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Coast Redwoods as Landscape Trees

by Michelle Le Strange, UC Master Gardener Advisor

California's coast redwoods (Sequoia sempervirens) are the tallest known trees in the world reaching over 350 feet and average a 600 year lifespan. When first described and collected by Europeans, old-growth forests covered about two million acres. Today, forests are much reduced, but the coast redwood is still a robust and vital species dominating favorable habitats. A redwood tree reaches 70-90 feet in about 25 years and grows rapidly (3-5 feet a year) the first five years. Tree height is shorter, if the conditions are not favorable for growth.

Cultivars: Nurseries sell about 10 cultivars of coast redwood. Some of the most popular are: 'Aptos Blue' (blue-green foliage, dense growth, horizontal branches), 'Majestic Beauty' (blue-green foliage, dense growth, pendulous branches, 'Los Altos' (dark green, dense growth, arching branches), 'Simpson's Silver' (silver-blue, somewhat open growth habit, slower growing), 'Soquel' (medium green, finer texture, branches turn up at tips), 'Filoli' and 'Woodside' (blue, drooping branches, irregular shape), and 'Santa Cruz' (light green, softer texture, downward branches). Notice how most are named after coastal CA towns.

Climate: In nature redwood trees grow in mild climates with high humidity. Average winter temperature is 38°F with summer temperatures ranging between 57 and 80°F. Annual precipitation ranges from 25 to over 100 inches and most rain falls in winter months. Heavy summer fog is also characteristic of their preferred habitat, and helps prevent water loss from evaporation and transpiration. These trees cannot tolerate water stress during the dry summer months.

Soils: Redwood grows best on deep well drained soils. Loam and clay-loam soils with the potential for good moisture storage are typical in coast redwood forests. Redwoods will not grow in soils containing large amounts of magnesium and sodium. Trees reach maximum development on alluvial flats where soils have been built up by successive floods.

Favorable habitats: The largest, most continuous and impressive coast redwood forests are found in the north where winter rainfall is highest and summer fog moderates the effect of the rainless California summer. Redwood is a relatively drought-sensitive species with leaf anatomy and thin leaf coatings which allow large volumes of water to be lost from the foliage.

On the coast line ocean breezes carry large amounts of sea salts which can dehydrate and kill redwood foliage and seedlings. Where redwoods approach the coast, they are usually protected by stands of more tolerant trees, especially Sitka spruce and red alder, or by topography that diverts the wind flow up and over the coastal slope. Further inland redwoods are completely replaced by Douglas-fir dominated mixed evergreen forests.

Coast Redwood in Valley Landscapes: With that said there are many who plant coast redwood trees in our valley landscapes. In some neighborhoods the trees thrive, but there are also neighborhoods and cities where coast redwoods are a bad investment. They might look healthy for 4-8 years, but then suddenly all goes wrong and the tree browns up and dies.

Every month my office receives phone calls about coast redwood trees that are sick and dying. The problem is so widespread, especially in Kings County, that several years ago the Master Gardeners evaluated over 30 trees. They rated them for visual appeal and collected foliage, soil, and water samples which were analyzed by a laboratory. The results indicated that extremely large amounts of sodium collected in redwood leaves. In many instances both soil and water were quite high in soluble salts and pH was around 8.0.

Redwood dieback in Santa Clara County: Four tree experts investigated symptoms of chlorosis and necrosis of redwood foliage that was affecting many trees in several locations. The symptoms coincided with recycled water use. Six locations were studied: 3 irrigated with potable water and 3 with recycled water. They compared topography, exposure, size, and visual appearance of the trees at each site and collected foliage and soil samples for laboratory analysis.

They discovered the soil pH to be more alkaline and to contain more sodium and chloride at the recycled sites. Leaf samples contained sodium and chloride levels that were generally within the toxic range at recycled water sites. The amount of sodium and chloride in the leaves at recycled water sites was disproportionate to the concentration in the soil and water and the most affected trees were under moisture stress. However, the answer is not that simple. They would find healthy trees right next to severely affected trees.

Take home message to Valley gardeners: Coast redwood trees don't grow naturally in the San Joaquin Valley mainly because of our hot interior valley floor climate in the summer. Although they may do well in some landscapes, they may also fail miserably in others. If you have a soil that is neutral in pH, drains well and water that is low in alkalinity, then they might perform well. If your soil is heavy clay or high in pH and saline, then you will have less luck. Redwoods like lawn watering, but give them a deep irrigation on a monthly basis. It also helps to cut down on water evaporation from the soil surface by applying a thick layer of organic mulch. This will also modify the surface temperature and help keep their roots cooler.

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