

## California Pistachio Research Board 2021 Research Projects

Proposal Title	Principal Investigator	Amount Awarded
<b>Education</b>		
New Cooperative Extension Farm Advisor Seed Grant	Douglas Amaral	\$15,000
California Pistachio Research Board Event Facilitation	Julia Stover	\$15,000
California Pistachio Workgroup Website Development	Julia Stover	\$15,000
<b>Entomology</b>		
Raman Spectroscopy to Detect and Measure NOW Pheromones	Tiziana Bond	\$47,594
Attraction and suitability of trap crops for large bug pests in pistachio	Kent Daane	\$52,719
Seasonal biology and controls of the Gill's mealybug in pistachio	Kent Daane	\$49,324
Optimizing chemical control programs for Gill's mealybug, <i>Ferrisia gilli</i> , in Pistachio	David Haviland	\$29,545
Attractants for Leaf-footed Bugs in Pistachios	Andrea Joyce	\$25,000
Another look at pheromonal or related attractants for leaf-footed bugs ( <i>Leptoglossus</i> spp.) infesting California nut crops	Jocelyn G. Millar/Houston Wilson/Kent Daane	\$38,147
Effective biological control of Gill's mealybug from drone releases of Green lacewing	Andreas Neuman/David Haviland.	\$22,413
Improved control of navel orangeworm: focus on increasing insecticide efficacy using adjuvants and improved timing	Joel Siegel	\$60,000
Producing sterile navel orangeworm on demand for improvement of pest management	Houston Wilson/Chuck Burks	\$112,972
Spatiotemporal Models to Evaluate the Potential Value of Sterile Insect Technique for Control of Navel Orangeworm	Ran Wei/Brittney Goodrich	\$45,062
Influence of Pistachio Hull Degradation and Shell Split on NOW Egg Deposition and Infest	Houston Wilson/Chuck Burks	\$47,060
<b>Food Safety</b>		
Factors Affecting the Efficacy of AF36, Improvement of the biocontrol Agent, and Establishing an Area-wide Long-term Mycotoxin Management Program	Themis J. Michailides	\$76,326
A survey of fungi producing Ochratoxin A in California pistachios and management of contamination in the field	Themis J. Michailides	\$15,000
<b>Horticulture Agronomics</b>		
Assessing Nitrogen Uptake to Develop Best Management Practices and Early Leaf Sampling Protocols for Pistachio Cultivars 'Lost Hills' and 'Golden Hills'	Douglas Amaral	\$91,352
Improving Productivity of Pistachio Harvesting Machines Using Automation and Artificial Intelligence	Reza Ehsani	\$50,000
Evaluation of Salinity, Boron, and Soil Hypoxia on Pistachio Tree Growth Year Two	Phoebe Gordon	\$7,769
Understanding the biology and improving the management of alkaliweed in pistachio	Brad Hanson	\$24,646
Evaluating new training systems for pistachio	Bruce Lampinen/Mae Culumber	\$94,847
Upscaling new findings on Pistachio water use (ET and Kc) to enhance irrigation scheduling and demand estimation in the water-limited context of the San Joaquin Valley	Daniele Zaccaria	\$94,133
<b>Horticulture Genetics</b>		
Collaborative Pistachio Rootstock Breeding	Pat J. Brown/Themis J. Michailides/Florent Trouillas	\$139,767
Pistachio Improvement Program	Pat J. Brown	\$131,417
Dissection of Pistachio Fruit Development Towards Optimal Shell Split and Kernel Quality	Georgia Drakakaki	\$88,902
Development of Molecular Markers and Biotechnological Approaches For Pistachio To Improve Agricultural Traits	Richard Michelmore	\$122,671
Pistachio Pan-genome for Accelerated Breeding	J. Grey Monroe	\$87,853
<b>Horticulture Physiology</b>		
Effect of environmental temperature and tree physiology on pistachio nut development (Year 3)	Barbara Blanco-Ulate	\$98,095
Metabolomics analysis of pistachio bud and shoot samples during the dormant period under various oil spray application treatments	Gurreet Brar	\$72,345
Evaluation of pistachio rootstocks for high root carbon storage, water use efficiency and salinity tolerance	Georgia Drakakaki	\$36,981
Exploratory research for a better understanding of the biochemical and physiological responses of Pistachio buds to winter chill	Li Tian	\$46,130
Exploratory research for a better understanding of the biochemical and physiological responses of Pistachio buds to winter chill	Maciej Zwienicki	\$75,000
<b>Pathology</b>		
Quantification and management of fungicide resistance in <i>Alternaria</i> populations causing <i>Alternaria</i> late blight in California pistachio orchards	Themis J. Michailides	\$66,796
Evaluating pistachio rootstock tolerance to soil borne diseases	Florent Trouillas	\$62,718
Is there a risk of plant-parasitic nematodes in pistachio on current and future rootstocks?	Andreas Westphal	\$50,000