Sapium sebiferum L.
(= *Triadica sebifera* (L.) Small)

Chinese tallowtree

Family: Euphorbiaceae
Range: Primarily found in the southeastern United States, from North Carolina to Texas. More recently becoming an issue in California.
Habitat: Disturbed and undisturbed bottomlands, fields, coastal prairies, riparian areas, and wetlands. Tolerates shade, drought, saline, flooded conditions, and temperatures as low as 5°F. Grows best on well-drained clay-peat soil, but can tolerate a wide range of soil conditions.
Origin: Native to China and Japan where it has been cultivated for seed oil production for more than a thousand years. It is thought that Benjamin Franklin introduced Chinese tallowtree into the United States in 1776. Significant planting occurred throughout the Gulf Coast in the early 1900s both as a seed crop and as an ornamental. Since then it has escaped from cultivation, is extremely invasive in much of the lower southeast, and is currently expanding its range.
Impacts: Chinese tallowtree can aggressively invade disturbed and undisturbed terrestrial, wetland, and riparian plant communities. The tree is most problematic in the southeastern U.S., where large tracts of coastal prairie have been replaced by stands of Chinese tallowtree. Stands replace native vegetation and can significantly alter the soil nutrient status. The milky sap and unripe fruits are mildly toxic to humans and livestock when ingested.
California Invasive Plant Council (Cal-IPC) Inventory: Moderate Invasiveness (Alert)

Chinese tallowtree is a fast-growing deciduous tree that often grows to about 20 ft, but can reach 40 to 50 ft tall. It is freely branching, with an open, airy appearance. The leaves are pendant, diamond shaped, abruptly pointed at the tip, and 2 to 3 inches long. In fall the leaves turn brilliant shades of scarlet, orange, yellow and maroon. Like most members of the spurge family, broken twigs and leaf stems exude a milky latex sap.

The flowers are produced in yellowish-green catkins on the branch tips. The fruits are 3-lobed brown capsules that open to reveal three white, waxy seeds that resemble popcorn. Chinese tallowtree has a tremendous reproductive potential. They reach reproductive age in as little as 3 years and can remain productive for 100 years. A mature tree may annually produce an average of 100,000 seeds that are spread mainly by birds and water. Most seeds survive over a year under field conditions, but little is known of the seedbank longevity. In addition to prolific seed production, Chinese tallowtree resprouts from stumps, and roots readily develop shoots.

NON-CHEMICAL CONTROL

Mechanical (pulling, cutting, disking)	Hand pulling can remove seedlings and small saplings, but this technique is generally not effective or practical for established trees. Cutting is most effective before flowering to prevent seed production. Because tallowtree spreads by suckering, resprouts are common after treatment. Cutting should be combined with an herbicide treatment or with multiple cuttings over a period of years. Cut trees at ground level with power or manual saws. Trees standing in water may be successfully killed by cutting them below the water line. Heavy equipment can be effectively used to control tallow trees on canal banks and in areas where soil disturbance and nonselective species removal are not important considerations. Stumps remaining following such treatment will require herbicide application to prevent regrowth. Girdling can be an effective treatment where the use of herbicides is impractical. Using a hatchet, make a cut through the bark encircling the base of the tree, approximately 6 inches above the ground. Be sure that

	the cut goes well into or below the cambium layer. This method will kill the top of the tree but resprouts are common. Follow-up treatments for many years may be required until roots are exhausted, so this method is not recommended for large populations.
Cultural	Grazing (foliage is toxic to cattle), burning or flooding are not effective management options for controlling Chinese tallowtree.
Biological	No biological control agents have been released for the control of Chinese tallowtree.

CHEMICAL CONTROL

The following specific use information is based on published papers and reports by researchers and land managers. Other trade names may be available, and other compounds also are labeled for this weed. Directions for use may vary between brands; see label before use. Herbicides are listed by mode of action and then alphabetically. The order of herbicide listing is not reflective of the order of efficacy or preference.

