

**Chinese Wisteria**

*Wisteria sinensis* (Sims) DC.

Pea family (Fabaceae)

**NATIVE RANGE**

China

**DESCRIPTION**

Chinese wisteria is a deciduous, woody twining vine that climbs up tree trunks to heights of 60 feet or more. It twines upwards in a **clockwise** direction. The stems are stout, gray-brown and covered with fine white hairs. Older plants can grow to 15 in. or more in diameter. The leaves are alternate and compound, 6-10 in. long with 9-11 (7-13) leaflets; leaflets are ovoid-elliptic to ovoid-lanceolate and have slightly wavy margins. In the mid-Atlantic region, flowering occurs in April before leaf expansion. Flowers are lavender to purple, occur in pendulous racemes 6-8 (up to 12) in. long, and open mostly all at once. Individual flower stalks (pedicels) are 0.6-0.8 in. long. Fruits are green to brown velvety seedpods 4-6 in. long, narrowed toward the base with constrictions between the 1 to 3 flat, round seeds. They begin to appear midsummer and persist for a long time on the vine.



**Look-alikes:** 1) American wisteria (*Wisteria frutescens*), native to the southeastern U.S. into southern Virginia; twines clockwise; stems brown to reddish brown and hairless; leaves with 9-15 leaflets, lower surface somewhat milky green; flowers in May after the leaves have expanded; flower clusters 1.5-6 in. long, shorter than both Chinese and Japanese wisteria; flower pedicels 0.2-0.4 in long; seedpods 2-4 in. long, brown and non-hairy; 2) Japanese wisteria (*Wisteria floribunda*) twines counter-clockwise; stems slender, brown and densely pubescent when young, becoming hairless with age; leaves typically with 7-17 (19) leaflets; flowers violet to violet-blue, racemes 1-3 ft. long; flower pedicels 0.6-0.8 in. long; flowers open sequentially from base to tip; 3) trumpet creeper (*Campsis radicans*), native to central and eastern U.S.; has opposite leaves with toothed leaflets and orange-red flowers that bloom from late spring through summer and into fall.

**ECOLOGICAL THREAT**

The hard woody vines of Chinese wisteria twine tightly around host tree trunks and branches and cut through the host tree bark, eventually girdling and killing it. On the ground, new vines germinating from seed or sprouting from rootstocks form dense thickets that smother and shade out native vegetation and impede natural plant community development. As girdled trees die, canopy gaps are created which increase the amount of sunlight reaching the forest floor. While this may temporarily favor some native species, it also stimulates vigorous growth and spread of wisteria.

**DISTRIBUTION IN THE UNITED STATES**

Found extensively throughout the eastern U.S., Chinese wisteria has been reported to be invasive in at least 19 states from Massachusetts to Illinois south to Texas and also in Hawaii. It is a management challenge for several national parks in Maryland, Virginia and Washington, DC.

**HABITAT IN THE UNITED STATES**

Wisteria prefers full sun, but established vines will persist and reproduce in partial shade. Vines climb trees, shrubs and manmade structures. It is tolerant of a variety of soil and moisture regimes but prefers deep, loamy, well drained soils. Infestations are commonly found along forest edges, roadsides, ditches, and rights-of-way.

## BACKGROUND

Chinese wisteria was brought to the U.S. from China in 1816 as an ornamental. It has been grown extensively in the southern U.S. as a decorative addition to porches, gazebos, walls, and gardens. Most infestations in natural areas are a result of escapes from landscape plantings.

## BIOLOGY & SPREAD

Wisteria is a long-lived perennial, surviving 50 years or more. Vegetative reproduction is the primary means of growth and spread. Slender stems (stolons, runners) grow horizontally across the ground and develop new plants (roots and shoots) at the nodes. Seeds may be produced when conditions are favorable. In riparian areas these may be carried by water downstream for great distances.

