

Oxydendrum arboreum (L.) DC.

sourwood

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Synonym. *Andromeda arboreum* L.

Other common names. sorrel-tree, lily-of-the-valley tree.

Growth habit, occurrence, and uses. Sourwood is a medium-sized, deciduous tree that develops a graceful, pyramidal shape when mature (Dirr 1990). The plant typically grows 9 to 15 m tall in the wild but seldom attains such height outside its native range (DeWolf 1987). This species is indigenous to the eastern United States, extending from Pennsylvania southward into northern Florida, and west to Indiana and Louisiana (Rehder 1986). Sourwood often is found on ridges of gravelly soil adjacent to streams and is hardy to USDA Zone 5 (Dirr 1990). The species has several attributes that create an outstanding specimen plant. It has slender, drooping branches of dark green foliage that contrast sharply with pendulous terminal panicles of white flowers in mid-summer, when few other plants are flowering. In addition, the brilliant scarlet fall foliage is without comparison amongst plants indigenous to the United States (DeWolf 1987). Sourwood should be grown in full sun to attain maximum flower production and the most vibrant fall color. However, the tree will also grow in partial shade (DeWolf 1987). Sourwood prefers an acidic (pH 4.0 to 5.5), moist, well-drained soil high in organic matter (DeWolf 1987; Dirr 1990). Sourwood is best suited for suburban or rural landscapes, as it will not tolerate air pollution occurring in urban areas (DeWolf 1987). Lastly, sourwood honey is highly prized, as is the wood, which is used for tool handles and in crafts (Duncan and Duncan 1988).

Geographic races and hybrids. Sourwood is monotypic, that is, the only species in the genus. No hybrids are described in the literature.

Flowering and fruiting. Fragrant, 6-mm-wide, white, urn-shaped flowers are borne profusely on 15- to 25-cm, pendulous, terminal panicles (Bridwell 1994; Dirr 1990). Flowers open in late June or July and provide a dramatic, mid-summer show. The floral display can completely shroud the dark green foliage in a white, lacy veil (Dirr 1990). Fruits are ovoid-pyramidal, dry, 5-chambered, dehiscent capsules, borne in clusters, each capsule about 5 to 7 mm long (Bailey 1977; Dirr 1990; Radford and others 1968). Seeds are 2 mm long, 0.5 mm wide, and gray to brown when mature (figure 1) (Olson and Barnes 1974).

Collection of fruits; seed extraction, cleaning, and storage. Capsules and seeds ripen in

September and October and can be collected at that time (Olson and Barnes 1974). Capsules are removed from the plant, lightly beaten, and then rubbed to open them completely (Dirr and Heuser 1987). Next, seeds are shaken from the capsules. Viability can be poor if seeds are not graded rigorously. Use of an air-column blower is recommended to remove chaff and empty seeds (Barton and Bonaminio 1986). Lots of cleaned, pure seeds average 8,200seeds/g (230,000/oz) (Olson and Barnes 1974). The seeds are apparently orthodox in storage behavior and may remain viable for several years if stored dry in a sealed container at 4.5 °C (Blazich 1996).

Pretreatment and germination tests. Seeds germinate readily after harvest and no pretreatments are necessary (Dirr and Heuser 1987; Fordham 1960). Germination is epigeal (figure 2). Seeds of sourwood require light for maximum germination (Barton and Bonaminio 1985). A 30-day test of seeds collected in Yadkin Co., North Carolina, demonstrated that germination in total darkness at 25 °C was minimal (5%) (Barton and Bonaminio 1985). However, a daily photoperiod of 2 hour resulted in 29% germination and daily photoperiods ≥ 4 hours resulted in maximum germination (58%). In another test, seeds were placed at 20, 22.5, 25, 28 °C, or at 25/15 or 30/20 °C for 9/15-hour thermoperiods (Barton and Bonaminio 1985). Seeds received 1 hour of light daily at each temperature. After 21 days, the highest germination occurred at 25/15 °C and 30/20 °C, with germination of 50 and 64%, respectively. Germination began faster at 30/20°C. These studies utilized cool-white fluorescent lamps as the light source, at 4.3 klux (about 55 $\mu\text{mol}/\text{m}^2/\text{sec}$). Under particular conditions, stratification (moist prechilling) also may be used to stimulate germination (Barton and Bonaminio 1986).

Nursery practice. Johnson (1978) described a commercial method for seed propagation, where seeds are sown in November soon after harvest. Seeds are spread lightly on the surface of a flat containing fine milled sphagnum and vermiculite (1:1, by vol.) and misted. Then, the flat is wrapped in a clear plastic bag, with supports to keep the bag from touching the surface of the medium, and placed under continuous light, provided by cool-white fluorescent lamps. Typically, the germination medium is maintained at 22 °C using bottom heat. The medium surface should never be allowed to dry. Seeds germinate within 2 weeks, and seedlings develop rapidly. At the 2- to 3-leaf stage, seedlings can be transplanted into peat pots or individual containers containing an acidic, organic medium. After 6 months, seedlings can be potted into 3.8-liter (1-gal) containers containing a well-drained, acidic, organic medium. Growth of 0.6 m (2 ft) can be obtained in 9 months following this production protocol. Blazich and others (1994) reported that commercial production of seedlings of sourwood may be accelerated by utilizing a pine bark medium and a day/night cycle of 26/22 °C or 30/26 °C with long-day conditions.

Stem cuttings are reported as difficult to root (Dirr and Heuser 1987). However, sourwood can be propagated vegetatively by micropropagation (Banko and Stefani 1989).

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Figure 1C *Oxydendron arboreum*, sourwood: seeds in longitudinal section (left) and external view (right), $\times 30$.

Figure 2C *Oxydendron arboreum*, sourwood: seedlings of sourwood at 2, 6, and 8 days after germination.