GROWTH REGULATORS	
Picloram + 2,4-D *Tordon 22K* + 2,4-D amine Picloram + triclopyr *Tordon 22K* + *Remedy Ultra*	**Rate:** Foliar spot treatment: 1 qt *Tordon 22K*, plus 4 pt 2,4-D amine (1.9 lb a.e./acre) or 1 pt *Remedy Ultra*, plus 0.5% v/v surfactant. Apply to thoroughly wet all leaves. **Timing:** Postemergence in spring or fall when conditions are favorable for plant growth. **Remarks:** High rates of picloram can give long-term soil residual control for broadleaves. *Tordon 22K* is a federally restricted use pesticide. It is not registered for use in California.
Triclopyr *Garlon 3A, Garlon 4 Ultra, Pathfinder II*	**Rate:** Low volume foliar treatment: 2% v/v solution of triclopyr and water plus 0.5% surfactant; apply to thoroughly wet all leaves. Cut stump treatment: 20% *Garlon 4 Ultra* in 80% oil carrier, or 50% *Garlon 3A* in water. Basal bark treatment: 20 to 30% *Garlon 4 Ultra* in 70 to 80% oil carrier, or *Pathfinder II* as a ready to use formulation. Stem injection treatment: one cut per every 3 inches of stem diameter, and 1 ml of undiluted *Garlon 3A* added to each cut. For clumps, one hack per every 6 inches of total stem diameter. Treat the largest stems. Basal cut stump treatment: 20% *Garlon 4 Ultra* in 80% oil carrier. **Timing:** Foliar treatments are best when leaves are fully expanded. Cut stump, basal cut stump, basal bark, and stem injection treatments can be applied as long as the ground is not frozen, but are best when used in late summer or early fall, before leaf drop. **Remarks:** Triclopyr is a selective herbicide for broadleaf species and will not damage desirable grasses growing nearby. Cut stump treatment: cut stems horizontally at or near ground level, and immediately apply herbicide solution to cover the outer 20% of the stump face. Suckering from the roots typically occurs after cutting, but the treatment should control most resprouts. Basal bark treatment: spray the lower trunk, including the root collar, to a height of 12 to 15 inches from the ground; the spray should thoroughly wet the lower stem but not to the point of runoff. Stem injection treatment: be sure that each cut goes well into or below the cambium layer. Trees should not be cut for at least one month following basal bark and stem injection treatments. Triclopyr can be used as a premix with aminopyralid (*Capstone*) at 5 to 8% v/v solution for spot treatments.
AROMATIC AMINO ACID INHIBITORS	
Glyphosate *Roundup*, *Accord XRT II*, and others	**Rate:** Foliar treatment: 2% v/v solution of *Roundup ProMax* (or other trade name with a similar concentration of glyphosate) and water plus 0.5% surfactant to thoroughly wet all leaves. Cut stump treatment: undiluted *Roundup* (or other trade name) or 50% of herbicide concentrate in water. Stem injection treatment: one cut per every 3 inches of stem diameter, and 1 ml of undiluted herbicide added to each cut. For clumps, one hack per every 6 inches 6f total stem diameter. Treat the largest stems. **Timing:** Postemergence foliar treatments are best when leaves are fully expanded. Cut stump and stem injection treatments can be applied as long as the ground is not frozen, but is best when used in late summer or early fall, before leaf drop. **Remarks:** Glyphosate is a nonselective systemic herbicide. Cut stump and stem injection applications are as described for triclopyr. Trees should not be cut for at least 4 months after foliar and stem injection treatments.
BRANCHED-CHAIN AMINO ACID INHIBITORS	
Imazapyr *Arsenal*, *Habitat*,	**Rate:** Low volume foliar treatment: 1% v/v solution of *Stalker* and water plus 0.5% surfactant to thoroughly wet all leaves. Cut stump treatment: 10% *Stalker* in 90% oil carrier. Basal bark treatment: 20%

Stalker, *Chopper*, *Polaris*	v/v *Stalker* or *Chopper* formulation in 80% oil carrier. Stem injection treatment: one cut per every 3 inches of stem diameter, and 1 ml of undiluted herbicide (*Arsenal* or *Habitat*) added to each cut. For clumps, one hack per every 6 inches of total stem diameter. Treat the largest stems. **Timing:** Best in late summer to early fall, but before leaf drop. Avoid stem injection between March and April. **Remarks:** Imazapyr is a soil residual herbicide and may result in bare ground around trees for some time after treatment. Cut stump, basal bark and stem injection applications are as described for triclopyr. Trees should not be cut for at least 4 months after foliar, basal bark and stem injection treatments.
PHOTOSYNTHETIC INHIBITORS	
Hexazinone *Velpar L*	**Rate:** Broadcast soil treatment: 2 to 4 gal/acre (4 to 8 lb a.i./acre). Basal (soil) single stem treatment: undiluted product at a rate of 2 to 4 ml per inch of stem diameter, applied to the soil surface within 3 ft of the stem. **Timing:** Preemergence from late winter through summer. **Remarks:** Hexazinone is a residual herbicide applied as a broadcast or basal-soil treatment for brush control. Basal (soil) single stem treatment: one squirt of spot gun per 1 inch stem diameter. High rates of hexazinone can create bare ground, so only use high rates in spot treatments.
Tebuthiuron *Spike*	**Rate:** Basal (soil) single stem treatment: up to 7.5 lb product (*Spike 80DF*)/acre (6 lb a.i./acre) **Timing:** Soil treatments can be applied anytime except when the soil is frozen or saturated with moisture. Applications should be made before the start of spring growth or before expected seasonal rainfall. **Remarks:** Tebuthiuron is a surface applied, soil-active product intended for total vegetation control in non-cropland. For best control, do not disturb plants for 2 years after application.

RECOMMENDED CITATION: DiTomaso, J.M., G.B. Kyser et al. 2013. *Weed Control in Natural Areas in the Western United States*. Weed Research and Information Center, University of California. 544 pp.