

California Department of Food and Agriculture
2011 Specialty Crop Block Grant Program - Farm Bill (SCBGP-FB)

crops, and extend the program's reach through purchases of airtime on commercial television stations in San Francisco and/or Los Angeles.

Project 9 Fresno County Economic Opportunities Commission (FCEOC) ***\$101,931***

Title: A Guide to Promoting Asian Specialty Produce

Abstract: This project will develop a guide to promoting Asian specialty produce, which will list vegetables and other specialty crops commonly grown in different Asian regions. The guide will codify names for each product, and provide nutritional facts and recipes for distribution to growers, inspectors, and consumers statewide.

Project 10 Robert Mondavi Institute for Wine and Food Science ***\$105,023***

Title: Delivering best practices and sensory training to benefit California olive growers and processors

Abstract: This project would develop 'best practices' for olive orchard management, processing, storage, and sensory evaluation to (1) help olive growers and processors increase production efficiency; (2) expand food industry knowledge of the qualitative differences between California olives and olive oil and imported products; and (3) assist the United States Department of Agriculture (USDA) in enforcing new olive oil quality standards by providing sensory training. The project addresses a top industry priority identified through a strategic planning process in 2010 led by the University of California (UC) Davis Olive Center that included olive growers and processors, university faculty, farm advisors and culinary experts. The project would review UC and non-UC olive research, digitize UC olive research and providing free online access, develop 'best practices' information based on the research and conveyed in a concise format, disseminate 'best practices' through olive industry and food-service sectors, train USDA inspectors to be proficient in sensory evaluation, and evaluate performance measures.

Project 11 San Benito County Ag in the Classroom ***\$131,750***

Title: Expand Specialty Crops Education and Outreach in the Schools and Community

Abstract: The project focus for the Community will be to implement specialty crop signs along major roadways in the County. The signs will help to engage and educate people about the vast array of specialty crops being grown in the County. On the education side San Benito County Ag would like to expand the efforts in school gardens, provide teacher trainings, and develop a more detailed Harvest of the Month (HOTM) program for San Benito County. Currently the project has 60 classrooms participating in the program. San Benito County Ag hopes to take the program in-house, have the local county growers provide crops, and extend the program into the local grocery stores - showcasing a crop of the month.

Project 12 Stanislaus County Ag Center Foundation ***\$268,217***

Title: Ag In Motion

Abstract: The National Ag Science Center has developed a mobile agriculture classroom, called Ag In Motion, (AIM), which launched in June 2011. AIM will visit local schools to provide seventh-grade students with a unique learning opportunity while fostering an understanding of future career opportunities in agriculture by introducing students to the connection between science and agriculture. This innovative classroom approach will promote California specialty crop production through four, standards-based, interactive science education curriculums geared for middle school students. The lab will be fully equipped with the materials needed to perform science experiments that teach lessons about specialty crops, and the pests, environmental concerns and science which impact their production.

California Department of Food and Agriculture
2011 Specialty Crop Block Grant Program - Farm Bill (SCBGP-FB)

Stanislaus County Ag will also provide outreach to areas not served by Ag In Motion and will work with communities to provide duplicate mobile units in these areas.

Project 62 *Soil Born Farms Urban Agriculture Project* **\$483,485**

Title: Urban Farmer Training Program

Abstract: Soil Born Farms Urban Farmer Training Program will provide a comprehensive program to train prospective urban farmers to meet the increasing demand for local fruits and vegetables in urban environments. The program will be designed to meet the needs of diverse participants (beginning farmers, limited resource farmers, and home farmers), to develop the skills and knowledge to grow specialty crops on urban and peri-urban lands, sell within urban markets, and compete in the agriculture industry. This includes instruction in small-scale sustainable farming practices including diverse crop planning; fertility planning; pest management; public engagement; direct marketing and sales; land tenure and business planning. Trainees will have access to intensive hands-on farm experiences, production resources, new /existing farm site planning, land placement assistance and marketing/distribution resources with support from farms, schools, developers, public/private organizations.

California Department of Food and Agriculture
2011 Specialty Crop Block Grant Program - Farm Bill (SCBGP-FB)

Environmental Concerns and Conservation

Project 13 *The Regents of University of California, Davis* **\$483,316**

Title: Evaluation of Winter Cover Crops to Reduce Nitrate Leaching and Increase Yields in Drip-irrigated Tomato Rotations

Abstract: Cover crops will be evaluated for their ability to reduce nitrate leaching and improve soil properties in drip-irrigated tomato rotations. The effects of physical, chemical, and hydraulic properties on fibrous-rooted and leguminous cover crops and tomato crop yields will be assessed. These measurements, as well as soil moisture and field nitrogen monitoring will be used to calibrate and mechanize a multi-dimensional HYDRUS model for simulating water and nutrient (i.e. nitrate) movement during irrigation and rainy seasons. Root and canopy development of the different cover crops will be characterized and integrated with modeling efforts and field measurements of drainage and nitrate distribution to develop recommendations for best management practices associated with winter cover cropping for sustainable drip-irrigated tomato production. Cost/benefit analyses will compare the profitability of the different alternatives.

Project 14 *Ag Innovations Network* **\$119,780**

Title: Review of Regulatory Efficiencies for Specialty Crop Producers

Abstract: The goal of this project is to explore and develop efficiencies in the regulatory process governing California's specialty crop growers. It continues from and builds on ongoing efforts of the California Roundtable on Agriculture and the Environment (CRAE), California Ag Vision, and others to identify regulatory areas that may be duplicative and find solutions which are effective and have a high likelihood of adoption. The project would provide a process for stakeholders to identify problems and solutions and broadly disseminate those results and assist regulatory agencies in convening productive meetings with specialty crop growers to explore how to implement the solutions identified. A key strength of this project is the engagement of environmental and community stakeholders to increase support for the solutions identified.

Project 15 *University of California Cooperative Extension* **\$59,961**

Title: An assessment of springtime temperature inversion conditions and the usefulness of wind machines for frost protection in California coastal winegrape regions

Abstract: The availability of water for sprinkler frost protection is diminishing in California coastal regions due to environmental concerns and lack of supply. Reliable frost protection is required for sustainable and profitable winegrape production, thus growers will increasingly rely on alternatives such as wind machines. However, the effectiveness of wind machines depends upon local temperature inversion conditions. To ensure that large investments in expensive wind machines provide a predictable benefit, site temperature inversion conditions need to be quantified. This project will assess the springtime temperature inversion conditions in winegrape vineyards in Sonoma, San Luis Obispo and Santa Barbara Counties to assess the potential usefulness of wind machines for frost protection. The University of California Cooperative Extension will determine if wind is a viable alternative to frost water protection in targeted sites thus providing growers with the option of reducing water use for crop production.

