CAES
The Connecticut Agricultural Experiment Station
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PEAR TRELLIS RUST

Pear trellis rust (European pear rust) is one of most devastating diseases on fruit and ornamental pear trees in Europe. In the United States, since the disease was first reported in the Bellingham, WA in 1997, it has moved from the west coast to east coast. In Connecticut, pear trellis rust was first reported in 2012. Although the disease is considered cosmetic on pear trees, heavy and repeated infections due to wet spring weather conditions may result in severe premature defoliation, significant diebacks, and reduced tree vigour (Figure 1).

Figure 1. Browning of leaves and early defoliation of heavily infected pear trees in early summer

SYMPTOMS AND DIAGNOSTICS

The disease affects pear and juniper plants, which is the alternate host of the fungal pathogen *Gymnosporangium sabinae*. On pear trees, the disease mainly damages leaves although twigs and fruit can also be infected. The initial symptom appears as yellow spots on the upper side of young leaves in the spring. Lesions become reddish orange in color and expand up to 3/4 inch in diameter (Figure 2). By mid summer, small black dots (spermagonia) form in the center of the spot on the upper side of leaves. And then, light brown,

Figure 2. Reddish-brown lesions on the upper- (left) and lower-side (right) of the leaf

acorn-shaped structures (aecia) form on the under side of the leaf directly below the lesion (Figure 2). Severe infections can result in a twisting of the leaf and premature defoliation. On juniper, the pathogen infects young and succulent shoots in late summer and fall. In the spring, dark brown fusiform swellings (telia) about 2/10 inch long are noticeable on infected stems. In rainy and wet weather conditions, orange gelatinous masses of teliospores are produced from the swellings. The impact of pear trellis rust on juniper health is not usually severe.

DISEASE DEVELOPMENT

Like other Gymnosporangium rusts, the pathogen of pear trellis rust requires two hosts, pear and juniper, to complete its two-year life cycle. The pathogen overwinters as mycelium on infected stems of its juniper host, which serves as a perennial source of infection on pear trees. In the spring, the pathogen forms telia on juniper stems and produces bright orange teliospore masses in telia when conditions are favourable. Teliospores germinate and produce basidiospores that are carried by wind and rain splash to susceptible pear trees. Basidiospores germinate and infect young pear leaves. The success of infection is dependent on the age of pear leaves. Leaves that are less than 10-days old are the most susceptible. The optimal temperature and relative humidity for basidiospore germination are 60°F and 85-90%, respectively. Infected pear leaves will give rise to aeciospores on the lower leaf suface from late summer to fall. These aceiospores are dispersed by wind over long distances and infect junipers to complete the life cycle.

DISEASE MANAGEMENT

Host resistance: All species of pear are susceptible to the disease. But, there are differences in susceptibility between varieties. Choose resistant pear cultivars when possible. Some juniper species such as *Juniperus communis*, *J. conferta* 'Blue Pacific' and *J. virginiana* 'Hetz' are more resistant to the disease than other species.

Cultural practices: Separate pear and juniper plantings by more than 1000 feet. Prune and dispose of infected juniper branches in the fall and winter. Remove and discard fallen pear leaves during the summer to reduce the availability of inoculum of the disease on junipers.

Fungicide application: Currently, no fungicides are registered for control of pear trellis rust. Fungicides registered for rust diseases on pear, such as mecozeb, can be used to protect pear trees from the disease in early spring. Always read and follow the label instruction before using pesticides.

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