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Proposal

Proposal Summary

Proposal Name: Developing the California Fresh Fig Industry

Abstract

A fresh fig program is being developed at the University of California and based at Kearney Agricultural Center. It will have the goal of understanding the biology of new cultivars, extending their marketing period, and maintaining their postharvest quality. As a first step, we will consolidate domestic and overseas information and make it available to our growers. We will also establish a fig research plot with a grower cooperator that will include current fresh fig cultivars as well as promising varieties available through the USDA and commercial sources in Europe. This planting will be used as a demonstration plot for growers and allow us to observe promising cultivars under San Joaquin Valley conditions. It will also form the basis for preharvest and postharvest research studies. The fresh fig industry is growing rapidly, and is working to establish a marketing order for 2005. Establishing a UC research and outreach program will greatly benefit this new industry and encourage its development.

Priority Core Issues

- **Sustainability and Viability of Agriculture**

  Developing and implementing effective strategies to ensure the ecological sustainability of California agriculture

  that focus on the opportunities and challenges associated with:

  Transition to organic production techniques;

  New crops and breeds;

  Biotechnology.

Current Workgroup: No workgroup selected

Total Amount of ANR Support Requested: $13,510

Project Justification:

Provide a succinct justification for the activity, including:

1. Identify the core issue and target opportunity to be addressed and outline the specific aspects that will be the focus of the project.
2. Describe the importance and how this project will make significant contributions to successfully addressing core issue and target opportunity. Include brief background information and review of previous and current related ANR and other relevant research and extension efforts (Include URL(s) and/or attach list of literature cited in text proposal);
3. Provide rationale for the proposed project teams' capacity and comparative advantage to address this issue (s) and target opportunity(ies).

Due to low prices and increasing competition from other crops and countries, California growers producing traditional crops in the San Joaquin Valley are facing difficult economic times. Therefore, growers are looking for economically viable alternatives to traditional crops. Fresh fig, an environmentally friendly crop, is showing a lot of promise. The current challenges are the limited number of fresh fig cultivars available, the need to develop a preharvest technology to synchronize harvest, the need to find ways to reduce production costs, and the need to apply postharvest technologies to maintain quality and extend shipping/marketing potential. The fresh fig growers are working to establish a marketing order by 2005. By providing leadership in the development of technology prior to the creation of a Fresh Fig Commission, UC will create a positive long-term relationship with this group. At this point, the petition to create a fresh fig commission is being reviewed in Sacramento by the USDA.

Our proposed team includes the current and long-term dry fig liaison, Dr. Louise Ferguson. She has responsibilities within the UC for figs, and over her career has developed the expertise that will assure the positive development of this program. Mr. Andris and Mr. Holtz are farm advisors in the two counties where figs are currently produced. Mr. Andris and Mr. Holtz have production and pathology expertise that will benefit the development of this program. Dr. Michailades is a UC Davis plant pathologist stationed at the Kearney Agricultural Center (KAC). Dr. Michailades has been working with figs for several years with support from the Fig Institute. Mr. Bentley is a resident entomologist at KAC. Thus, Dr. Michailades and Mr. Bentley will be excellent on site experts for any problems that we observe in the field or during storage. Dr. Stover is the new curator at the USDA Germplasm Repository, where a fig collection is available. Dr. Stover will provide currently available fig material and coordinate any potential introductions from overseas. Dr. Crisosto is a UC Davis postharvest physiologist stationed at KAC since 1990; Mr. Garner and Ms. Crisosto are part of Dr. Crisosto's team working on postharvest physiology and technology since 1992. This

interdisciplinary and balanced group includes most of UC personnel that have been and could be working on fresh figs.

Describe the budget in terms of:

- General statement of need for ANR funding (Note: funding request not to exceed $35,000 except in instances that can be clearly and richly justified);
- Other support available for the project and explanation of relationship to current proposal;
- Plans for leveraging additional support.

Figs have long been grown for drying. However, there is little information available for handling the fruit fresh. Since the current fig marketing order does not cover fresh fruit, growers have organized to create a fresh fig marketing order for 2005. Once in place, this marketing order will generate a budget for the basic research that this industry needs to develop. To give this industry a kick-start, we are requesting ANR funding as "seed money" for an expected long-term research program. Our expectation is for the new commission to continue funding this research after the first year. Because of the industry's immediate needs, the lack of current information, and the potential marketing opportunity for this commodity group, we believe that this ANR project will have a tremendous impact in the short term as well as in the long term.

For the 2005 season, we received $15,000 support from the fig growers to start this program. In addition, they will provide plant materials for the research plot as well as care for the planting.

By establishing a research and demonstration plot in the main production area of California and generating immediately useful posharvest handling information, we will attract future funding for all aspects of fig production from the fresh fig commission. The fresh fig marketing order continues to move forward and it is under review by the USDA in Sacramento. In general, fig growers have been very supportive of the research component of the marketing order and in particular are interested in postharvest shelf life.

