Production Research Focuses on Grower Needs

By Tim Spann
Research Project Manager

The Production Research Committee (PRC) received proposals for more than $800,000 worth of new research for the 2013-14 fiscal year. However, with commitments to ongoing projects, less than half that amount was available in the budget. To determine which projects to fund, the PRC evaluated the likelihood of success of each proposal, whether the proposal met a critical industry need, and whether the research would result in an outcome that could be immediately used by growers. The total production research budget approved for the 2013-14 fiscal year is $1.2 million, split almost equally between new projects and continuing projects that were funded in previous years.

Newly Funded Projects

After reviewing the submitted proposals and having some of the researchers attend a PRC meeting to answer questions, the PRC decided to recommend three new projects for funding. These three projects relate to the polyphagous shot hole borer, fertilizer recommendations, and understanding floral bud viability.

Polyphagous shot hole borer (PSHB): Dr. Akif Eskalen, plant pathologist, UC Riverside, submitted a proposal to evaluate the efficacy of fungicides against the fungi associated with PSHB. Previously, Dr. Eskalen had received funding to screen fungicides in laboratory assays and greenhouse trials. This project will take the most promising fungicides from his work and test them in the field on infected mature trees. The Huntington Botanical Gardens will be cooperating with Dr. Eskalen on many of his field trials. This is a two-year project that will provide us with the necessary efficacy data to apply for a Section 18 Emergency Exemption for these fungicides when PSHB is found in commercial avocado groves.

Improving fertilizer recommendations: Dr. Carol Lovatt, plant physiologist, UC Riverside, submitted a proposal to conduct a meta-analysis of the data from many years of fertilizer trials. These trials have been conducted by Dr. Lovatt over the course of her career throughout California's avocado growing region, across soil types, microclimates, tree ages, and other variables. By bringing these diverse datasets together and applying powerful statistical tools, Dr. Lovatt will be able to develop improved leaf nutrient recommendations to maximize avocado yield. In addition, she will cooperate with Dr. David Crowley to integrate her datasets and results into his decision support tools project.

Floral bud viability: Dr. Lovatt also submitted a proposal to study the gene expression in floral buds throughout their development. Dr. Lovatt previously studied the gene expression in floral buds from November through February, and found that when fruit are harvested during this time, the floral buds' gene expression recovers and the buds can produce viable flowers during bloom. However, it is unknown how late in the season harvest can be delayed without irreversibly hindering flowering. Dr. Lovatt previously collected floral buds for the March through October time period, and will complete the analysis during this one-year project. The results of this project will be useful in developing harvesting strategies to mitigate alternate bearing.

In addition to these three new projects, the PRC recommended that Dr. Richard Stouthamer, entomologist, UC Riverside, receive a second year of funding on his project to identifying PSHB and determining its area of origin. An update on his work is provided in the PSHB/Fusarium Dieback update article in this issue of *From the Grove*.

Plant Breeding

The PRC also recommended funding three breeding-related projects—rootstock breeding and evaluation, variety improvement, and maintaining the Gwen mapping population trees—at their 2012-13 levels while the PRC finalizes plans for a restructured breeding program beginning in 2014-15. The PRC has reviewed a draft request for proposals for the restructured breeding program and that is being finalized for distribution to researchers in early 2014. The four goals of the restructured breeding program will be: 1) development of Phytophthora resistant and salinity tolerant rootstocks; 2) rigorous horticultural evaluation of new rootstocks (of domestic or international origin) for potential to serve the California avocado industry; 3) preserve existing germplasm and biodiversity that exists within various avocado collections; and 4) develop molecular/genetic tools to expedite avocado breeding. These goals help to align the breeding program with solving the industry's two most critical issues—phytophthora and salinity.

The PRC is reviewing the research funding process to ensure that the industry is getting the most out of its investment by making sure that projects address key industry needs and produce grower usable results. 2014 will be an exciting year as the PRC continues to improve the research program to align it with these goals.