Project 16 *University Corporation at Monterey Bay* **\$378,028**

Title: Improved Tracking of Water Use in Specialty Crops

Abstract: Accurate estimation of crop water demands efficient irrigation scheduling, which in turn brings benefits including surface water conservation, mitigation of groundwater depletion/degradation, and

California Department of Food and Agriculture
2011 Specialty Crop Block Grant Program - Farm Bill (SCBGP-FB)

Project 20 *The Regents of University of California, Davis* **\$219,502**

Title: Sustainable Methods for Extracting High Quality Oil from Fruit and Vegetable Seeds

Abstract: Seeds in byproduct streams of fruit and vegetable processing have not been fully utilized in California. The seeds normally have oil with superior quality and functionality than oil seeds. However, conventional oil extraction by solvent lead to severe environmental and health hazards to workers, food safety concerns, and low product value. The project will develop methods which use cold press to extract oil with high quality and value. The Regents of University of California, Davis (UCD) will evaluate and optimize processing conditions including seed moisture content, extraction pressure, particle size, extraction temperature and/or preheated seed temperature to achieve high oil yield and quality from tomato, grape, and pomegranate seeds. Chemical and functional components of oil, nutritional quality, energy usage, and operational cost of new and conventional methods will be studied and compared. Results will be statistically analyzed and disseminated through publications, reports, conferences, sample distribution and seminars.

Project 21 *USDA, Agricultural Research Service, WRRC* **\$226,117**

Title: Torrefaction of Specialty Crops Pomace to Produce High-Energy Density Fuels

Abstract: Torrefaction of pomace from the juice, wine, and olive oil industries can produce a stable, high-energy density fuel source. This provides the different industries with a value-added alternative to current pomace use as compost and animal feed. Torrefaction is a mild pyrolysis method that removes most moisture and volatile components. The torrefied material has an energy value comparable to low-rank coal and becomes more hydrophobic, rendering it stable to biological activity and moisture. Also, torrefaction reduces mass of the material, which lowers shipping costs. In this proposal, USDA, Agricultural Research Service, Western Regional Research Center (USDA-ARS-WRRC) plans to optimize the torrefaction process for different pomaces. USDA-ARS-WRRC will also examine alternative heating methods for torrefaction, such as microwave heating. In addition, USDA-ARS-WRRC will use computer modeling software to determine energy requirements for the torrefaction process at different processing scales.

Project 22 *San Luis Obispo Bee Company* **\$280,138**

Title: Best management practices (BMPs) for Cal. native blue orchard bees (BOBs) and BMPs for wildflower seed production in orchards and vineyards.

Abstract: The proposed research will develop BMPs for California native BOBs in Central valley orchards, coastal vineyards and wild coastal production areas. This will provide orchard pollination and additional BOB production to serve as an additional agricultural commodity. In addition, this project will develop BMPs for native wildflower seed production in Central valley orchards and coastal vineyards. Wildflower species to be produced are wild isolates of *Phacelia ciliata*, *Phacelia tanacetifolia*, *Pholistoma auritum*, *Collinsia heterophylla*, *Nemophila menziesii* and *Clarkia elegans*. This project will also determine the BOB forage preferences among early blooming Cal. native lupines and other leguminous cover crops. Finding a leguminous cover crop that is a quality BOB forage will allow growers to gain additional nitrogen that is desired in a cover crop mix and determine the nitrogen production of native lupines in orchards and vineyards. This will allow the greatest nitrogen production from a high value, seed producing cover crop.

Project 23 *Wine Institute* **\$308,632**

Title: California Wine Climate Protection Initiative: Calculating Scope Three Greenhouse Gas Emissions to Mitigate Climate Change, Reduce Costs, and Address International Market Demand

California Department of Food and Agriculture
2011 Specialty Crop Block Grant Program - Farm Bill (SCBGP-FB)

Abstract: The project will increase California wine's competitiveness by adding Scope 3 Greenhouse Gas (GHG) emissions (e.g. transportation options and packaging materials) to an existing web-based calculator to help wineries understand and minimize carbon (C) footprints, reduce costs, and address international market demand. Wine Institute and the California Sustainable Winegrowing Alliance (CSWA) have been working to better understand Scope 1 and 2 emissions for wineries and vineyards; however, Scope 3 emission factors have not yet been defined with a high degree of confidence. Adding Scope 3 elements to the GHG calculator provides a means for California wineries, with diverse winemaking and distribution processes, to better understand their carbon footprint from a full carbon Life Cycle Analysis (LCA) perspective. This information in turn will be used to set industry-wide targets for improvement while mitigating climate change and meeting growing demand for this information in the global marketplace.

Project 27 *Calaveras Winegrape Alliance* **\$86,273**

Title: Improving Water Use Efficiency in High Elevation (HE) Vineyards

Abstract: It is anticipated high elevation (HE) vines using irrigation schedules based on 10 day predictive high temperature forecasts will benefit differently than HE vines using traditional low elevation (LE) irrigation guidelines. Testing and recording pms levels, irrigation intervals and gallons variables; data results will be analyzed using 3n factorial experiment procedures to perform statistical analysis. Statistical data values will be used to develop HE irrigation models. Promising models will be tested in Phase 2.

California Department of Food and Agriculture
2011 Specialty Crop Block Grant Program - Farm Bill (SCBGP-FB)

Marketing Enhancement/ International Trade

Project 24 *Lake County Winegrape Commission* **\$204,017**

Title: Lake County Rising, Promotional Campaign

Abstract: The wine industry is Lake County's largest agricultural sector with 32 wineries and 158 growers. Conservative estimates of this industry in the County exceed \$40 million in gross revenue, over 1000 jobs, and dozens of related small businesses. While the County's wine industry is beginning to receive recognition for the quality of its wine, many vintners and growers have limited financial resources and lack expertise in marketing to promote the county on a broad scale. The goal of this project is to increase competitiveness and long term sales of Lake County wine and wine grapes by promoting the unique characteristics of Lake County that produce quality wine and wine grapes. This project will utilize research to benchmark the current state, development of coordinated marketing campaign and materials, deployment of electronic and print media campaign, demonstration of the product at events and trade shows: and marketing training for growers and vintners.

Project 25 *California Fresh Tomato Growers dba California Tomato Farmers* **\$350,000**

Title: Development of an On-line Traceability Tool for California Tomato Farmers

Abstract: The California Tomato Farmers (CTF) will develop an on-line food safety database to enhance the industry's competitiveness in the U.S. market. The database will foster greater collaboration and transparency between industry and their customers, giving California tomatoes a competitive edge against foreign suppliers who offer lower prices but limited food safety assurance. CTF will utilize its extensive knowledge of the global food safety system to provide their customers with supply chain visualization capabilities designed to expedite food safety traceback investigations. Information generated in this database will be accessible to growers, regulators, auditors, distributors, and end-users of California fresh tomatoes. The foundation and development of this database are based on the cooperation of CTF, the U.S. Food and Drug Administration (FDA) and the California Department of Public Health (CDPH) under FDA's Task Order 7 (TO7).

