

# *Oxydendrum arboreum* (L.) DC.      Sourwood

Ericaceae      Heath family

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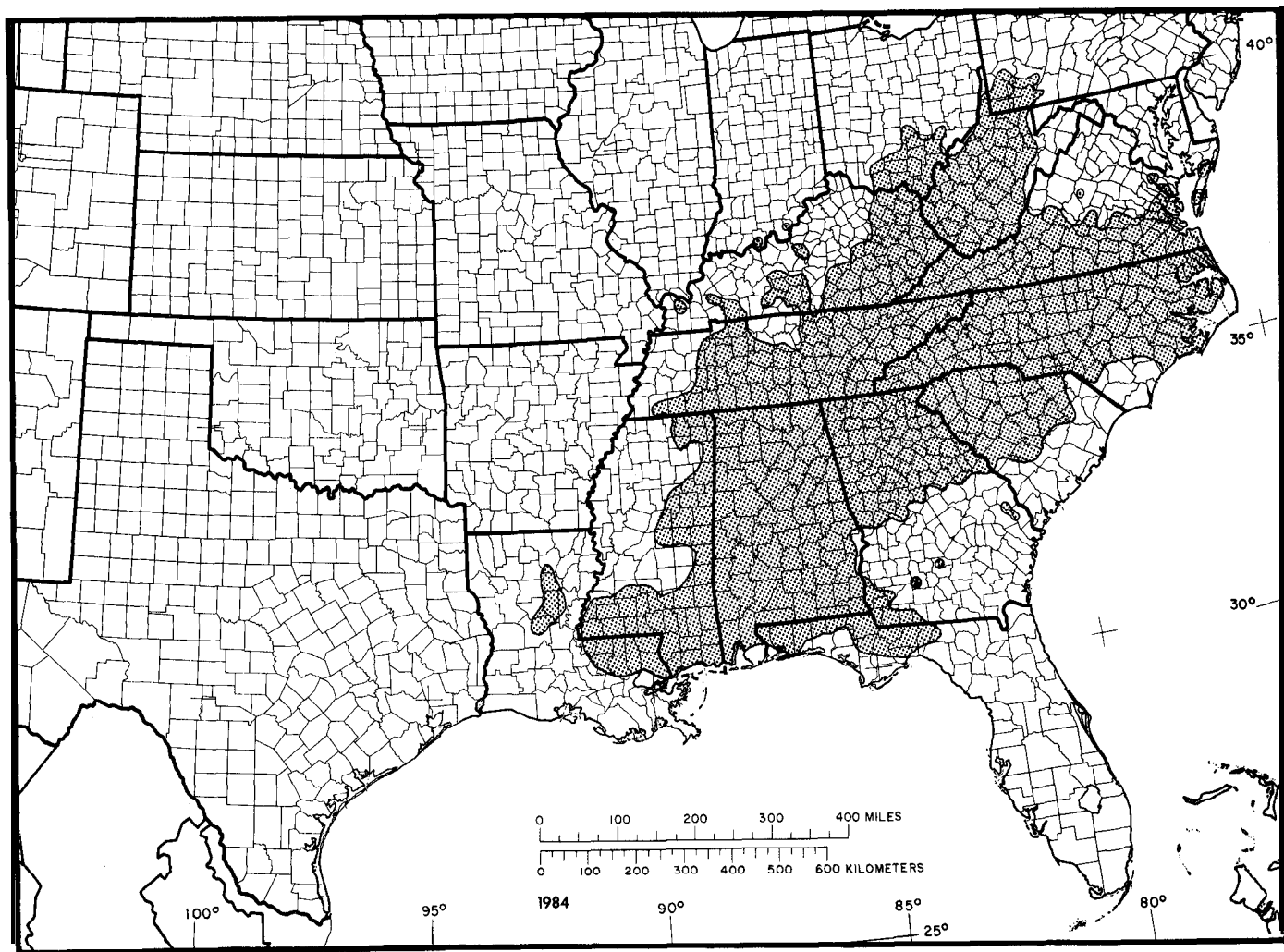
Sourwood (*Oxydendrum arboreum*) grows in the upland forests of the southeastern United States. Also known as sorrel-tree or lily-of-the-valley-tree, its flowers are an important source of honey in some areas but it is of little value as a timber species. Sourwood sprouts often interfere with the establishment of more desirable species in second-growth

and cutover areas. This mid-summer flowering tree is an attractive ornamental.

