

Print Application

Pin No: 33702 - Assessing the Feasibility of Managing or Cultivating California Bay (*Umbellularia californica*) for Commercial Nut Production - SUBMITTED

Application Overview

RFP Title: 2016 Specialty Crop Block Grant Program

Submitting Organization: The Regents of the University of California

Submitting Organization: Davis

Division:

Project Title: Assessing the Feasibility of Managing or Cultivating California Bay (*Umbellularia californica*) for Commercial Nut Production

Project Description: California Bay (*Umbellularia californica*, Lauraceae) has been used for millennia by native people for food and medicine. Its roasted edible seeds (Bay nuts) are appreciated by specialty food markets and consumers, but are not well known due to lack of supply. Little is known about phenotypic and genetic variation in the species, including causes of variability in fruit production. Our objectives are to elucidate: 1) infraspecific phenotypic and genetic variation; 2) causes of variability in productivity; 3) management practices that promote productivity; 4) nutritional value, health risks, and optimal postharvest handling of the fruit. Project success will be evaluated by our ability to identify and document factors contributing to variation in fruit set, management practices that increase fruit set, human health benefits and risks of seed consumption, effective postharvest handling methods, and collaborators in the development of this native species as a viable specialty crop.

Water System ID:

District Office:

APPLICANT DETAILS

Applicant Organization: The Regents of the University of California

Applicant Organization: Davis

Division:

Applicant Address:

1 Shields Ave , Davis , CA - 95616

Address:

PROJECT LOCATION

Latitude : **Longitude:**

Watershed:

County: Statewide

**Responsible
Regional Water
Board:**

PROJECT BUDGET

Funds Requested(\$): 449,121.00

Local Cost Match(\$): 0.00

Total Budget(\$): 449,121.00

Funding Program	Applied	Amount Recommended by State Water Board
2016 Specialty Crop Block Grant Program	Yes	\$0.00

Project Management Role	First Name	Last Name	Phone	Fax	Email
Project Director: Authorized Representative	Ahmad	Hakim-Elahi	530-754-7700	530-754-8229	awards@ucdavis.edu
Project Manager: Day to day contact	Daniel	Potter	530-754-6141	530-752-8502	dpotter@ucdavis.edu

Applicant Information

Name: The Regents of the University of California
Division: Davis
Address: 1 Shields Ave Davis, CA , 95616
Federal Tax ID: 946036494 **DUNS Number:** 047120084

Person Submitting Information

Submitter Name: Daniel Potter
Submitter Phone: 530-754-6141
Submitter Fax: 530-752-8502
Submitter Email: dpotter@ucdavis.edu

Cooperating Entities	Role	Name	Phone	Email
Kashia Band of Pomo Indians	local stakeholder group, cultural investigation facilitator	Teresa Romero	707-591-0580	teresa@stewartspointrancheria.com
	collaborator:			

Department of Biological and Agricultural Engineering, UC Davis	post-harvest physiology and management	Irwin Donis-Gonzalez	530-752-8986	irdonisgon@ucdavis.edu
Department of Biological and Agricultural Engineering, UC Davis	collaborator: chemical and nutritional analyses	Gail Bornhorst	530-752-9239	gbornhorst@ucdavis.edu
Anthony Cohen	consultant and inter-agency facilitator	Anthony Cohen	707-591-0608	tony@tonycohenlaw.com

Pre Submission Attachment Title	Phase	Submission Period	Date & Time
Concept Proposal Budget	PHASE1	PRE SUBMISSION	12/3/2015 10:57:14 AM

Download all Pre Submission Attachments 

Questionnaire - Phase1

1 **ORGANIZATION TYPE**

Select one of the following organization types that best describes the applicant organization.

Answer: | College/University

2 **FUNDING AREA AND CATEGORY**

Select the funding area and category that most directly aligns with the nature of the project. Refer to page 4 of the 2016 Request for Concept Proposals for descriptions of each funding area and category.

