

The Challenges Of Establishing Pacific Madrone

One of the most striking and well-loved native species in our area, Pacific madrone (*Arbutus menziesii*) has been steadily declining over the last 40 years. Madrones naturally occur on drier, edge sites along shorelines, on southern exposures and on sandy or rocky, well-drained soils.

Fungal diseases

Pacific madrone contracts several leaf-borne fungal diseases, but they generally aren't fatal. Root rots and other systemic fungal diseases are the main culprits causing mortality. Three in particular appear to cause the most damage: Phytophthora collar rot (*Phytophthora cactorum*), Arbutus canker (*Nattrassia magniferae*) and madrone canker (*Fusicoccum aesculi*). Phytophthora collar rot can be identified by dark or black cankers forming at the soil line as well as further up the main trunk. This disease affects the roots and trunk and ultimately prevents the plant from taking up water, due to root dieback. Arbutus canker forms dark areas on the bark of branches, which eventually become sunken cankers that can girdle the stems. Individual trees most commonly contract this type of fungal disease following a mechanical wound. Madrone canker forms as a secondary infection on already weakened trees. This disease usually starts at branch tips and works its way in towards the main stem. Pacific madrone is also susceptible to numerous other fungal diseases including sudden oak death (*Phytophthora ramorum*), although this has been documented only in California.

Proper planting site

Factor in the susceptibility of this species to fungal diseases when selecting a planting site. Fungal diseases thrive in cool, shady sites with limited air circulation due to a dense canopy. Mimic where this species occurs naturally, by selecting planting sites on the edges of established plantings. Plant madrone in sites with full sun to partial shade and well-drained soil to minimize fungal diseases and increase the probability of survival. Well-drained soil dries out and does not remain waterlogged through much of the growing season, reducing the occurrence of root rot diseases. Full sun exposure dries the water on foliage quickly, reducing the likelihood of fungal leaf diseases. We recommend watering in new plantings of madrone once, and not irrigating further. This species is extremely drought-tolerant and irrigation only exacerbates fungal disease problems.

Madrones are susceptible to transplant shock, and we've found that planting the trees in the same orientation they had in the nursery can minimize the shock. At Sound Native Plants, we notch the side of the pot that faces south in the nursery yard, so the same side of the plant can be oriented south at outplanting. We also recommend planting three individuals for every one plant you would like to survive, due to the low survival rate. Do not plant multiples on top of each other; maintain adequate spacing (at least 6') to ensure good air circulation.

Additional resources

The Decline of the Pacific Madrone—Current Theory and Research, edited by A.B. Adams, was published in 1999. This reference was used when developing this information sheet and is available online at the following link: soilslab.cfr.washington.edu/madrone/book.html. Pacific madrone is included in the US Forest Service Fire Effects Information System: www.fs.fed.us/database/feis/plants/tree/arbmen/all.html#INTRODUCTORY. Greenbelt Consulting also has a webpage on management recommendations for Pacific madrone: www.greenbeltconsulting.com/ctp/managementoptions.html.