Budget Details:

Using the following format, detail budget for 2005 and 2006:	
Expenditure Category (Include descriptions- 150 chars max- as appropriate below)	**Total $ Requested** Feb 1, 2005-Jun 30, 2006
Staff Salaries:SRA-II, 50% for 6 months	$9,450

Justification	SRA-II (Garner)50% for 6 months; Mr. Garner is located at Kearney Ag Center and will conduct studies on fig postharvest biology and physiology,	
Staff Benefits		$2,835
Supplies & Expenses:	Packaging and Gases	$700
Justification	Fruit packaging ($200) and gases for controlled atmosphere storage($500).	
Travel:	Vehicle mileage	$525
Justification	Travel estimated as the following: -KAC to UC Davis germplasm repository. 360 miles in each RT. -KAC to plot site in Madera. 150 miles in each RT.	
Equipment:	None	$0
Justification		
	Grand Total	**$13,510**

Project Goals and Outcomes:

1. Overall purpose, goals and specific objectives proposed for the project (Number objectives and limit them to one sentence each);
2. Potential benefits/impacts and ultimate outcomes of the proposed project, including how the project serves the 'public good' and how the project will help build ANR's capacity in critical program component(s) area.

The main goal of this program is to create a relationship with the industry and among UC peers with interests in fresh fig that will help to develop a research and outreach program. ANR funding will support activities in the first and part of the second year. We expect subsequent activities to be supported by the fresh fig commission. We are proposing the following objectives:

1. Consolidate domestic and foreign information on figs (first and second year).
2. Establish a research plot with a grower cooperator (first and second year).
3. Visit production areas frequently during the growing season and observe fruit behavior during storage (first and second year).
4. Evaluate market life for current commercial fresh fig varieties (first and second year).
5. Describe fig antioxidant capacity and quality changes during ripening and storage (first and second year).
6. Introduce European fig varieties to the research and demonstration plot (second year).

7. Study fig deterioration factors in the field and storage (ongoing).
8. Evaluate cooling and temperature management benefits on market life of different fig cultivars (second and third year).
9. Study the use and practical implementation of controlled atmosphere storage and modified atmosphere packaging on fig market life (second and third year).
10. Compare the effects of different packaging systems on fig physical damage and deterioration (second and third year).

The development of a fresh fig industry will benefit many growers whose livelihoods depend on the economic success of their crops. It will also give the opportunity to consumers to eat an environmental friendly and highly nutritious fruit. This research and outreach program will help to initiate a joint venture with a group that historically has loyally supported UC extension.

Project Action Plan and Methodology:

1. Approach to the project, methods to be used and time line, including (1-2 pages is recommended);
2. The nature and extent of collaboration, including listing of ANR and non-ANR collaborators and specific roles;
3. Evaluation plan including description of the process to determine that the expected outcomes and impacts have been achieved. Describe the information to be collected, when, how and from what sources.

Approach. Objectives 1, 2, 3, 4, 5 and 6 will be initiated during the first year of this project. Planting recommendations will be obtained from the industry and discussed with UC experts. During the first and second year, Dr. Stover and I will be searching for European cultivars and coordinate the importation process (Objective 3).

Chemical and physical changes of 'Black Mission', 'Brown Turkey', 'Kadota', and 'Calimyrna' fig will be measured during ripening and storage. Fruit will be harvested at different periods during ripening and immediately transported to the Kearney Agricultural Center for quality evaluations and storage. Quality evaluations will include measures of fruit firmness, color, soluble solids concentration, antioxidant potential and others using methodology modified from Colelli et al. (1991).

During the second season, objectives 7, 8, 9 and 10 will be initiated.

Collaboration. Dr. Crisosto will be responsible for executing and overseeing the project. He and his team (Mr. Garner and Ms. Crisosto) will collect domestic and European fresh fig information. Information with the pertinent limitations will be distributed in our industry. Crisosto's team will carry out the postharvest research described in the

objectives above. With the help and advice of Dr. Ferguson and Dr. Stover, Dr. Crisosto will supervise the introduction and establishment of the fig plot. The day-to-day supervision of the plot will be assigned to Dr. Ferguson, Mr. Andris, Mr. Holtz, and industry members. They will coordinate field operations with industry representatives.

Evaluation. As this industry is just starting, our group will generate a summary of potential problems and recommended research areas to develop. The results of our initial quality evaluations (antioxidant activity, market life) will be posted on our web sites and distributed to the industry. The establishment of a research plot on a grower's property (by March 2006) will serve as a measure of our progress as well.
During the second year, we will be able to track the number of people visiting our web sites for fresh fig information. New research supported by funding from the fresh fig commission will also indicate program success.

Project Dissemination Plan:

Indicate how and where the results of the proposed project will be disseminated in a form that is available to a broader audience and identify key constituencies that will be targeted for receiving project results and benefits.
Initially we will extend the information through direct consultation, laboratory open houses and workshops with individual companies, articles in our newsletters (the *Central Valley Postharvest Newsletter* and the *Perishables Handling Quarterly*), and development of a fresh fig quality resource area on our websites (http://www.uckac.edu/postharvest.html; http://fruitsandnuts.ucdavis.edu/). Based on information from this season's work , a fresh fig web site was created which is under construction and our first fresh fig day took place during our harvesting season.

These web sites already include many articles relevant to our fresh fig growers, packers, shippers and handlers. Farm advisors will also be active participants in the extension of this information. As a group, we expect to initiate an annual fresh fig research meeting after the first year of research.

Proposal

- 2005-06 Proposal (pdf)