Project 26 *High Sierra Resource Conservation & Development Council Inc* **\$111,599**

Title: Enhance the Competitiveness of Placer County Mandarin oranges

Abstract: This project will increase the distribution and consumption of Placer County Mountain Mandarin oranges beyond the borders of Placer County and California. By development of standard horticultural and marketing practices the Placer County Mountain Mandarin orange growers and members of the Mountain Mandarin Growers Association (MMGA) will increase their market share domestically by providing distributors with a consistent size, taste, labeled and marketed product.

Project 28 *The Regents of University of California, Davis* **\$90,851**

Title: Reducing spoilage and expanding growth in California specialty olives through improved fermentation management

Abstract: The national market for high-value fermented 'specialty' table olives offers strong growth potential to California table olive processors. However, a lack of scientific understanding of the microorganisms essential for the fermentation process has led to serious product spoilage defects and overall limited growth and investment for improvement and diversification of table- olive production. This project will determine variations in the amounts and identities of lactic acid bacteria and yeast populations in commercial olive fermentation tanks develop methods to diagnose and control the growth of economically devastating spoilage yeast, and provide foundational knowledge on the microbial quality

California Department of Food and Agriculture
2011 Specialty Crop Block Grant Program - Farm Bill (SCBGP-FB)

of California fermented olives needed for this industry to capture a higher proportion of this market sector.

Project 29 *California Citrus Mutual* **\$96,062**

Title: Implementing the California Standard to Increase Navel Orange Consumption

Abstract: Over six years of consumer research, by the citrus industry; funded in part by the Specialty Crop Block Grant Program (SCBGP), has resulted in the development of a new maturity standard for navel oranges. The California Standard has been proven to be a much more reliable indicator of flavor and favorable consumer response, as indicated by expressed intent to purchase more, more often. In 2011 the ratio standard that has been used for navel oranges since 1914 will be abandoned and the California Standard will be adopted as the legal maturity standard for navel oranges. To maximize the benefit to the California citrus industry customers will need to be made aware that quality standards have been improved. California Citrus Mutual proposes to accomplish and thereby increase navel orange consumption through an intensive educational campaign, educating buyers and customers about the new California Standard and how it helps assure consumers receive a better tasting navel orange.

Project 30 *Robert Mondavi Institute for Wine and Food Science* **\$111,997**

Title: Improving Analytical Methods and US Standards to Increase Competitiveness of California Table Olives and Olive Oil

Abstract: This project will develop innovative methods to assess the quality of olives and olive oil, and facilitate the adoption of improved quality standards for the United States. Inadequate standards and analytical methods are hindering the long-term sales and competitiveness of olives grown and processed in California. The project addresses a top industry priority identified through a strategic planning process in 2010 led by the UC Davis Olive Center, a process that included olive growers and processors, university faculty, farm advisors and culinary experts. The project would determine the chemical values of a variety of olives grown in California, identify chemical markers for sensory defects, develop standards based on the chemical markers, and lead a stakeholder effort to develop and adopt improved standards and methods based on this research.

Project 31 *California Department of Food and Agriculture, Inspection and Compliance* **\$216,818**

Title: Increasing Market Vitality and Enforcement through Market Manager Training and Certification at California Certified Farmers Markets

Abstract: This proposal is designed to increase sales of California specialty crops and enhance compliance at certified farmers' markets (CFMs) through market manager training and certification.

The Certified Farmers' Market Program has grown exponentially over the last decade. From 2005 until 2010, the number of CFMs operating throughout the state has grown dramatically from approximately 500 to over 700. In addition, the Program has increased consumption of specialty crops that are often unavailable through conventional venues.

The growth of the CFM Program has increased the necessity for market manager training and cohesive application of CFM Program rules and regulations.

Funding will provide market managers the training and tools necessary to comply with applicable statutes, rules and regulations. As a result, the program would expect a decrease at least 25%, in the number of noncompliance notices being issued and increase in market viability by the close of the program.

California Department of Food and Agriculture
2011 Specialty Crop Block Grant Program - Farm Bill (SCBGP-FB)

Project 32 *The Regents of University of California, Davis* **\$135,883**

Title: Domestic and International Market Potential of the California Olive Industry

Abstract: This project will document the impact of European Union (EU) trade and support policies for olives on the competitiveness of the California olive industry. In addition, The Regents of University of California, Davis (UCD) will analyze the effects and market implications of regulating quality control standards for olive products. UCD will collect and classify market and policy data spanning the past 20 years. UCD will statistically document the effects of historical changes in EU and U.S. policies related to olive products on market patterns across time and regions. Using this documentation, UCD will simulate the effects of potential changes in policy on U.S. and global olive product markets. The results from this project will identify opportunities for the California olive industry that may result from changes in EU trade and support policies and strict olive product standards.

Project 33 *Wine Institute* **\$392,500**

Title: Green from Grapes to Glass: A Marketing Communications Campaign for California Wine

Abstract: Green from Grapes to Glass (GGG) is a marketing campaign to educate the wine trade, media and consumers about CA's leadership in sustainable winegrowing practices and grow awareness and sales for the state's 3000 wineries and 4600 winegrape growers. GGG builds on Wine Institute (WI) and California Association of Winegrape Growers successful collaboration on California First, a program communicating California wine's regional diversity, and on the California Sustainable Winegrowing Program, centered on a code of best practices with participation from wineries representing more than 63% of statewide wine shipments, and growers representing 68% of statewide acreage. GGG will use research to create marketing data and tools, provide tools and incentives for wineries and growers using best practices, and improve awareness through events, websites and digital media with wine trade, media and Millennial generation consumers who place high priority on green product attributes.

Project 34 *California Blueberry Commission* **\$65,000**

Title: California Blueberry Commission International Market Survey

Abstract: The newly formed California Blueberry Commission (CBC) was created, in part, to determine new international markets for the California blueberry industry. A critical component and starting point of any successful marketing campaign is research of the market potential in the targeted countries. The objectives of this project are to determine if the targeted countries are a plausible and sustainable market for California blueberries. CBC will buy marketing data and conduct surveys among the targeted countries' major produce retailers, which will allow the California blueberry industry to focus on those retailers that provide the best opportunities.

Project 35 *California Leafy Green Product Handler Marketing Agreement* **\$250,120**

Title: California Leafy Greens Consumer Public Relations Campaign in Canada

Abstract: The California Leafy Greens Marketing Agreement (LGMA) will implement a consumer public relations campaign in Canada to raise consumer confidence in California leafy greens' quality and safety. There remain lingering concerns among many consumers about the safety of leafy greens since the widely publicized E. coli cases dating back to 2006. Public relations activities in Canada will focus on communicating the accomplishments and significance of the LGMA food safety program that was instated as an outcome of those food safety issues. In addition, LGMA will use media outreach efforts to educate consumers about the health benefits of leafy greens.