## Habitat

### Native Range

Sourwood (figs. 1, 2) is found from southwest Pennsylvania to southern Ohio, and southern Indiana,



**Figure 1**—The native range of sourwood.

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**Figure 2**—*Sourwood* flowers in midsummer and makes an attractive lawn tree.

south to southeastern Louisiana and the coastal region of Mississippi, Alabama, and northwest Florida; west to western Kentucky and Tennessee, and to the Delta in Mississippi; and east to the Atlantic coast from southern Virginia to central North Carolina, and to the edge of the Coastal Plain in South Carolina and Georgia. The main range lies between latitude 30° and 40° N. and longitude 75° and 92° W. Sourwood reaches its largest size on the western slopes of the Great Smoky Mountains in Tennessee.

### Climate

Annual precipitation within the range of sourwood varies from 1020 mm (40 in) in the North to 2030 mm (80 in) in the central Appalachians. Warm season precipitation ranges from 530 mm (21 in) in the North to 910 mm (36 in) on the gulf coast and in the Appalachians, and annual snowfall varies from none along the gulf coast to 152 cm (60 in) in the Appalachians. The length of the growing season fluctuates

from 150 days in the mountains of southern Pennsylvania to 300 days in northern Florida. Temperature extremes vary from -29° C (-20° F) to 42° C (107° F) within the range of sourwood.

### Soils and Topography

In the central Appalachians sourwood is most abundant on subseric open slopes and ridges occupied by chestnut oak (*Quercus prinus*), white oak (*Q. alba*), scarlet oak (*Q. coccinea*), and Virginia pine (*Pinus virginiana*). It appears less frequently on more mesic sites such as coves and sheltered slopes (17). Throughout this area sourwood is found up to 1520 m (5,000 ft) but rarely to 1710 m (5,600 ft) (13).

Sourwood grows throughout the Piedmont uplands. It is also found along Piedmont streams on well-drained lowland areas not subject to ordinary flooding (10). Where it enters the Coastal Plain it is found on the gently rolling areas of the upper portion; toward the coast it is restricted to old dunes and well-drained slopes and ridges above streams and swamp borders (4,16).

Like most of the Ericaceae, sourwood generally does not grow on soils of limestone origin (8,11) but is most commonly found growing on soils in the orders Ultisols, Inceptisols, and Entisols.

### Associated Forest Cover

Sourwood is an understory to midcanopy associate of the following forest cover types (Society of American Foresters) (6):

- 40 Post Oak-Blackjack Oak
- 44 Chestnut Oak
- 51 White Pine-Chestnut Oak
- 52 White Oak-Black Oak-Northern Red Oak
- 53 White Oak
- 75 Shortleaf Pine
- 76 Shortleaf Pine-Oak
- 78 Virginia Pine-Oak
- 79 Virginia Pine
- 81 Loblolly Pine
- 82 Loblolly Pine-Hardwood
- 110 Black Oak

Other associates, in addition to the cover type species, are sweetgum (*Liquidambar styraciflua*); yellow-poplar (*Liriodendron tulipifera*); scarlet and southern red oak (*Q. falcata*); red and sugar maple (*Acer rubrum* and *A. saccharum*); shagbark, bitter-nut, pignut, and mockernut hickory (*Carya ouata*, *C. cordiformis*, *C. glabra*, and *C. tomentosa*); white ash (*Fraxinus americana*); American beech (*Fagus grandifolia*); eastern hemlock (*Tsuga canadensis*); flower-

ing **dogwood** (*Cornus florida*); sassafras (*Sassafras albidum*); American hornbeam (*Carpinus caroliniana*); eastern hophornbeam (*Ostrya virginiana*); and redbud (*Cercis canadensis*).