## MANAGEMENT OPTIONS

Manual, mechanical and chemical control methods are all effective in removing and killing wisteria. Employing a combination of methods often yields the best results and may reduce potential impacts to native plants, animals and people. The method you select depends on the extent and type of infestation, the amount of native vegetation on the site, and the time, labor and other resources available to you. Whenever possible and especially for vines climbing up trees or buildings, a combination of cutting followed by application of concentrated systemic herbicide to the cut surfaces of the rooted living portions will provide better kill of the targeted plants. For large infestations spanning extensive areas, a foliar herbicide may be a better choice rather than manual or mechanical means which could result in extensive disturbance to the soil.

## Biological

There are no biological control agents available for this plant.

## Chemical

Systemic herbicides like triclopyr (e.g., Garlon® 3A and Garlon® 4) and glyphosate (e.g., Accord®, Glypro®, Rodeo®) are absorbed into plant tissues and carried to the roots, killing the entire plant within about a week. Glyphosate is a non-selective systemic herbicide that may kill non-target plants that are only partially contacted by spray. Triclopyr is selective to broadleaved species and is a better choice if native grasses are present. Ambient air temperature should be above 65°F for all foliar treatments. Glyphosate products referred to in this fact sheet are sold under a variety of brand names (Accord®, Rodeo®, Roundup Pro® Concentrate) and in three concentrations (41.0, 50.2 and 53.8% active ingredient). Other glyphosate products sold at home improvement stores may be too dilute to obtain effective control. Triclopyr comes in two forms – triclopyr amine (e.g., Garlon® 3A, Brush-B-Gone®, Brush Killer®) and triclopyr ester (e.g., Garlon® 4, Pathfinder®, and Vinex®). Because Garlon® 3A is a water-soluble salt that can cause severe eye damage, it is imperative that you wear protective goggles to protect yourself from splashes. Garlon® 4 is soluble in oil or water, is highly volatile and can be extremely toxic to fish and aquatic invertebrates. It should not be used in or near water sources or wetlands and should only be applied under cool, calm conditions.

Herbicide applications can be made almost any time of year as long as temperatures are above 55-60 degrees Fahrenheit for several days and rain is not expected for at least 24 hours. Fall and winter applications will avoid or minimize impacts to native plants and animals. Repeated treatments may be needed for control of large or long-established infestations. In areas where spring wildflowers or other native plants occur, application of herbicides should be conducted prior to their emergence, delayed until late summer or autumn, after the last killing frost occurs, or carefully targeted. Herbicidal contact with desirable plants should always be avoided. If native grasses are intermingled with the wisteria, triclopyr should be used because it is selective for broad-leaved plants and will not harm grasses. Follow-up monitoring should be conducted to ensure control of any regrowth.

### *Basal bark application*

Use a string trimmer or hand saw to remove some of the vine foliage in a band a few feet wide and a few feet above the ground at comfortable height. To the exposed vine stems, apply a 20% solution of triclopyr ester (Garlon® 4) (2.5 quarts per 3-gallon mix) in commercially available basal oil with a penetrant (check with herbicide distributor). As much as



possible, avoid application of herbicide to the bark of the host tree. This method can be employed essentially year-round when daily temperatures remain around 50°F for several days. Efficacy will vary seasonally.

#### *Cut stem application*

Use this method in areas where vines are established within or around non-target plants or where vines have grown into the canopy. Cut each vine stem close to the ground (about 2 in. above ground) and immediately apply a 25% solution of glyphosate (e.g., Accord®) or triclopyr (e.g., Garlon® 3A) mixed with water to the cut surface of the stem. Glyphosate applications are effective at temperatures as low as 40°F. Triclopyr applications are effective at temperatures below 60°F as long as the ground is not frozen. Subsequent foliar applications may be necessary to control new seedlings or sprouts. Homeowners can apply products like Brush-B-Gone®, Brush Killer® and Roundup Pro® concentrate undiluted to cut stems. Use a paint brush or a plastic spray bottle to apply the herbicide to cut surfaces.

