

# Management Options for Chinese Tallowtree



Chinese tallowtree, *Triadica sebifera* (L.) Small, is one of the most invasive trees in the southeastern United States. It is a classic example of a plant introduced into the United States with good intentions but with very bad outcomes.

Benjamin Franklin is often cited as having introduced the tallowtree into the United States in 1772, but the species has been repeatedly promoted over the past 100 years for numerous purposes, including in the soap industry, as an ornamental shade tree, for honey production, and, most recently, for bioenergy. Chinese tallowtree is an ecosystem transformer with tremendous negative impacts in wetlands, pastures, prairies, and forests. In almost all of these areas, tallowtree invasion frequently results in a closed canopy tallowtree forest with few other species present.

Multiple factors can make tallowtree management difficult. It produces large numbers of fruits, which are spread by water and are consumed and spread by many species of birds. Bottomlands subject to periodic flooding may be repeatedly reinfested from upstream

seed sources. Tallowtree is also an aggressive sprouter and rapidly regenerates from both stumps and lateral roots, so mechanical control methods frequently exacerbate the problem.

## **Multiple factors can make tallowtree management difficult.**

This publication provides recommendations for several control techniques that can be used for tallowtree across a range of environments. Some discussion of techniques that do not work is also provided. Not all techniques can be used in all situations, and tallowtree frequently grows along water in places that are difficult to access.

### **Physical Removal**

Seedlings may be pulled when they are very small, but hand pulling is not generally an effective option for controlling established tallowtree. Tallowtree rapidly establishes a deep taproot, making saplings difficult to



Also known as popcorn tree, Chinese tallowtree produces large numbers of waxy coated seeds that resemble popcorn. Seeds remain on the tree through early winter.

remove, especially in heavier textured soils. The use of a weed wrench may help remove small saplings. However, stems that originate from lateral roots will break off just below the soil surface and new sprouts will form near the break point. The use of bulldozers and excavators may be effective in removing entire trees and stumps. However, many lateral roots will be missed during removal, and sprouting can rapidly occur from these pieces. Many land managers have reported rapid increases in the density of tallowtree stands following removal with heavy equipment.

### **Mowing, Cutting, and Brush Mulching**

In pastures, annual mowing has been used to suppress Chinese tallowtree, but it can make the problem worse. Because tallowtree rapidly sprouts from the stump and from lateral roots, stem densities may increase over time with repeated mowing. Brush mulchers or shredders are effective in opening dense tallow stands and can be a good first step in tallowtree management. However, follow-up herbicide treatments are necessary for effective control. If cutting tallowtree with a chainsaw, immediately apply a recommended herbicide to the freshly cut stump to prevent sprouting (see following section on chemical control).

### **Prescribed Fire**

Prescribed fire typically is not effective for Chinese tallowtree control. Chinese tallowtree leaf litter is rapidly degraded by decomposers, resulting in very little fine fuel accumulation to carry a fire. In prairies and grasslands, a summer fire applied when tallowtree is in flower may provide some suppression if the fire can completely girdle the stems. However, tallowtree will generally sprout following fire and follow-up herbicide treatment will be needed.

### **Biological Control**

Grazing is usually not an option for Chinese tallowtree control. Although cattle will readily graze some other invasive plants such as kudzu and Chinese privet, they do not graze Chinese tallowtree at all. Goats will graze Chinese tallowtree, but they do not prefer it. Effective management would require numerous repeated grazing events by goats. Research evaluating potential insects for classical biocontrol of Chinese tallowtree is under way in Florida. However, there are currently no classical biological control agents that can be used for Chinese tallowtree control in the United States.

