

CHAPTER FOURTEEN

Needle Rusts

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Several needle rusts occur in conifer nurseries, but that caused by *Melampsora occidentalis* is the most common. Douglas-fir and western larch are the principal coniferous hosts, although pines may be infected as well. The fungus requires two hosts to complete its life cycle. Black cottonwood (*Populus trichocarpa*) and balsam poplar (*P. balsamifera*) are common alternate hosts in the West.

Douglas-fir needle rust may be confused with:
Frost damage
Gray mold
Nutrient problems
Pesticide damage

Symptoms on conifers are distinctive: yellow pustules filled with spores develop on the undersides of current-year needles in June or July (Figure 14-1A). These spores will

Douglas-fir needle rust symptoms appear:
All ages
Summer

infect nearby poplars but not other conifers. Conifers are infected in the spring shortly after bud break by spores formed on overwintered



A



B

Figure 14-1. Melampsora needle rust: (A) aecia on the underside of Douglas-fir needles, and (B) uredia on the underside of a cottonwood leaf. Cottonwood is the alternate host.

cottonwood leaves (Figure 14-1B). Heavily infected needles will drop off.

Melampsora needle rust is seldom damaging. However, infection can be reduced or eliminated by removing the alternate host from areas adjacent to nursery beds, by disposing of fallen leaves of the alternate host, and by applying fungicide to infected conifers. Chemicals (chlorothalonil, mancozeb, and maneb) should be applied during the 3-week period after bud break. Spray schedules depend on the compound selected.

Reference

Ziller, W.G. 1974. The tree rusts of western Canada. Publication No. 1329. Canadian Forestry Service, Department of the Environment. 272 p.