#### *Foliar application*

Foliar spray herbicide applications are used to control large infestations of exotic wisterias. It may be necessary to precede foliar applications with cut stem treatments to reduce the risk of damaging non-target species. To the leaves, apply a 2% solution (8 oz per 3 gal. mix) triclopyr ester (Garlon® 4) or triclopyr amine (Garlon® 3A) mixed in water with a non-ionic surfactant. In Rhode Island, concentrations as low as 1% in mid-summer and 0.05% in September have been very effective. Thoroughly wet the foliage but not to the point of runoff. The ideal time to spray is after much of the 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. If the 2% rate is not effective try an increased rate of 3 or up to 5%. Ambient air temperature should be above 65°F. For dense, low patches, another alternative is to cut the entire patch to the ground early in the growing season using a mower, weed-whip, machete or other tool. About one month later, apply 1-2% solution of triclopyr ester (Garlon® 4) or triclopyr salt (Garlon® 3A) in water to the cut patch using a backpack sprayer. This method has achieved complete kill of the targeted vines with little off-target damage or root uptake by adjacent plants. A third herbicide, clopyralid (e.g. Transline®) is also available and is selective to plants in three families: aster (Asteraceae), buckwheat (Polygonaceae), and pea (Fabaceae), of which wisteria is a member. This herbicide is effective at a concentration of 0.5%. Clopyralid has the potential to leach into groundwater and not may be appropriate for many sites depending on conditions. Consider this potential environmental problem when deciding what product to use. When using clopyralid, take precautions to reduce or prevent leaching.

#### **Manual and Mechanical**

Always wear gloves and long sleeves to protect your skin from poison ivy and barbed or spined plants that often grow amongst the invasive vines. For small infestations, plants can be hand-pulled along with the root portions. If fruits are present, the vines should be bagged in plastic trash bags and disposed of in a landfill or, alternatively, piled up and allowed to desiccate onsite. Dried piles of pulled material can either be left on-site and monitored the next year for new growth or hauled away. For climbing vines, first cut the vines near the ground at a comfortable height to kill upper portions and relieve host tree. Vines can be cut using pruning snips or a pruning saw for smaller stems and a hand axe or chain saw for larger stems. Try to minimize damage to the host tree's bark. Rooted portions will remain alive and should be pulled, repeatedly cut to the ground or treated with herbicide. Cutting without herbicide will require vigilance and repeated cutting because new plants will resprout from the stem base.

Grubbing, removal of entire plants from the roots up, is appropriate for small initial populations or environmentally sensitive areas where herbicides cannot be used. Using a pulaski, weed wrench 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 may resprout. Mature fruits should be bagged and disposed of in a trash dumpster to prevent spread by seed. Cut climbing or trailing vines low, close to the root collar if possible. This technique, while labor intensive, is feasible for small populations, as a pretreatment for large impenetrable infestations, or for areas where the use of herbicide is not desirable or possible. Wisteria will continue to resprout after each cutting until its root stores are exhausted. For this reason, cutting should begin early in the growing season and, if possible, sprouts should be cut every few weeks until autumn. Cutting will slow down growth, exhaust some of the plants resources and help prevent flowering and seed production.

**USE PESTICIDES WISELY:** Always read the entire pesticide label carefully, follow all mixing and application instructions and wear all recommended personal protective gear and clothing. Contact your state department of agriculture for any additional pesticide use requirements, restrictions or recommendations.

**NOTICE:** mention of pesticide products on this page does not constitute endorsement of any material.

## CONTACT

For more information on the management of Chinese wisteria, please contact:

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## SUGGESTED ALTERNATIVE PLANTS

Some examples of alternative plants to consider include American wisteria (*Wisteria frutescens*) which is native to the southeastern U.S. to southern Virginia, trumpet creeper (*Campsis radicans*), trumpet honeysuckle (*Lonicera sempervirens*), Dutchman's pipe (*Aristolochia macrophylla*), and crossvine (*Bignonia capreolata*). Contact your local native plant society for information on sources of these and other native plants.

## OTHER LINKS

- <http://www.invasiveplantatlas.org>
- <http://www.invasive.org/eastern/srs/CJW.html>
- <http://www.invasive.org/library/FLFSNoxWeeds/chinesewisteria.html>

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