

Cupressaceae—Cypress family

***Platycladus orientalis* (L.) Franco**

oriental arborvitae

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Synonym. *Thuja orientalis* L., *Thuja acita* Moonch., *Platycladus stricta* Spach., *Biota orientalis* (L.) Endl.

Other common names. Chinese arborvitae, biota.

Growth habit, occurrence, and use. Oriental arborvitae is native to northern and western China and Korea (Vidakovic 1991). This species was previously included in the genus *Thuja* (Schopmeyer 1974), but it has now been placed in *Platycladus*, a monotypic genus. It is a medium-sized tree (approximately 12 m tall) that is widely cultivated as an ornamental in the United States. Many ornamental cultivars have been developed (Dirr and Heuser 1987; LHBH 1976). The foliage of oriental arborvitae is not as aromatic as that of *Thuja* species, and its cones are rather fleshy (Rushforth 1987). It can be planted in many different soils and will tolerate drier soils than northern white-cedar—*Thuja occidentalis* L. Oriental arborvitae should be restricted to regions where the minimum temperature is above !24 EC (Rushforth 1987).

Flowering and fruiting. Flowering occurs in the spring, and the cones mature in the fall of the same year. The cones range from 1.5 to 2.5 cm in length and typically have 4 fertile scales. The seeds are dark reddish-purple and wingless (Schopmeyer 1974).

Extraction, cleaning, and storage of seeds. Cones are usually collected by hand from the branches when they turn yellow or brown, but before they open. Cones will open partially with only air-drying in the sun or inside at room temperature, but auxiliary heating is needed for complete extraction. Most cones should open in 24 to 36 hours when heated at 30 EC (Dirr and Heuser 1987). Seeds can be shaken from the cones with small cone tumblers or similar devices, then scales and trash can be removed with screens or seed blowers. If large numbers of empty seeds are present, seedlots can be upgraded with the careful use of seed blowers. Oriental arborvitae seeds range from 44,100 to 55,125/kg (20,000 to 25,000/lb) (Schopmeyer 1974).

Seeds of this species are orthodox in storage behavior. If dried to moisture contents of 5 to 10% and stored at near-freezing (0 to 5 EC) temperatures, viability should be maintained for at least 5 years. For longer storage periods, sub-freezing temperatures of about !18 EC are recommended (Bonner 1991).

Germination tests. For most seedlots, pretreatments are not needed for germination tests, although beneficial effects have been reported for cold stratification for 1 to 1½ months and for short soaks in weak solutions of gibberellic acid (Dirr and Heuser 1987; Schopmeyer 1974). Both AOSA (1993) and ISTA (1993) recommend testing oriental arborvitae on the top of

moist paper media at a constant 20 EC for 21 days; no pretreatments are prescribed. Germination is epigeal.

Nursery practice. Sowing outdoor nursery beds should take place in the spring at a depth of 6 to 9 mm ($\frac{1}{4}$ to $\frac{3}{8}$ in) and no mulch. A bed density of 375 to 430/m² (35 to 40/ft²) has been recommended (Schopmeyer 1974). Under most conditions, seedlings are grown for 2 years before outplanting, although this may vary according to individual nursery practices. Container production in greenhouses is also possible, using techniques that are successful with the closely related *Thuja* species.

Vegetative reproduction, while more difficult than it is with *Thuja* species, is possible with oriental arborvitae and is widely used for ornamental cultivars. Dirr and Heuser (1987) recommend taking cuttings from June to August, treating with indole-butyric acid (IBA) in talc and Benlate®, then rooting with mist and bottom heat in a peat and perlite mixture (2:1, v/v).

References

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