California Department of Food and Agriculture
2011 Specialty Crop Block Grant Program - Farm Bill (SCBGP-FB)

Project 36 *Solano County* **\$50,000**

Title: Solano Grown Marketing

Abstract: Local growers are looking at ways to expand their sales both within Solano County and to the greater bay area. By increasing their "market" they hope to improve on farm income. Funding for this project would be used to continue the development of local marketing activities and allow for market promotions into the bay area. Although Solano County is off to a good start, 'Solano Grown' is still in the start up phase as an organization. The objective of this grant project is to build on the success of the 'Solano Grown' logo and branding effort, by developing an advertising campaign that promotes locally produced agricultural products and also reaches into the bay area.

Project 37 *Northern California Regional Land Trust* **\$116,317**

Title: Specialty Crop Market Enhancement and Promotion, Buy Fresh Buy Local North Valley

Abstract: The project purpose is to expand the Buy Fresh Buy Local, North Valley (BFBLNV) program to provide marketing opportunities, assistance, and training to specialty crop producers in Butte, Glenn, and Tehama counties in the northern Sacramento Valley. The Northern California Regional Land Trust (NCRLT) seeks funding to increase the scope of this program to create more opportunities connecting specialty croppers to consumers in ways that increase profitability and build stronger, more secure, and sustainable local economies. Initiated in 2009, BFBLNV educates consumers and provides supply-side technical assistance and resource sharing in the areas of marketing and promotion. NCRLT has been working with retailers, farmers' market associations and restaurants to use the Buy Fresh Buy Local logo on their grocery shelves, menus and in their advertising to identify the origin of the North Valley agricultural products they sell.

California Department of Food and Agriculture
2011 Specialty Crop Block Grant Program - Farm Bill (SCBGP-FB)

Nutrition: Food Security/ Healthy Eating

Project 38 *National Hmong American Farmers* **\$106,910**

Title: Specialty Commodities Promotion in Disadvantaged Communities

Abstract: Fresno County produces many of the specialty crop fruits and vegetables consumed in the U.S. but it is also one of the poorest areas of the country. There are high rates of malnutrition, obesity and diabetes with many of the socially disadvantaged residents having little access to the fresh fruit and vegetables themselves. Even though Fresno Unified School District has recently spent \$25 million building a central kitchen for the schools so that children may eat healthier, no connection between local growers and children's plates has been established. This project will improve the health of communities through promotion of healthy eating habits by: 1) supplying school meal programs with locally grown fresh specialty crops 2) developing school farm stands to offer healthy choices at prices below market value while educating students and teachers, and 3) establish mobile vending to visit disadvantaged communities to sell specialty crops.

Project 39 *Sacramento Area Council of Governments* **\$318,673**

Title: Food Bank as Food Hub: Building a Local Food System

Abstract: This project will complete work needed to assess the feasibility of building a local food system. This system will supply specialty crops to a range of local consumers, including underserved communities. Advocates for this system are focused on food banks as likely food hubs for their clients and others. A food hub aggregates and distributes local food much like a food bank. The system also relies on specialty crop supply, so supporting farmers growing for these markets is critical. This project looks at creating the volume and transport of local specialty crops needed to supply food banks and others with an ongoing supply of local specialty crops. The work builds upon recently completed research for other parts of the food system and fills a gap in the feasibility analysis needed to initiate a local food system. The study will provide a model for other institutions and private organizations to expand a local food system and supply underserved communities with fresh, healthy food.

Project 40 *Mandela Market Place* **\$405,000**

Title: Mandela Market Place Emerging Markets

Abstract: Mandela MarketPlace (MMPlace) Emerging Markets is a targeted produce distribution project in West Oakland to link unmet community demand for affordable fresh foods with markets that expand income avenues for underserved producers. This funding will support expansion of MMPlace's distribution center that links minority-operated producers with low-income urban consumers through locally-owned retail grocery and booth markets. The project will also produce a manual & toolkit for creating locally-owned food systems for use in low-income communities throughout California. MMPlace will increase consumption of California grown specialty crops by a minimum of 150,000 lbs while providing a distribution network for minority-operated specialty crop producers and educating local retailers and an emerging consumer base to the benefits of sustainably produced California fruits and vegetables.

Project 41 *Sacramento Neighborhood Housing Services Inc.* **\$50,068**

Title: Oak Park Farmers Market

Abstract: The Oak Park Farmers Market is a project of NeighborWorks HomeOwnership Center Sacramento Region and completed its first year in October 2010. The focus is now turning to market expansion. Specifically, the project will implement strategies to strengthen the market, increase visibility,

California Department of Food and Agriculture
2011 Specialty Crop Block Grant Program - Farm Bill (SCBGP-FB)

cultivate new relationships with local farmers and develop the market as a community destination. There is an opportunity to reach thousands more people who do not yet know about the Oak Park Farmers market. The project will put a special focus on reaching out to populations who speak languages other than English and to low-income population who receive Cal Fresh EBT benefits and WIC coupons.

Project 42 *Ecology Center* **\$150,026**

Title: Ecology Center Nutrition Food and Farming Policy Programs

Abstract: This project will enable the Berkeley Food Policy Council (BFPC) to implement a city-wide program and focus predominantly on California Specialty Crops (CSC) at farmers' markets. It will also provide assistance in acquiring and using wireless EBT devices and market scrip for 20 Farmers' Markets/Associations statewide.

Project 43 *Life Lab Science Program* **\$479,162**

Title: Plant It, Grow It, Eat It!

Abstract: California children consume less than the recommended servings of fruits and vegetables and have little understanding of California agriculture. School gardens have been shown to increase healthy eating and agricultural literacy. California has invested in school gardens by funding 3,900 garden projects and promoting fruit and vegetable consumption to support a healthy school environment. To make this investment more effective, teachers have requested instruction on how to use their new school gardens. The Life Lab Science Program project will: 1) provide Creating and Sustaining Your School Garden (CSYSG) workshops, 2) develop and implement the Plant It, Grow It, Eat It (PIGIEI) workshop for educators on the use of school gardens to increase student interest in and consumption of specialty crops, 3) provide statewide collaborators/school garden promoters with resources to promote garden-based nutrition education in their communities.

Project 44 *RISE (Rural Innovations in Social Economics) Inc.* **\$249,050**

Title: From the Mouths of Babes: A Children's Campaign for Home-Based Food Access

Abstract: This project is a working model for re-shaping attitudes, accessibility, and food security in small rural communities of California. The project is a paradigm reversal: it teaches children, not adults, how to garden and become ambassadors of edible landscapes, building a community food system using school-home-community resources effectively. The project establishes a sustainable concept of edible schoolyards, community garden networks, and edible residential landscaping to change food security for low-income, under-served rural populations. The impact will be communities that strategically shift their food production for family use to community sites and home landscapes' making food sources accessible, user-friendly, and family-focused.