Market Enhancement

- A: California Grown Promotion
- B: Market Expansion and Access

Training and Education

- A: Specialty Crop Nutrition Education
- B: Equipping Current and Next Generation Specialty Crop Farmers

Research

- A: Environmental Stewardship and Conservation
- B: Plant and Pest Management

Fixed Amount Awards

- A: Food Safety Modernization Act
- B: Adaptation to Drought

Answer: | Market Enhancement: B

3 **PROJECT PURPOSE**

Identify the specific and existing issue, problem, or need the project will address, and explain why the proposal is important and timely for the specialty crop industry.

Answer: In the face of ongoing drought in California, development of native species as crops makes good sense. Species traditionally used by California Indians have great cultural value and interest. *Umbellularia californica* is widely distributed in California and has been used for millennia by native people for food and medicine. Roasted seeds (California Bay nuts) are appreciated by specialty food markets and consumers, but are not well known due to lack of supply. Little is known about phenotypic and genetic variation in the species, including causes of variability and inconsistency of fruit productivity. Preliminary analyses indicate that the seeds have similar nutritional value to walnuts. Additional research is needed on nutritional value, health risks, and postharvest handling. Our study will elucidate infraspecific variation, causes of variation in productivity, management practices that increase fruit set, and nutritional value, health risks, and optimal postharvest handling of fruit.

4 **PRIOR-YEAR SCBGP PROJECTS**

Indicate if the project builds upon a previously funded SCBGP project. If "YES," provide the grant agreement number(s), explain how the new project differs from, complements, or builds upon previous work.

Answer: I NO

Answer:

5 **SUSTAINABILITY**

Describe how the project will become self-sustaining beyond the grant duration and not indefinitely dependent on grant funds.

Answer: There is great enthusiasm for California Bay nuts among California Indian groups and specialty food markets, but the number of interested parties and their access to the nuts are limited by supply. California Bay nut production is generally very low. We will promote awareness of the nut while researching causes of yield limitation, management practices that increase yield, nutritional value of the nuts, and optimal postharvest handling. This will enable involved groups to obtain significant revenue from existing stands and reinvest it in future crop development and management. We will work with current collaborators, especially the Kashia Band of Pomo Indians, and new partners identified in the course of this grant period, to secure additional funds to expand the project. The project should result in widespread adoption of this native specialty crop with associated economic benefits, which should in turn facilitate funding of future efforts toward continued development and improvement.

6 **POTENTIAL IMPACT**

Identify and provide the projected number of specialty crop beneficiaries. Describe the estimated economic impact on the specialty crop industry. List the specific specialty crops that will be affected, if possible.

Answer: The initial beneficiaries will be the 860 members of the economically challenged Kashia Tribe, whose 1000 acres of Bay habitat produce poorly. Likely Bay nut purchasers are "locally grown" food makers, retailers, and restaurants. Per a local chocolate maker, lack of

supply is the only obstacle to commercial Bay nut candy. He would pay \$10 per pound for dried-in-the-shell nuts, twice his cost for cacao.

Our focus is on Bay nuts, but there is enthusiasm for all native foods because of their lower environmental cost. This project, the first under modified CDFA rules, will be a model for California's 109 federally recognized tribes, their 720,000 members, and their 500,000 acres of tribal lands. Native food cultivation businesses will also benefit the broader economy because of the support services and employment opportunities that will thrive around them: horticulture, initial and final processing and packaging, transportation, advertising, distribution, wholesale and retail sales.

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OUTCOME MEASURES

Identify the outcome measure(s) the project will achieve and the indicator(s) of success for each outcome. Explain how the project will accomplish the outcome measure(s) and indicator(s) identified. Click [HERE](#) for a description of the required outcomes and indicators.

Answer: The project will enhance competitiveness of specialty crops through:

1. Enhancing the economy by specialty crop development. Indicators of success will be the numbers of tribal groups and small businesses who report increased use of California Bay as a specialty crop in response to project results and outreach.
2. Greater capacity of sustainable practices of specialty crop production resulting in increased yield and conservation of resources. Indicators of success will include the numbers of producers indicating adoption of recommended practices and the number of acres maintained as habitat for Bay nut production.
3. More sustainable, diverse, and resilient specialty crop systems. Indicators of success will be the number of discoveries with implications for expanding use of California Bay as a crop; i.e., identification of factors contributing to variation in fruit set, management practices that increase fruit set, nutritional value, and effective postharvest handling methods.

