use of agrichemicals, through the development and use of safer yet effective pesticides, or by exploring novel means of controlling pests that do not rely on pesticides. ANR can also generate information to improve and support regulatory decisions that will positively impact California growers, while increasing food safety to the consumer.

Concentration in this area may include:

a) Develop strategies for food producers and handlers to prevent and detect food borne contamination; evaluation of technologies to minimize contamination as food moves from the farm through the processor, handler and to the end consumer.

b) Develop systems to allow for rapid and cost-effective trace-back of contaminated products to their source and trace-forward of those products to their markets in order to remove them from possible consumption.

Sustainable Natural Ecosystems

Balancing multiple ecosystem services and biotic diversity in California's working landscapes
Wildland, rangeland, urban, and agricultural managers face increasing pressure to develop management practices that maximize crop/forage yield and quality while conserving native species, increasing soil storage of carbon and water, and minimizing weeds, erosion, flooding, and nutrient leaching. Managing ecosystems for multiple goals involves careful evaluation of tradeoffs, thresholds, and feedbacks associated with multiple ecosystem processes. Despite a few reviews and a significant amount of recent research, there is still little synthesis connecting how to manage for multiple services, or even how managing for one service impacts other services.

Concentration in this area may include:

a) How do environment and management interact to control individual ecosystem services and diversity (including patch- to landscape-level, as well as short-term to long-term) options?

b) What are the impacts of any given management practice on multiple services (and how does that depend on site conditions and annual variation in weather)?

c) How can the tradeoffs in managing for multiple services be valued and understood, and how do these tradeoffs vary by site, region, and spatial and temporal scale?

d) How do adjacent land uses affect the provision of individual and multiple ecosystem services?

e) How does the potential for change in ecosystem services change through interactions between climate change, land use change, N deposition, and invasion of exotic species?

The shifting spatial structure of California's natural resources under environmental change
New conceptual approaches to measuring, understanding, and managing of natural resources are needed because fragmentation of the landscape will change the distribution and abundance of organisms, resources such as water shift spatially and are used (or lost) differently, and ecological mechanisms resulting from management strategies change.

Concentration in this area may include:

a. An overview of the current status and knowledge, known and postulated trends, and currently projected outcomes in land-change science. In addition to the development of a clearer framework to evaluate and analyze impacts of fragmentation across scales (local, county, and region), dynamics (temporal dimensions), processes, drivers and systems (working landscapes, wildlands, agriculture, and urban communities).

Tools for Land change science
One aspect of land change science is observation, monitoring and prediction of patterns. There is a range of tools that can be used in support of land change science: understanding change, understanding consequences, predicting futures, and educating decision-makers. There are also a number of tools currently available for citizen science monitoring that could be used by Cooperative Extension to broaden the existing network of monitors.

Concentration in this area may include:

Focus on the inventory of these tools, and analyze the following aspects: are these tools primarily for data collection; do they have an educational aspect; what are their strengths and weaknesses; what is their adaptability; are they available through UC, ANR, or externally?

Promote the understanding and importance of ecosystem services provided by California's working landscapes
The general novelty of ecosystem services to the general public warrants a step-wise approach beginning with clientele engagement, education outreach, and building the foundations for an ecological understanding of these services. The education component works towards communicating the purpose and mechanics of using ecosystem services to policy makers and communicating policy makers' perspectives of ecosystem services to researchers.

Concentration in this area may include:

a. Education outreach media, an increased understanding by policy makers and the public of ecosystem services, and the engagement of policy makers in the development of future ecosystem services research.

Reference

ANR, UC. (2009). *Strategic Vision 2025.* http://ucanr.org/sites/anrstaff/files/1006.pdf.

University of California

Division of Agriculture and Natural Resources (ANR)
Letter of Intent Submission Instructions

Spring 2011

The University of California's Division of Agriculture and Natural Resources is pleased to provide applicant instructions for submission of a Letter of Intent (LOI) to its internal competitive grants program for spring 2011. Submission and approval of an LOI is required to submit a full proposal to this RFP. Once the LOI is approved, applicants will be notified of their eligibility to submit a full proposal. *The deadline for submitting an LOI is Tuesday, March 15, 2011. If eligible, the deadline for submitting a full proposal is Friday, May 20th, 2011*

PLEASE NOTE NEW EXTENDED DEADLINE, FRIDAY MAY 20TH AT 5:00PM.

Required elements for the LOI

- **Name of Principal Investigator** (PI) and **affiliation** (UCCE County Office *or* Campus and Department)
- **Name of Co-PI and affiliation** (if applicable)
- **Title** of proposed project
- **Strategic Initiative** (SI): choose one of the four Strategic Initiatives your proposal will address and describe the target area(s) the proposed work will focus on
- **Award Type**: please state which award type you are soliciting (*large-scale integrated or targeted short-term*)
- **Estimated start and end date**: please indicate an estimated start and end date for the entire duration of the project *(projects in this RFP are expected to initiate on September 1, 2011; if your proposed work requires a different critical starting date, provide those dates and a brief explanation)*
- **Estimated Budget**: please indicate 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
- **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 proposal meets the criteria specified in the RFP. Your summary may be up to one page in length.

To read further information on submitting letters of intent, please log into your ANR Portal and locate the *Universal Review System.* Under *Open Systems*, you can click on *ANR Competitive Grants*. If you have any questions, you may contact Vanessa Gomez at (510) 987-0377 or Vanessa.gomez@ucop.edu.

****Please note that full application materials will be available only to persons that received notification of their approval for submission of full proposals. All applicants will receive a notification of their eligibility within two weeks of the LOI deadline****