Project 45 *Central Coast Ag Network* **\$255,237**

Title: City Farm Phase II: Bringing the First Crops to Harvest

Abstract: Central Coast Ag Network (CCAN) has been offered the opportunity to manage a 25-acre urban farm within the City of San Luis Obispo under a long-term nominal-fee lease. Phase I has involved working with the City to create a recently approved Master Plan for use of this parcel to grow specialty crops, and completing a feasibility study for distribution of those crops to institutional purchasers. Phase II implements the vision for City Farm as the focus for development of a local food system. It funds staff to finalize contracts with the City and farmers and identifies additional surplus publicly-owned land, specifying steps to make it available for lease to local for-profit farmers, using the City Farm as a model. It funds a position to continue CCAN's marketing of local specialty crops through its

California Department of Food and Agriculture
2011 Specialty Crop Block Grant Program - Farm Bill (SCBGP-FB)

CentralCoastGrown.org website and newsletter. It also funds a formal Foodshed Assessment laying groundwork for a local Food Policy Council.

Project 46 *North Coast Opportunities, Inc.* **\$261,866**

Title: North Coast Opportunities Farm2Fork Project

Abstract: North Coast Opportunities will work with local institutions and businesses to increase purchase and utilization of locally-produced specialty crops. The project will assess infrastructure needs and make adaptations; provide training in procurement and utilization; train farmers to produce for the institutional and business markets; and develop a distribution system for locally-produced specialty crops. The target population will include students attending local schools, hospital staff and patients, customers of local markets, and local farmers. Anticipated outcomes include increased capacity to incorporate fresh local produce into institutional meals; increased institutional and business purchase of locally-grown fruits and vegetables; an efficient distribution system; increased farm income generated through produce sales to local institutions and businesses; and increased access to and consumption of locally-produced fruits and vegetables.

Project 47 *Trust for Conservation Innovation* **\$498,682**

Title: Expanding the Promotion of Specialty Crops and Increasing Healthy Food Access to Federal Nutrition Benefit Clients

Abstract: The project proposes to increase the promotion, marketing and access to specialty crops by a consumer base that utilizes food assistance programs, and to alter the purchasing patterns toward an increased commitment to healthy and fresh fruits, vegetables and nuts. Roots of Change (ROC) and lead partners in 10 counties will operate the program in each of the target regions. Additionally, this year's project will: 1) expand to 63 farmers markets in the 10 established counties supported or managed by the Trust for Conservation partners; 2) increase the revenue of specialty crop farmers participating at these markets; and 3) develop more accurate data tracking and evaluation tools to better strengthen and measure the impact of these project activities on specialty crop farmers. Employing best practices established in the pilot year and honed in the second year, the project will provide better promotional methods and partnership strategies.

Project 48 *California State University, Chico Research Foundation* **\$499,994**

Title: Cultivating a Community Nutritional Health Network

Abstract: This project will increase food security by serving the Specialty Crop food economy and system needs of low-income residents, local growers, and community service agencies. Specifically, the proposed project (1) forms a stakeholder coalition to identify and address the community's nutritional needs (2) utilizes tested incentive programs to bring CalFresh/EBT recipients to farmers markets and to local community-supported agricultural farms (CSA's) (3) provides technical assistance to farmers markets and CSA's to become EBT-enabled (4) assists farmers markets serving low-income growers and areas (5) expands existing community gardens to supply local help agencies and offer onsite workshops in low-cost, high-yield organic gardening in limited-space urban environments as well as on larger plots; and (6) brings interactive culinary exhibitions to workshops and farmers markets to demonstrate low-cost, ethnically rich techniques to prepare and preserve produce.

California Department of Food and Agriculture
2011 Specialty Crop Block Grant Program - Farm Bill (SCBGP-FB)

Project 49 *People's Grocery* **\$52,244**

Title: California Hotel Community Crops Project

Abstract: The California Hotel (CA Hotel) is a low-income housing development in West Oakland where People's Grocery has managed an agricultural space since 2009. The West Oakland community faces considerable health challenges with high rates of diabetes, hypertension, cholesterol, and a number of other health disorders related to limited access to healthy fresh produce and specialty crops. People's Grocery's specialty crop garden at the CA Hotel provides produce to residents and neighbors and serves as a healthy foods education & leadership development hub for West Oakland. Through the garden space, People's Grocery intends to build community and leadership amongst individuals suffering from the worst health effects of poverty while creating opportunities for residents to increase their knowledge of, access to, and interaction with specialty crops.

Project 50 *Ceres Community Project* **\$348,083**

Title: Healing Meals for Healthy Communities

Abstract: The Healing Meals for Healthy Communities Project promotes the consumption of California Specialty Crops and directly and profoundly links increased consumption of these crops to better health outcomes for program participants. The program targets two key population groups: 8th - 12th graders, and adults who have been diagnosed with cancer or another life threatening illness such as heart disease or diabetes. For the teen participants, the program teaches them about preparing and eating California Specialty Crops by having them prepare local, whole foods and plant-based meals for the adult clients, who will receive free meals featuring California Specialty Crops along with weekly nutrition information about the link between these foods and their health.

California Department of Food and Agriculture
2011 Specialty Crop Block Grant Program - Farm Bill (SCBGP-FB)

Plant Health and Pest Challenges

Project 51 *USDA, Agriculture Research Services, WRRC* **\$190,593**

Title: Development of an Effective Lure for Reliable Detection and Control of the Female Navel Orangeworm (NOW) Moth

Abstract: The navel orangeworm (NOW) is the major insect pest of California tree nuts. NOW feeding damage results in extensive monetary loss to growers and directly contributes to aflatoxin contamination.

Using field trapping studies this project will optimize a series of recently discovered non-pheromonal volatile blends. These blends have demonstrated significantly greater attractiveness in the field compared to the current standard lure, almond meal, and will address the critical need for an effective monitoring tool and lure for female NOW. Numerous almond and pistachio orchards are available for extensive field trials of blends.

This series of new blends will demonstrate effectiveness by: 1) providing an efficient and reliable female NOW lure for use in almond mating disruption studies; 2) providing a new lure to fill a large void in the tactics used in conventional almond and pistachio orchards; and, 3) providing a lure for the attract-and-kill approach in almonds and pistachios.

Project 52 *The Regents of the University of California, Riverside* **\$139,252**

Title: Alternative Strategies for Pest Control in Commercial Potato Production

Abstract: The Regents of the University of California, Riverside's (UCR) goal is to develop economically viable novel Integrated Pest Management (IPM) techniques to benefit standard and organic commercial potato growers. Until recently, sustainable low input IPM strategies for potato production in California have been widely adopted. However, these recent gains are at immediate risk because of the introduction of the potato psyllid (*Bactericera cockerelli*) and the losses associated with the transmission of the bacterium, *Candidatus Liberibacter psyllae* (CLP). Entire fields on both commercial and seed potatoes have been lost. Growers have responded by dramatically increasing pesticide use, and costs have reached the point where the economic viability of the crop is threatened. Organic production is particularly at risk, and will potentially be eliminated entirely as the psyllid range expands. The goal of this study is therefore to develop a scientifically sound, economically viable, and sustainable IPM strategy for the production of potatoes in standard and organic potato grower operations that reduces reliance on pesticides.

