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Features

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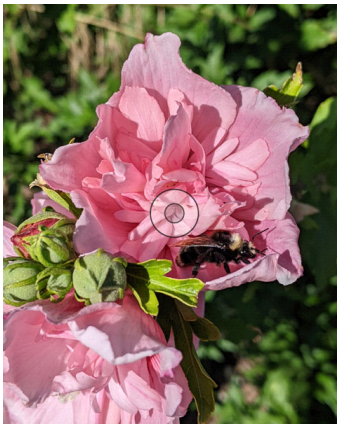
Western Trials Reveal Climate-Ready Plants

Erica Browne Grivas



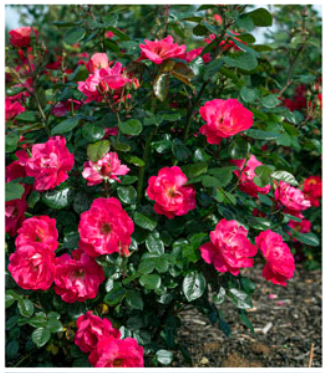
The Climate-Ready Plants Trial (CRPT) offers a window into woody plants that can thrive in low-irrigation conditions. This collaboration between six universities, nurseries and breeding experts has created a rare regional plant trial across six western locations in California, Utah, Arizona, Oregon and Washington. With comprehensive scope, the multi-year study—begun in 2020—tells us how plants reacted across three irrigation protocols. Because many of the same plants were used in all the sites, we can see how a given rose performed in Tucson versus Seattle, with very different climate conditions throughout the year.

Hibiscus Pink Chiffon.
Photo courtesy of Jared Sisneroz.

“Water is much more precious than it was years ago,” said Jared Sisneroz, project manager and a graduate student at University of California-Davis, which pioneered the program. “For us to have livable green cities we have to find plants that do well. One of the biggest benefits is having that greater climate reach. Utah gets super cold; Arizona baking hot.

“The other aspect is having different climate patterns. In California, we have really dry summers while in other areas

you have summer rainfall. Arizona can have a monsoon. So to identify these plants on low water use to see which species can span that wide climate gradient, that was our big interest and motivation. You need to have a plant that can cope with all seasons as the climate changes."



The Bigger Picture

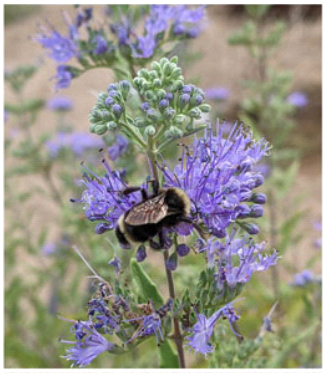
The results may be able translate to any region—or garden—where these plants meet similar conditions. The sites have included Davis and Irvine, California; Portland, Oregon; Tucson, Arizona; Logan, Utah; and Seattle, Washington.

Top right: Lagerstroemia Center Stage Red | Bottom right: Pink Knock Out Rose
Photos courtesy of Jared Sisneroz.

What makes the study unique?

"Ours is the largest irrigated plant trial in the country," said Lloyd Nackey, Ph.D., Associate Professor of Nursery Production and Greenhouse Management for Oregon State University. "I think the trials provide a lot of value to the public and an aspect of profitability for the industry. These are multi-year trials; we want to know how a plant performs in a landscape. To see them at different times in the season, there's lot of value in that."

Lloyd was impressed with the way the study connects the public with science and the industry. "Traditionally, the critical is research done in an ivory tower—this is very much the opposite."



The CRPT grew out of a long-standing irrigation trial at University California-Davis called UC Landscape Plant Irrigation Trials (UCLPIT) begun in 2004. There have been two Climate Ready project studies on shrubs and perennials, and some of the results so far have been surprising.

Lloyd said, "From the first few years we did identify quite a few plants able to be rated by these groups as aesthetically pleasing grown on very little water and across the West, and because we worked with nurseries, the plants should be available in those markets."

How it Works

A nursery advisory board helps choose the plants to trial, looking for both new plants, as well as underutilized local favorites.

Top left: Caryopteris Sapphire Surf | Bottom Left: Bouteloua Zig Zag
Photos courtesy of Jared Sisneroz.

"We want to utilize plants people can find at their local nursery and garden center as a way to ensure we get industry participation, and select plants likely to do well," Jared said.

