

Table a. Symptoms and signs of six important root diseases in forests of the Pacific states.<sup>1</sup>

Symptoms and Signs	Laminated root rot	Armillaria root disease	Annosus root disease	Black stain root disease	Tomentosus root rot	Port-Orford-cedar root disease
Reduced height growth	√	√	√	√	√	
Chlorotic foliage	√	√	√	√		√
Slow loss of foliage	√	√	√	√	√	
Distress cone	√	√	√	√	√	
Slow crown decline	√	√	√	√	√	
Rapid tree death		√		√		√
Dead tree, no foliage loss		√				
Abundant basal resin flow		√		√		
Cinnamon stain in outer bark						√
Black stain in sapwood				√		
Roots rotted	√		√			
Windthrown live trees	√		√			
Insect galleries under bark	√	√	√	√	√	√
Small yellow to reddish-brown velvety fruiting bodies on ground					√	
Fleshy golden yellow mushrooms on tree base		√				
Thick mycelial fans		√				
Rhizomorpha		√				
Leathery conks			√			
Setal hyphae	√					
Ectotrophic mycelium	√					
Creamy leathery pustules on roots			√			
Laminated decay with pits and setal hyphae	√					
Laminated decay with pits on one side of sheet			√			
Yellow stringy decay, papery when dry		√				
White stringy decay			√			

<sup>1</sup> Table modified after Hadfield, J.S., Goheen, D.J., Filip, G.M., Schmitt, C.L., and Harvey, R.D. 1986. Root diseases in Oregon and Washington conifers. R6-FPM-250-86. USDA For. Serv., PNW Region, 27 p.