Project 53 *The Regents of the University of California, Berkeley* **\$460,198**

Title: Navel orangeworm biological control

Abstract: The navel orangeworm (NOW) has long been an important moth pest in pistachio, almonds, and walnuts ' key specialty crops. While there have been many advances in control strategies, such as mating disruption, most growers still apply costly insecticides to achieve acceptable levels of control. The Regents of the University of California, Berkeley (UCB) propose to renew efforts on biological controls. The project has three objectives: (1) Study the biology and behavior of resident natural enemies to determine both their strengths and short-comings with respect to NOW control. (2) Renew a classical biological control program for NOW using modern techniques, such as molecular tools to help determine the origin of California population of NOW and an evaluation of parasitoids from closely related moth pests, such as the Carob moth. (3) Determine the impact of common insecticides on resident and imported natural enemies to determine how best to manage both pests and beneficial arthropods in a modern Integrated Pest Management (IPM) program.

California Department of Food and Agriculture
2011 Specialty Crop Block Grant Program - Farm Bill (SCBGP-FB)

Project 54 *The Regents of the University of California, Davis* **\$445,843**

Title: Broad spectrum rootstocks to manage disease and pest infestation in orchard and vineyard crops in California

Abstract: Disease causing pathogens are a major factor limiting productivity and quality of orchard and vineyard crops. RNA interference (RNAi) and/or next-generation chimeric antimicrobial proteins (CAPs) can relieve this pressure by targeting specific pathogens through expression in the rootstock to reduce and/or eliminate the pathogen in the grafted scion varieties. The Regents of the University of California, Davis (UCD) have generated walnut rootstocks that are resistant to crown gall disease (CGD) through RNAi and in grapevine UCD have engineered expression of CAP that can control Pierce's Disease via expression in the rootstock. UCD will combine these two strategies in grapevine, walnut, citrus and almond rootstocks to control crown gall and other important diseases like walnut blight disease (WBD) and almond leaf scorch (ALS). In year 1 UCD will validate the efficacy of CAP against WBD and ALS and in years 2 & 3 stack resistance traits in grapevine, walnut and almond rootstocks to provide broad spectrum resistance to multiple pathogens.

Project 55 *The Regents of the University of California, Davis* **\$277,596**

Title: Development and Implementation of Sustainable Production Methods for Bedding and Container Color Plants

Abstract: CA growers produce bedding and color plants year round for landscape and container planting. Many growers feel that these crops' short production time, high value, and high aesthetic standards preclude the use of integrated pest management (IPM). There are often at least 3 weekly pesticide sprays as well as frequent irrigation and fertilization. These substantial inputs reduce profits, impact workers and the environment, and concern regulators. Previous IPM programs have focused on single pests; the Regents of the University of California, Davis (UC Davis) will instead consider best practices to impact the entire system (e.g. optimizing fertilizer and water use to reduce pest pressure). UC Davis will develop a sustainable program that is flexible enough to meet the needs of growers with varying crops and production systems. Implementation of the work will occur at 4 collaborators and will be accompanied by a strong education effort. There is an economist on UC Davis team to incorporate financial sustainability and competitiveness into the program.

Project 56 *USDA, Agricultural Research Service* **\$483,362**

Title: Increase fumigation efficacy with alternatives to methyl bromide using low permeability tarps

Abstract: Many specialty crops including almonds in California rely heavily on pre-plant soil fumigation disinfestation for profitable production. The loss of methyl bromide as a broad-spectrum fumigant as well as stringent environmental regulations on alternatives due to emissions have brought great challenges in controlling soil-borne pests and pathogens. The sustainability of the industry and fumigant availability will depend largely on management strategies that can improve pest control efficacy and minimize environmental impacts. This project will demonstrate that using low permeability tarps (e.g., TIF) can improve efficacy while controlling emissions and can be potentially used with lower rates. Fumigation trials will be conducted in fields infested with pests/diseases. Soil gas concentration and efficacy data on nematodes, pathogens and weeds as well as tree response in seasons following fumigation will be evaluated. Lethal dosages and effective field fumigation treatments will be determined.

Project 57 *The Regents of the University of California, Davis* **\$255,598**

Title: Integrated Pest Management for Light Brown Apple Moth in California Ornamental Nurseries

California Department of Food and Agriculture
2011 Specialty Crop Block Grant Program - Farm Bill (SCBGP-FB)

Abstract: This project will develop and demonstrate improved IPM strategies and tools that nursery operators could implement and control LBAM more effectively. Ultimately it is the goal that these new IPM strategies and tools would help nurseries to ship LBAM-free products to their traditional markets.

Project 58 *The Regents of the University of California, Davis* **\$362,410**

Title: Development of tools for rapid detection, identification and interdiction of Torradoviruses before they invade and establish in California

Abstract: The Regents of the University of California, Davis (UC Davis) will use Biosafety 3P Contained Research Facility (CRF) to study the exotic plant virus, Tomato apex necrosis virus (ToANV), and its relatives now, before they enter California. ToANV was first described from Mexico in 2007 where it caused important losses in processing tomato production. Since then, closely related viruses have been reported several locations. These viruses (Torradoviruses) pose an immediate threat to California tomatoes. Torradoviruses are spread plant-to-plant by whitefly vectors of the species complex *Bemisia tabaci*, but also by the temperate whitefly *Trialeurodes vaporariorum*. There has so far been very limited work to understand these viruses, mostly just sequence and phylogenetic analyses, and they are listed by the National Cooperative Agricultural Pest Survey Target Species as invasive species of concern. UC Davis proposes to perform critical research on the biology and incidence of these viruses before they enter and establish in California.

Project 59 *The Regents of the University of California, Riverside* **\$290,455**

Title: Optimizing Applications of Plant Systemic Insecticides Against Vine Mealybug (VMB)

Abstract: Systemically mobile insecticides in plants including imidacloprid (Admire Pro®) and spirotetramat (Movento®) are especially effective against cryptic insects such as VMB. Other systemic insecticides are also registered for use against VMB, but scant information is available regarding when and where they should be applied for maximum effect. Different characteristics of these compounds (e.g. solubility) may render certain systemic insecticides more suitable under particular conditions. Field and laboratory research for this project will investigate how application timings and vineyard conditions (soil type, plant age, rootstock, etc.) affect insecticide titers in grapevines. Field trials will be carried out in table and wine grape vineyards and grapevine tissues will be collected through the season for analysis. Direct measurement of Insecticide titers will be made using HPLC and ELISA techniques and will provide a robust comparison of systemic insecticide concentrations in grapevines.

Project 60 *The Regents of the University of California, Riverside* **\$153,220**

Title: Mass rearing and identification of imported parasitoids for the Asian Citrus Psyllid

Abstract: The Asian Citrus Psyllid (ACP) is the vector of the pathogen which causes huanglongbing (HLB). Spread of HLB depends on the abundance of its vector ACP. A single parasitoid species, *Tamarixia radiata*, released in Florida for biological control of ACP, has not reduced ACP populations sufficiently to suppress the spread of the disease. However, published literature suggests 6-15 additional parasitoids of ACP are present in its native range (Pakistan). These species may provide much more effective control of ACP. Planned foreign exploration (already funded) for natural enemies of ACP will result in the importation of these different parasitoid species. However, funding for maintenance of the imported parasitoids in quarantine at UCR, and subsequent identification and characterization, has not been secured. The funds requested here will allow mass rearing, morphological identification and genetic characterization of these novel parasitoids from Pakistan.