## Life History

### Reproduction and Early Growth

**Flowering and Fruiting-Sourwood** is among the latest of the flowering shrubs and trees to bloom. The white, bell-shaped perfect flowers appear from late June to August in copious masses on one-sided racemes clustered in an open panicle. The flowers are insect pollinated and are an important honey source in some areas (14).

**Seed Production and Dissemination-The** fruit is a capsule 6 to 13 mm (0.25 to 0.5 in) in length. It ripens in September and October, and the tiny seeds are dispersed gradually throughout the winter by the clehiscing capsule. The number of seeds in clean lots range from 4 080 000 to 12 125 000 seeds per kilogram (1,850,000 to 5,500,000/lb) (14).

**Seedling Development-Seedbed** requirements are not known for natural regeneration. In the Piedmont, however, sourwood seedlings and saplings are found in all stages of succession from young pine stands to the oak-hickory climax (10). This indicates that seed germination and establishment may occur on litter and under partially shaded conditions.

Techniques have been described for sourwood seed collection, storage, and germination (2,5,14). Acid sandy peat is recommended as a seedbed for sourwood. Germination is epigeal.

**Vegetative** Reproduction-Sourwood sprouts prolifically and persistently from the stump and often must be treated with herbicides to release more desirable species in second growth and in cutover areas (7,9,12,15). Sourwood is difficult to propagate from cuttings. A single report found softwood cuttings (short side shoots), made with a heel and taken in late July with a 90 ppm IBA soak, rooted 80 percent when placed in a sand:peat (equal volumes) mix under mist (5). No reports were found of propagation by grafting.

### Sapling and Pole Stages to Maturity

**Growth and Yield-The** maximum size for sourwood is 24 m (80 ft) in height and 61 cm (24 in) in diameter. It is typically much smaller, reaching 6 to

15 m (20 to 50 ft) in height and 20 to 30 cm (8 to 12 in) in diameter (11).

Sourwood usually remains in the forest understory from seedling to maturity. It occasionally enters the overstory in Piedmont lowland pine stands, but on upland sites it attains the upper canopy only if some disturbance removes the overtopping vegetation (10).

Sourwood develops a slender trunk and small crown in dense stands. In more open situations it forms a short, often leaning trunk dividing into several stout, ascending limbs. Growth is slow in established stands, but the initial growth of sprouts in cutover areas is rapid enough to hinder establishment of more desirable species (7,12). Per-acre volume estimates are not available for this species because it usually grows in mixture with other species rather than in pure stands.

**Rooting Habit-No** information is currently available on the rooting habit of sourwood.

**Reaction to Competition-Sourwood** is classed as tolerant of shade and can grow and reproduce in the understory of climax (oak-hickory) forests (3,10,11). Its response to release is not definitely known but is thought to be poor.

**Damaging Agents--**Several insects attack sourwood but normally do no serious harm (1). The dogwood-twigg borer, *Oberea tripunctata*, and the twig girdler, *Oncideres cingulata*, attack the twigs; the fall webworm, *Hyphantria cunea* (7), and the hickory horned devil (the larva of the regal moth), *Citheroniou regalis*, attack the foliage.

There are no known reports of serious diseases that affect sourwood.

## Special Uses

Sourwood is occasionally used as an ornamental because of its brilliant fall color and midsummer flowers (7). It is of little value as a timber species; the wood is heavy and is used locally for handles and fuel and in mixture with other species for pulp (8). Sourwood is important as a source of honey in some areas and sourwood honey is marketed locally.

## Genetics

No studies on the genetic characteristics of sourwood have been reported.

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