Southeast Exotic Pest Plant Council Invasive Plant Manual

Common Name: Oriental Bittersweet

Scientific Name: *Celastrus orbiculata* Thunb.

Oriental bittersweet is a serious threat to plant communities due to its high reproductive rate, long range dispersal, ability to root sucker, and rapid growth rate. Climbing Oriental bittersweet vines severely damage native vegetation by constricting and girdling stems. Vines can shade, suppress, and ultimately kill native vegetation. Oriental bittersweet has been shown to hybridize with the relatively rare American bittersweet (*Celastrus scandens* L.). Hybridization may lead to the loss of American bittersweet's genetic identity through introgression. Both are members of the Celastraceae (Stafftree) family.

Height: Oriental bittersweet is a deciduous woody vine that may become a spreading, trailing shrub. Maximum height can reach 19 m (60 ft) depending on surrounding vegetation. Vines grow up to 10 cm (4 in) in diameter.

Leaves: Leaves are alternate and are variable in size and shape from oblong-obovate to suborbicular. Margins are crenate-serrate and base cuneate to obtuse. Petioles are 1-3 cm (0.4-1.2 in) long.

Stem: Stems and branches are round, glabrous, light to dark brown with discernible lenticels.

Flowers: Inflorescence is a few-flowered (3-7) axillary cyme. Flowers have 5 sepals and 5 petals, and are greenish-yellow in color. Varieties can be dioecious or monecious. Blooms in May.

Fruit: Fruit is green changing to bright yellow upon maturity. The globose fruits are 6-8 mm (0.2-0.3 in) in diameter, three valved with each fruit containing one to three seeds. Matures August-September.

Photo by James H. Miller

Life History

Oriental bittersweet flowers in May in Tennessee. Hymenopterous insects, especially bees, are the primary pollinators, but wind pollination is also successful. Fruit ripens in August through September and remains on the stem into the winter. Seed dispersal is by birds or small mammals. Seedling germination is generally high (up to 95%) and begins in mid to late spring. The highest rate of seed germination is in lower light intensities. Seedlings increase photosynthesis two-fold when exposed to direct sunlight. The plants develop and expand by layering

stolons and rootsuckers. Annual growth rate is from 0.3-3.0 m (1-12 ft) with little additional growth after about seven years.


Photo by James H. Miller

Origin and Distribution

Oriental bittersweet is native to Japan, Korea, and northern China. It was introduced into the U.S. in 1860. Naturalized plants were first collected in Connecticut in 1916. Oriental bittersweet has become naturalized in 21 of 33 states in which it is cultivated. Present distribution is throughout the northeastern and southeastern U.S. extending to the southeastern Great Plains.

Similar Species


Photo by James H. Miller

Oriental bittersweet is similar in appearance to American bittersweet and anyone surveying for Oriental bittersweet should verify identification. Oriental bittersweet differs from American bittersweet by having axillary inflorescences instead of terminal flower clusters. However, inflorescences are sometimes terminal in male Oriental bittersweet plants. A less reliable difference is the color of the outer covering of the fruit. The fruit of Oriental bittersweet is yellow while American bittersweet fruit is orange.

Habitat


Photo by Jil M. Swearingen

Oriental bittersweet has a wide range of habitat preferences including roadsides, old homesites, thickets, and alluvial woods. Oriental bittersweet is shade tolerant, readily germinating and growing under a closed forest canopy.

Management Recommendations

Since Oriental bittersweet produces numerous seeds, extensive seed reserves can become established in the soil within a year or two. Seeds of Oriental bittersweet remain viable for several years and control actions must continue until seed sources are eliminated.

Mechanical Control

Cutting: Cut climbing or trailing vines as close to the root collar as possible. This technique is feasible on small populations; as a pretreatment on large impenetrable sites; in areas where herbicide cannot be used; or if labor resources are not sufficient to adequately implement herbicidal control. This treatment will prevent seed production and strangulation of surrounding woody vegetation. Oriental bittersweet will resprout unless cut so frequently that its root stores are exhausted. Treatment should begin early in the growing season and be repeated at two-week intervals until autumn.

Grubbing: This method is appropriate for small initial populations or environmentally sensitive areas where herbicides cannot be used. Using a pulaski or similar digging tool, remove the entire plant, including all roots and runners. Juvenile plants can be hand pulled depending on soil conditions and root development. Any portions of the root system not removed will potentially resprout. All plant parts, including mature fruit, should be bagged and disposed of in a trash dumpster to prevent reestablishment.

Herbicidal Control

Stump Treatment: Use this method in areas where vines are established within or around non-target plants, or where vines have grown into the canopy.

Glyphosate: Cut the stem 5 cm (2 in) above ground level. Immediately apply a 25% solution of glyphosate and water to the cross-section of the stem. This procedure is effective at temperatures (as low as 40°F) and may require a subsequent foliar application of glyphosate.

Triclopyr: Cut the stem 5 cm (2 in) above ground level. Immediately apply a 25% solution of triclopyr and water to the cross-section of the stem This procedure remains effective at low temperatures (<60°F) as long as the ground is not frozen. A subsequent foliar application may be necessary to control new seedlings.

Foliar Spray Method: Use this method to control large populations. It may be necessary to precede foliar applications with stump treatments to reduce the risk of damaging non-target species.

Glyphosate: Apply a 2% solution of glyphosate and water plus 0.5% non-ionic surfactant to thoroughly wet all foliage. Do not apply so heavily that herbicide will drip off leaves. Glyphosate is a non-selective systemic herbicide that may kill non-target partially sprayed plants. Ambient air temperature should be above 65°F.

Triclopyr: Apply a 2% solution of triclopyr and water to thoroughly wet all foliage. Do not apply so heavily that herbicide will drip off leaves. The ideal time to spray is after surrounding native vegetation has become dormant (October-November) to avoid affecting non-target species. A 0.5% concentration of a non-ionic surfactant is recommended in order to penetrate leaf cuticle. Ambient air temperature should be above 65°F.

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