Project 61 *The Regents of the University of California, Riverside* **\$111,928**

Title: Addressing Urgent Research Needs for Red Palm Weevil in California

California Department of Food and Agriculture
2011 Specialty Crop Block Grant Program - Farm Bill (SCBGP-FB)

Abstract: Red palm weevil (RPW), native to Asia, is the world's most invasive palm pest. It was found in Laguna Beach California (CA) in September 2010 and this is the first US record. RPW has the potential to destroy palms in urban areas, date plantations, and desert oases. The most susceptible palm species are those that are most popular in CA (e.g. Canary Islands palms, and date palms). The CA date industry is worth \$30 million, the ornamental palm industry is valued at \$46 million, and palms are an iconic CA landscape plant. Several important knowledge deficits have been identified by the RPW Technical Working Group (TWG): (1) Is the red and black color morph of RPW in CA the same species as the orange color morph that has invaded the Middle East, Europe, and the Caribbean? (2) Why have RPW pheromone traps failed to capture RPW adults in Laguna? (3) Where in the world did the CA color form originate? This grant will address these three urgent research needs for RPW management in CA.

California Department of Food and Agriculture
2011 Specialty Crop Block Grant Program - Farm Bill (SCBGP-FB)

Food Safety

Project 63 *The Regents of the University of California, Davis, Center for Produce Safety* **\$254,888**

Title: Evaluation of sampling protocol to provide science-based metrics for use in identification of *Salmonella* in irrigation water testing programs in mixed produce farms in the Suwannee River watershed.

Abstract: The Center for Produce Safety (CPS) will partner with the University of Georgia to explore links between irrigation water and outbreaks of human food borne illness and death associated with bacterial contamination of produce. In 2010 the Food and Drug Administration (FDA) set forth a rule to allow for inspections of produce production systems, minimal standards to be derived for on-farm processes and resources such as quality of irrigation water. The rule also mandated documentation of actions conducted to minimize the risks of produce contamination. Requirements to document the quality of water are based on indicator bacteria and currently vary from no mandate for testing irrigation water quality to a presence/absence test to a single enumerated test to a five-day geometric mean. There are no science-based metrics comparing the utility of these methods for detecting pathogenic bacteria in irrigation water sources. The proposed research will provide guidance for growers on water sampling methods to maximize the ability to detect bacterial contamination in surface water irrigation sources. In addition, the water sampling protocol developed in this study will provide a science-based method for collecting samples that can be documented as part of a water quality program to minimize risks of produce contamination.

Project 64 *The Regents of the University of California, Davis Center for Produce Safety* **\$152,591**

Title: Toward a rapid and reliable pathogen detection system in produce.

Abstract: The Center for Produce Safety (CPS) will partner with Louisiana State University to explore an effective testing method for live *Salmonella* detection in produce. Recent outbreaks linked to *Salmonella* and *E. coli*-contaminated produce pose a significant threat to public health and the produce industry. Through a previous project funded by CPS, a rapid, accurate, yet simple and cost-effective molecular testing method termed “LAMP” (loop-mediated isothermal amplification) was developed for live *Salmonella* detection in produce. In this proposal LAMP will be further developed and validated to be a rapid and reliable pathogen detection system for both *Salmonella* and *E. coli* in produce. Specifically, the principal investigator (PI) will develop and validate LAMP detection of low levels of these pathogens in various produce items using conditions reproducing real-world contamination events. Rapid, accurate, simple, and robust detection of important human pathogens in produce will provide the produce industry a valuable tool to better control potential microbial contaminants, therefore significantly reducing the number of outbreaks and illnesses associated with fresh produce.

Project 65 *The Regents of the University of California, Davis Center for Produce Safety* **\$157,604**

Title: Sources and mechanisms of transfer of *Salmonella* in the production and post-harvest tree nut environment.

Abstract: The Center for Produce Safety (CPS) will partner with the University of California, Davis, Department of Food Science and Technology, to explore whether contamination of almonds and pistachios with *Salmonella* is facilitated by movement of dusts in orchards and during initial post-harvest handling. To test the hypothesis that airborne dust from animal feeding operations (dairies, feedlots) in close proximity to orchards may play a role in the spread of *Salmonella*, the research team will work closely with collaborators in the almond, pistachio, and livestock industries to identify collaborating farms, hulling/shelling (almonds), and hulling/processing

California Department of Food and Agriculture
2011 Specialty Crop Block Grant Program - Farm Bill (SCBGP-FB)

(pistachio) facilities. Environmental sampling and microbiological analyses will be used to characterize the microbial composition of bioaerosols and dust originating from livestock operations located in close proximity to almond and pistachio production areas in the California Central Valley; to evaluate movement of microorganisms from livestock operations to nearby almond and pistachio orchards; and to evaluate the microbial composition of bioaerosols and dusts at almond hullers/shellers and pistachio hulling facilities.

Project 66 *The Regents of the University of California, Davis Center for Produce Safety* **\$95,206**

Title: Distribution of *Salmonella* in pistachios and development of effective sampling strategies.

Abstract: The Center for Produce Safety (CPS) will partner with the University of California, Davis, Department of Food Science and Technology, to explore the prevalence and levels of *Salmonella* in tree nuts and the overall distribution of the organism within contaminated lots. Nuts and other low-moisture foods have generally been considered low-risks for foodborne illness because they are consumed in a dry state where water activity (available moisture) is too low to support microbial growth. However, it is increasingly recognized that many foodborne pathogens can cause illness at very low concentrations, such that microbial growth is not required. In the past decade, outbreaks associated with consumption of raw almonds and in-shell hazelnuts have been documented in the U.S. In 2009 there was a recall of pistachios when *Salmonella* was isolated from commercial products. With the exception of almonds, very little is known about the prevalence and levels of *Salmonella* in tree nuts and nothing is known about overall distribution of the organism within contaminated lots. The data is important to develop robust quantitative microbial risk assessments (QMRA) and for developing scientifically-sound product sampling schemes for verification of food safety plans.

Project 67 *The Regents of the University of California, Davis Center for Produce Safety* **\$147,344**

Title: Validating *Salmonella* inactivation during thermal processing of the physically heat-treated chicken litter as soil amendment and organic fertilizer.

