



Disease and Insect Resistant Ornamental Plants

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THUJA

Arborvitae

Thuja is a genus of evergreens commonly known as arborvitae. Used extensively in ornamental plantings, there are numerous cultivars available for a range of size, form and foliage color. Many can be recognized by their distinctive scale-like foliage and flattened branchlets. Two popular species, *T. occidentalis* and *T. plicata*, are native to North America.

Insect pests include leafminers, spider mites and bagworms. Leaf and tip blights may affect arborvitae in forest, landscape and nursery settings.



INSECTS

Arborvitae Leafminer, *Argyresthia thuiella*, is a native insect pest of *Thuja* spp. While there are several species of leafminers that attack arborvitae in the United States, *A. thuiella* is the most common. Its range includes New England and eastern Canada, south to the Mid-Atlantic and west to Missouri (5). Arborvitae is the only known host (6).

Heavy feeding in fall and early spring causes yellow foliage that later turns brown. Premature leaf drop may follow. Plants can survive heavy defoliation, but their aesthetic appeal is greatly diminished. Researchers at The Morton Arboretum report significant differences in relative susceptibility to feeding by arborvitae leafminer for several *Thuja* species and cultivars.

| Arborvitae Leafminer | | | | |
|---------------------------|------------------|-------------------|--------------|--------------------|
| Species | Cultivar | Reference | | |
| | | Least Susceptible | Intermediate | Highly Susceptible |
| <i>Thuja occidentalis</i> | | | | 6 |
| <i>Thuja occidentalis</i> | Aurea | | | 6 |
| | Douglasii Aurea | | | 6 |
| | Globosa | | | 6 |
| | Gracilus | | 6 | |
| | Hetz Midget | 6 | | |
| | Hetz Wintergreen | | | 6 |

| Arborvitae Leafminer | | | | |
|---------------------------|---------------|-------------------|--------------|--------------------|
| Species | Cultivar | Reference | | |
| | | Least Susceptible | Intermediate | Highly Susceptible |
| <i>Thuja occidentalis</i> | Holmstrup | | 6 | |
| | Hoopesii | 6 | | |
| | Smaragd* | | | 2, 6 |
| | Spiralis | | 6 | |
| | Techny | | 6 | |
| | Umbraculifera | | | 6 |
| | Wagneri | | | 6 |
| | Wareana | | | 6 |
| | Waxen | | | 6 |
| <i>Thuja plicata</i> | | | | 6 |
| <i>Thuja plicata</i> | Fastigiata | | 6 | |

*syns. 'Emerald' and 'Emerald Green' (Missouri Botanic Garden)

Cypress Tip Miner, *Argyresthia cupressella*, is an insect pest found mostly along the Pacific Coast. Hosts include cypress, juniper and arborvitae. For arborvitae species, *T. plicata* is resistant to infestation and *T. occidentalis* is highly susceptible (3, 5).

Bagworm, *Thyridopteryx ephemeraeformis*, is a native insect pest with a wide host range that varies by geography. In the Northeast, arborvitae and juniper are preferred. Larval feeding and bag production destroys foliage, making it unsightly with open dead areas. The bacterial insecticide, *Bacillus thuringiensis*, is an effective control on young larvae (5).

Japanese Beetle, *Popillia japonica*, is a common foliage feeder of many landscape plants. Some resistance is reported, with only occasional feeding observed on *T. occidentalis* and *T. orientalis* (4).

DISEASES

Cypress Canker, caused by the fungus *Seiridium* (= *Coryneum*) *cardinale*, is primarily a disease of *Cupressus* spp. However, it may also affect plants in other genera, including *Thuja*, *Chamaecyparis* and *Juniperus*. *T. plicata* is not susceptible (3).

Leaf Blight, caused by the fungus *Didymascella thujina*, is a disease of *Thuja* spp. that is widespread in North America. The primary host is *T. plicata*, but the disease has also been reported in *T. occidentalis* and *T. orientalis* (*Platyclusus orientalis*) (1, 8). *T. plicata* cultivars 'Atrovirens' and 'Excelsa' are especially susceptible (7).

Tip Blight, also known as Berckman's blight in the Pacific Northwest, is caused by the fungus *Coryneum berckmansii*. The primary host is *T. orientalis* (*Platyclusus orientalis*). The cultivar 'Pyramidalis' is not susceptible, while *T. orientalis* var. *conspicua* 'Berckmansii' is highly susceptible (1).

Root Rot, caused by various soil-borne *Phytophthora* spp., is a water mold disease that affects many ornamentals, particularly in sites with poor drainage. Favored by high soil moisture and warm soil temperatures, the disease kills roots which disrupts movement of water and nutrients eventually resulting in wilt and death of the plant. Water and site management are key to prevention—avoid heavy, poorly drained soils and overwatering.

In arborvitae, infection can cause discoloration of foliage and eventual death. Susceptibility varies among species and cultivars—*T. plicata* is most resistant, *T. occidentalis* 'Pyramidalis' is intermediate, and *T. occidentalis* 'Smaragd' is most susceptible (7).

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