



SUCCESS STORIES



Port-Orford-cedar Root Disease Resistance Breeding Program- Regions 5 and 6 Reforestation Burned Areas with Port-Orford-cedar Using Genetically Resistant Planting Stock in Post-Fire Reforestation Efforts



Figure 1. Fire-killed Port-Orford-cedar in the Copper Creek drainage, Siskiyou Complex Fire.

Port-Orford-cedar root disease has been a major concern since the introduction of the pathogen, *Phytophthora lateralis* (PL), into the natural range of Port-Orford-cedar (POC) during the 1950's. In 1989, disease resistance testing was begun and the most resistant trees were incorporated into an interregional breeding program to develop genetically resistant stock. This program is an important component of the overall strategy aimed at maintaining Port-Orford-cedar as an ecologically and economically significant species on all Forest lands. In 2010, the first operational planting of disease-resistant POC in northern California was accomplished as part of post-fire reforestation for the Siskiyou Complex Fire. This was the largest planting of resistant POC in the history of the program. Resistant POC seed was produced at Oregon's Dorena Genetic Resource Center. Resistant stock was grown at both a Forest Service and a private nursery.

The Siskiyou Complex Fire burned over 104,000 acres on the Six Rivers and Klamath National Forests during the summer and fall of 2008 (Figure 1). Started by four lightning fires along the boundary between the two Forests on June 22, the fires burned extensive acreages of POC in the Dillon, Copper, and Blue Creek drainages. Re-establishment of POC can be crucial to restoring ecosystem function, particularly on serpentine soils where it may be the only or most abundant tree species growing in the site

Pacific Southwest Regional Office guidance focused reforestation efforts on the most severely burned sites and the Six Rivers and Klamath National Forest direction incorporated multiple POC planting densities in areas where POC had been present before the fire and in adjacent areas where POC could be newly established. At the Ranger District level, foresters Todd Drake (Klamath National Forest, Happy Camp Ranger District) and Todd Salberg (Six Rivers National Forest, Orleans/Ukonom Ranger District) devised site specific planting strategies that implemented these concepts. On the Six Rivers National Forest, 41,170 disease-resistant seedlings were planted on nearly 1,400 acres. The multiple-density planting strategy was implemented using planting guides which allowed the crew to vary spacing by up to 50%. Average spacing was 14' x 14', with spacing varying from 7' to 21' (Figures 2 and 3).



Figure 2. Planters planting disease-resistant POC in a Siskiyou Complex Fire reforestation unit.

On the Klamath National Forest, approximately 7,000 disease-resistant POC were planted along streams at 20' x 20' spacing across 70 acres. Only POC was planted within 100 feet of the stream channel. In almost all cases, this increased the area previously occupied by POC.

During planting operations, a variety of measures were taken to prevent the introduction of POC root disease into the planting units. Entry and exit routes were chosen to avoid infested areas. Vehicles, planting tools and employee gear were washed and inspected before entering the planting units and any vehicles leaving the area were rewashed and reinspected before returning.



Figure 3. Newly planted disease-resistant POC within a riparian zone on a Siskiyou Complex Fire reforestation unit.

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