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OUTREACH PLAN

Describe how the project results will be shared with the target audience, stakeholders, and other interested parties beyond those directly involved in the project.

Answer: This project uses multidisciplinary approaches to address questions of basic scientific interest as well as direct applications to California's economy, environment, and cultural heritage. Results will be disseminated via talks and articles in scientific journals, newsletters, websites, and newspapers. The Santa Rosa Press Democrat already plans to publish a story on the Kashia Pomo's interest in the commercial potential of this traditional food, to be linked at pechanga.net, a native news forum with 5 million hits per month. Other groups with whom we will collaborate on outreach about our efforts to create a commercially viable, healthy, and environmentally friendly food source from a native plant include Bioneers and livingwild.org. We will also provide information and give presentations to interested groups such as Sonoma County Go Local Cooperative, the Farmer's Guild, the California Native Plant Society, and inter-Tribal organizations such as First Nations Development Institute.

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PROJECT DURATION

Estimate the "Start Date" for the proposal.

Projects cannot start before October 1, 2016.

Answer: 10/01/2016

Estimate the "End Date" for the proposal.

Projects cannot continue beyond March 31, 2019.

Answer: 03/31/2019

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WORK PLAN

Describe project activities that are necessary to accomplish project objectives and support outcome measures. Include tasks for all personnel responsible for carrying out project activities.

Only grant-funded activities occurring during the timeframe of the proposed project should be included. Do not include activities funded with match and/or in-kind contributions.

- Answer:
1. Characterize genetic and phenotypic variation, including fruit set, in natural populations from across the range within California. Sampling will comprise 20-30 populations and 10-20 individuals per population. Phenotypic characterization will emphasize characters related to fruit productivity and yield, including differences in flower and fruit development/abortion between high- and low-producing individuals. Genetic diversity will be assessed using molecular markers such as microsatellites and nucleotide sequences. Correlations between genotypic and phenotypic variation will be investigated to facilitate use of genetic testing to identify promising individuals. These tasks will be conducted by Potter lab personnel.
 2. Conduct historical research and ethnobotanical interviews to discover traditional Native American management methods for the species. Interviews will be conducted during sample collection trips. These tasks will be led by Project Scientist.
 3. Characterize postharvest nut physiology, effective post-harvest handling, drying, and storage. Sampling will comprise seeds collected from at least six populations (100 seeds per population) in at two different harvesting dates. Seeds will be divided into four treatment groups. The following parameters will be quantified immediately after harvest and each month for 6 months of storage at three different temperatures (1, 4 and 25 °C): color (correlated to oxidation), microbiota, respiration rate, ethylene production rate, firmness/hardness, moisture content, and water activity. These tasks will be conducted by Donis-Gonzalez lab personnel.
 4. Characterize chemical composition and nutritional potential of seeds, using subsamples of seeds taken immediately after harvest and after each month of storage. Amino acid composition, fatty acid composition, crude protein, lipid content, fiber content, and protein and lipid digestibility will be quantified. These tasks will be conducted by Bornhorst lab personnel.

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BUDGET

Click [HERE](#) to download the "Budget Template."

All budget items should solely support enhancing the competitiveness of specialty crops and correlate to the goal(s) of the project. Upload the completed budget template to your FAAST application in the "Attachments" tab.

The budget should only include grant funds. Do not include match and/or in-kind contributions.

Certification And Submission Statement

Please read before signing and submitting application.

I - certify under penalty of perjury:

- The information entered on behalf of Applicant Organization is true and complete to the best of my knowledge;
- I am an employee of or a consultant for the Applicant Organization authorized to submit the application on behalf of the Applicant Organization; and
- I understand that any false, incomplete or incorrect statements may result in the disqualification of this application.

By signing this application, I waive any and all rights to privacy and confidentiality of the proposal on behalf of the applicant, to the extent provided in this RFP.

Submission By: danpotterucd

Submitter Initials: dp
10:18:42 AM

Submission Date: 12/4/2015