On site, the plants are compared between full sun or 50% shade cover locations. During the first year, all the plants receive full irrigation to establish their roots. On the second year, irrigation is provided at three levels: at 20% (ETo),

50% (ETo) and 80% (ETo). The specific amount of irrigation is calculated considering evapotranspiration (ETo) data from a local weather station showing how much water is being removed, Jared said, while a public app called SoilWeb shows how much water the soil is retaining.

Blue Ribbon Winners and Silver Linings

The results highlight that we can expand our plant palette by harnessing the power of the microclimate. For Lloyd in Oregon, “Ceanothus Victoria did really well, and Rosemary Arp Texas selection was both cold and drought tolerant … as far as a hedge or pollinator plant they offer lot of value. There was a handful of roses that did well, too.”

He was surprised by the extent that cold and moisture over the winter affected certain plants for his site, like salvia and lantana. Hibiscus syriacus Purple Pillar barely grew beyond its pot size in the Portland site, but at the Irvine, California site, with a longer warm season, “it looked amazing.”
In California, Jared noted, “In 2023, we had 20 species we evaluated and about half were desert arid-climate plants and we had a lot of mortality. However, Penstemon Diabolo did very well.” Of the 24 Diabolo plants, he recalls about 22 surviving, calling it a “very attractive plant.”

“That’s the silver lining of these adverse climate experiences, it does serve to winnow out plants,” he added.

Everyone Plays a Role

The industry at large gets to play a part on annual summer Open Days when local industry members are invited to evaluate and vote on favorite plants.

Sites award Blue Ribbon status to plants that excel (maintaining high aesthetic quality over the growing season on the lowest irrigation treatment). Star Roses, a participant in the UCLIPT and Climate Ready trials, highlights Blue Ribbon winners from the Davis, California trials with an icon in its catalog.

Top right: Brick House Pink Rose | Bottom right: Climate-Ready Plants Trial at UC-Davis, which began the trials.
Photos courtesy of Jared Sisneroz.

“Roses, for the most part are naturally drought resistant once established in the landscape,” said Kristen Smith, Rose Evaluation Manager at Star Roses and Plants, “The surprise is finding which ones not only survive drought stress, but actually thrive under those conditions!”

Amelia Keyser-Gibson, a Ph.D. student at the University of Washington who’s assisting on the trial research, said, “People are expressing interest. For example, a local botanical garden reached out about our results as they are planning a new garden.”

She noted Physocarpus Little Devil and Miscanthus Bandwidth were recent Blue Ribbon winners. During the 2023 Open House, the favorites were Vitex Summertime Blues, Hesperaloe Straight Up Red and Physocarpus Little Devil. While a few of the hesperaloe languished in wet conditions, she said, “We were pretty surprised by hesperaloe doing so well in the PNW; I was really surprised when they flowered.”

What’s Next

The current study, now in its third year, has moved into vines to see how they can help cool the urban heat island

effect.

“Trees are really good at casting shade, but are not the fastest growing,” Jared said. The vine trial sites are surrounded by trellises mounted with thermal cameras to measure the vines’ growth and test the temperature changes. Deciduous and evergreen perennial vines from campsis to parthenocissus are being trialed.

Jared added to watch for a comprehensive website sharing results in the coming months. Meanwhile, some of the individual locations have independent websites, including lists of award winners. Check the sidebar for those sites. **GP**

Erica Brown Grivas is an award-winning journalist and lifelong gardener who explores the interplay between people and nature. Her features appear in publications like Horticulture, Better Homes & Gardens and The American Gardener. Erica studied Landscape Design at The New York Botanical Garden, worked in nurseries for nine years and recently became a Tilth Alliance Sustainability Steward. She’s a Western director for Garden Communicators International and on the board of the Northwest Horticulture Society.

> **What Retailers Can Do**
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> - The study’s high performers offer an opportunity for marketing—consider creating a “heat-tolerant” or “drought-adapted” display and signage to help your customers find the plants that will help them succeed.
> - Educate your customers with signage and workshops about how they can make their garden and plants more climate-ready, from watering one to two years to establish, mulching, zoned irrigation and plant selection.
> - Want more research specific to your region? Consider partnering with your local university or extension office to sponsor a trial.

> **Trial Results**
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> You can find Climate-Ready Plants Trial results at the following websites:
> University of California: climatereadyplants.ucdavis.edu and uclpit.ucdavis.edu
> University of Washington: botanicgardens.uw.edu/science-conservation/climate-ready-plants