Abstract: The Center for Produce Safety (CPS) will partner with Clemson University to explore the thermal resistance of a mixture of four *Salmonella* serotypes for heat treatment of chicken litter. There is a growing demand for the physically heat-treated chicken litter being used as soil amendment and organic fertilizer for plant growth. Heat treatments have been recommended to reduce or eliminate these pathogens, but no scientific research has been reported to validate if these treatments are adequate to produce the finished products free from pathogenic microorganisms. This study will determine the thermal resistance of a mixture of four *Salmonella* serotypes at temperatures recommended for heat treatment of chicken litter. Several key environmental factors such as moisture level, nutrient variation, and the freshness of chicken litter will be evaluated. Furthermore, a practical method for combining moist heat treatment with drying process will be investigated for rapidly inactivating *Salmonella* in broiler chicken litter.

Project 68 *The Regents of the University of California, Davis Center for Produce Safety* **\$175,229**

Title: Glucosinolate-derived compounds as a green manure for controlling *E. coli* O157:H7 and *Salmonella* in soil.

Abstract: The Center for Produce Safety (CPS) will partner with the United States Department of Agriculture, Agricultural Research Service (USDA-ARS) to evaluate the role of cover crop systems in reducing the risk of pathogens in the pre-harvest environment. It is critical to have produce free from pathogens as most produce is consumed raw or minimally processed. Good Agricultural Practices and Good Manufacturing Practices at the pre-harvest and postharvest settings, respectively, have been

California Department of Food and Agriculture
2011 Specialty Crop Block Grant Program - Farm Bill (SCBGP-FB)

implemented in recent years to minimize pathogen contamination. However, even occasional transfer of pathogens to fresh produce during pre-harvest can result in outbreaks, necessitating massive produce recalls. This project proposes to evaluate the role of cover crop systems in reducing the risk of pathogens in the pre-harvest environment; specifically, glucosinolate-derived compounds from *Brassica* spp (several species) as a green manure to control *E. coli* O157:H7 and *Salmonella* in soil. Broccoli will be grown in high tunnels and after harvest of florets, remnant crops will be tilled over in the soil. The persistence of *E. coli* and *Salmonella* strains inoculated in soil will be monitored over a period of time. Results will determine the efficacy of green manure as intervention to control enteric pathogens in soil and on fresh produce.

Project 69 *The Regents of the University of California, Davis Center for Produce Safety* **\$84,580**

Title: Assessment of *Escherichia coli* as an indicator of microbial quality of irrigation waters use for produce.

Abstract: The Center for Produce Safety (CPS) will partner with the University of Arizona to evaluate available detection methods for the accurate assessment of *Escherichia coli* contamination in irrigation waters and provide guidance for interpretation of results through a revised risk-based *E. coli* standard. The principal investigator (PI) proposes evaluating three commercial systems for *E. coli* detection in irrigation waters and assessing false positive rates with molecular technologies. As a secondary objective to evaluating *E. coli* as a reliable indicator, the PI proposes using a Quantitative Microbial Risk Assessment (QMRA) to assess the use of *E. coli* as an accurate indicator of food safety risk using data collected in the first stage with existing information found in the scientific literature. This work will offer recommendations toward the methods to be used by the produce industry to assess irrigation water contamination and a scientific risk-based *E. coli* guideline growers can use to protect public health.

Project 70 *The Regents of the University of California, Davis Center for Produce Safety* **\$121,015**

Title: Validation of testing methods for the detection and quantification of *Escherichia coli* O157:H7, *Salmonella* spp. (several species), fecal coliforms and non-pathogenic *Escherichia coli* in compost.

Abstract: The Center for Produce Safety (CPS) will partner with the United States Department of Agriculture, Agricultural Research Service (USDA-ARS) to investigate food-safety concerns that compost may be integrating pathogens into the farm environment. Compost is produced from a variety of feedstocks that are sources of potentially pathogenic microbes: landscape trimmings, animal manures, food residuals, and biosolids. Thermophilic compost production processes are designed to achieve reductions in fecal coliforms and *salmonellae*; however, recent surveys of point of sale compost have raised food-safety concerns that compost may be integrating pathogens into the farm environment. Many states now require point of sale compost to be tested for fecal coliforms, *salmonellae* and *E. coli* O157:H7. These microbiological testing methods have not been evaluated for their effectiveness in detecting *E. coli* O157:H7 and *Salmonella* spp. in the variety of composts available for on-farm usage. This proposal will evaluate microbiological testing methods that are recommended by the Environmental Protection Agency and the United States Composting Council for accuracy in detecting pathogens across a variety of point of sale composts. The results from this study will determine practical and sensitive microbiological testing methods to ensure the safety of compost for use in the produce industry.

Project 71 *The Regents of the University of California, Davis Center for Produce Safety* **\$96,729**

Title: Comparative assessment of field survival of *Salmonella enterica* and *Escherichia coli* O157:H7 on cilantro (*Coriandrum sativum*) in relation to sequential cutting and re-growth

Abstract: The Center for Produce Safety (CPS) will partner with the University of California, Davis, Department of Plant Sciences, to significantly narrow the knowledge gaps in food safety management of a

California Department of Food and Agriculture
2011 Specialty Crop Block Grant Program - Farm Bill (SCBGP-FB)

popular and widely used culinary herb, cilantro. The problem facing growers, foodservice and retail marketers, and public health officials is primarily the high detection prevalence of *Salmonella* on cilantro in produce surveys. Multi-state outbreaks and multiple costly recalls have elevated these concerns over the past five years, in particular. Field-based research with non-pathogenic forms of *Salmonella* and *E. coli* O157:H7 will be conducted in California to determine the survival, growth potential, and post-harvest removal efficiencies following simulated foliar contact contamination events during production. While the interactions between *Salmonella* and cilantro in laboratory studies have clearly shown that pathogen growth is likely at non-refrigerated temperatures, especially following dicing for foods such as salsas, the understanding of risk potential in more 'real-world' production conditions is largely absent. It is anticipated that the outcomes of this research will foster the development and adoption of best practices in food safety management among cilantro growers and processors. This knowledge will be largely transferrable to other leafy culinary herbs including parsley and basil.

Project 72 The Regents of the University of California, Davis Center for Produce Safety \$161,945

Title: The role of riparian zones in bacteria dispersal to produce farms

Abstract: The Center for Produce Safety (CPS) will partner with Cornell University to measure the movement of fecal bacteria through riparian zones to produce fields by detecting the movement of genes from those bacteria. Riparian buffer zones have been implicated in the transmission of foodborne pathogens to produce fields and fresh fruits and vegetables, it is not understood how the growth of produce in proximity to riparian zones influences the risk of contamination. This work will measure the movement by detecting the movement of genes from those bacteria. The measured movement of genes from field sampling will be compared to models that represent competing ideas about bacteria movement. These models produce maps for farms and surrounding lands that tell how bacteria move across the land much as roadmaps tell about the movement of cars. The maps that agree best with the movement patterns of fecal bacteria will be used to advise growers about when, where and how riparian zones increase risk of foodborne pathogen dispersal onto produce. Ultimately, a web-based tool can be developed to apply the model to new lands and help the produce industry evaluate crop planting decisions, pre-harvest surveillance practices and harvest practices to prevent product contamination.