

South Coast Research and Extension Center



south coastal plain-temperate climatic zone. Current research and extension projects span topics in tree and row crops, nursery and landscape management, and urban and water resources.

Intensive research efforts are focused on fruits and vegetables, including avocados, citrus, stone fruits, strawberries, cherimoyas, persimmons, carrots, celery, sugarbeets, and tomatoes.



Investigating Recycled Water Use

Recycling (reclaiming) wastewater is a fast-growing way to supply water in the arid western United States and water-limited regions around the world. However, elevated salt concentrations in recycled water may negatively impact the growth and aesthetics of important horticultural species. Therefore, long-term utilization of recycled water for horticulture is limited, in part, by our knowledge of salt tolerances for horticultural plant species. At the South Coast Research and Extension Center, researchers are testing the growth and physiological effects of irrigation with reclaimed water.

Recycled water generated by the local water purveyor was plumbed directly into one of the research greenhouses at the Center, enabling researchers to design a paired experiment in which plants are irrigated with potable water side-by-side with plants irrigated with recycled water to make direct comparisons while controlling for environmental variance. The first trial included plants common to southern California landscapes of a variety of growth forms including grasses, herbaceous perennials, and woody perennials. Cultivars included *Hemerocallis* 'Primal Scream', *Heuchera* 'Encore', *Rosa* 'Desmond Tutu', *Calamagrostis* 'Karl Foester', *Deschampsia* 'Northern Lights', *Calibrachoa* 'Superbells Red', *Gaura* 'Perky Pink', *Lantana* 'Luscious Bananarama', *Lavandula* 'Sweet Romance', and *Salvia* 'Black & Blue'.

The project has completed the first growing season. Measurement and analysis will commence in autumn 2015. No differences between irrigation treatments would be a positive result. Such a finding would suggest that recycled water is an appropriate irrigation source for landscape horticultural species. Researchers anticipate that most of the plants will grow as well on recycled water as they do on potable water.

Research conducted by Loren Oki, Darren Haver, Lloyd L. Nackley, and Grant Johnson



Avocado Breeding Program

Avocado research at South Coast Research and Extension Center is split between the breeding program fields and the germplasm bank. In previous decades, the breeding program has been responsible for the release of Gwen, Sir Prize, Lamb, GEM, Harvest, and several other varieties and has also collaborated with researchers internationally to develop new avocado cultivars suitable for a variety of different environments. More recently, the breeding program is pursuing the release of BL516, or Marvel, a variety from the same generation as GEM and Harvest, which has been reevaluated as a promising Hass-type pollinizer. Additionally, in 2016 and 2017, the program plans to release two more varieties. These two selections will be from the current generation of trees from the program's 1999 reboot.



The germplasm section of the program is a repository for avocado varieties, both heritage varieties with historic significance and unreleased varieties from the program's past. These cultivars are an important source of avocado genetic material to the California industry, and to the world. Additionally, a small selection of *Persea* species related to commercial avocados are also kept at the Center.

There are several hundred avocado varieties at the South Coast REC. Heritage varieties such as Dutton, Dickinson, Fuerte, and Carlsbad, as well as UC releases such as GEM, Jan Boyce, Harvest, and other unreleased selections are included. Numerous cultivars have been released by UC researchers, which include Gwen and the varieties Lamb, Haas, and Sir Prize. The latter were released in the mid- to late 90s, while GEM and Harvest were released in 2003. BL516 Marvel is currently being developed.

The criteria for a new variety to be released include flavor, initially, along with other fruit qualities such as peelability, fruit shape, and seed size. Secondary selection would include consistency of cropping or fruit set, a better idea of the seasonality of the fruit along with tree architecture characteristics, and taste appeal to a larger section of people through, for example, the taste panel. Final selection to determine release examines the trees and fruit as grown in a wider range of environments (as far North as Tulare County) and considers postharvest handling of the fruit as well as a closer look at the consistency of the fruit set and quality.

Research conducted by MaryLu Arpaia

International Education and Outreach

During 2015, UC ANR South Coast REC hosted several international groups from South Korea and various provinces in China seeking an understanding of the modern agricultural and social service system development in the United States. With the use of a translator, eager attendees learned about the various programs, tools, and network that UC ANR provides the communities that it serves. One topic of keen interest to the groups is how funding is obtained to carry out research and extend outreach to the public while producing unbiased results.



Touring the Center, visitors enjoyed the range of fruit varieties grown and studied at South Coast REC. Always of interest are the avocado trees, which protect the crops from the canyon winds and dust, along with the blooming agave that surrounds the demonstration landscapes. The visitors were amazed that both survive on rainwater alone.

Most impressive to the visitors is the support given to the Center and its projects by the various volunteer programs, such as the Orange County UCCE Master Gardeners who contributed 4,400 hours during 2015.