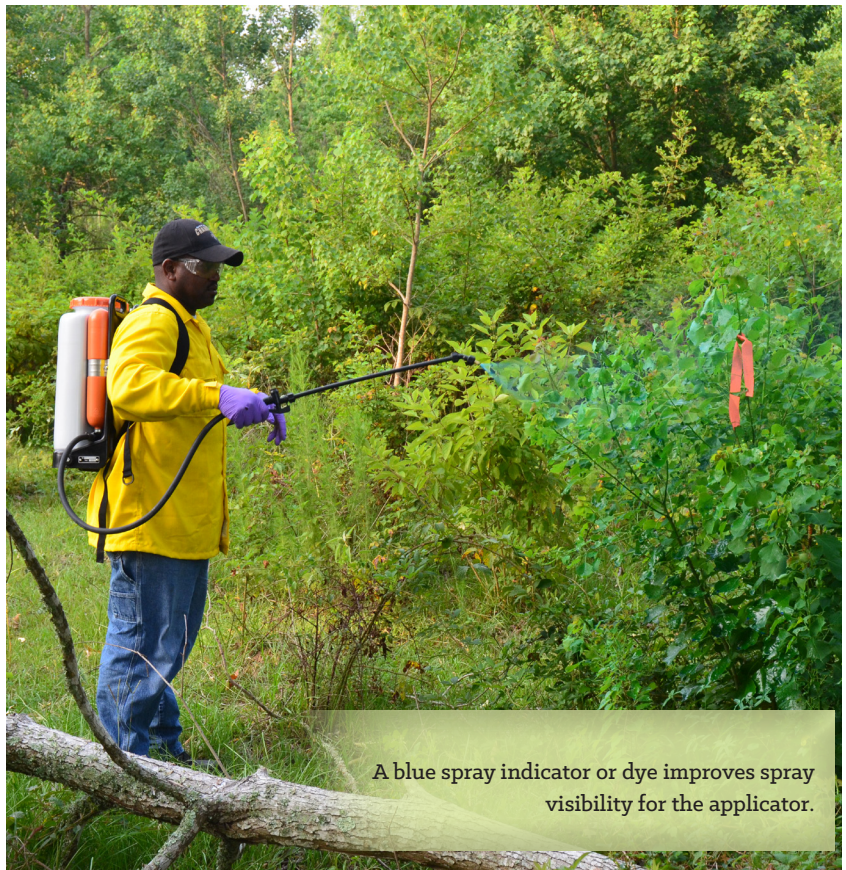


Dense stands of tallowtree are especially common near rivers. Note that many of the stems are from stump sprouts.



## Chemical Control

Several herbicides may be used for effective Chinese tallowtree control. As with any treatment method, it is important to remember that there are no silver bullets and most herbicides will require multiple applications for complete kill. It is also important to remember that Chinese tallowtree frequently grows near water or where there is a shallow water table. This may preclude or limit the use of certain herbicides. Additionally, several herbicides listed may cause injury or death to surrounding vegetation. Always read and follow the herbicide label for specific information concerning applications near water and nontarget injury. Table 1 lists herbicides that have been shown to be effective for various application methods including broadcast, foliar individual plant treatment (IPT), basal bark, cut stump, and hack and squirt.



A blue spray indicator or dye improves spray visibility for the applicator.

(Photo credit: Doug Streett, USDA Forest Service, Pineville, Louisiana)



**Table 1. Herbicide Treatments Recommended for Chinese Tallowtree Control<sup>a</sup>**

Herbicide	Example Trade Name(s)	Application Method	Rate	Site
Aminopyralid	Milestone	Cut stump	10%	Noncrop, natural areas
Aminocyclopyrachlor + metsulfuron	Streamline	Broadcast IPT foliar <sup>b</sup>	11.5 oz./A. 11.5 oz./100 gal.	Noncrop, natural areas
Imazamox	Clearcast	Broadcast IPT foliar Cut stump Hack and squirt	64 oz./A. 2% 50% 50%	Noncrop, aquatic, natural areas
Imazapyr	Arsenal, Habitat	Broadcast IPT Foliar Cut stump Hack and squirt	2 to 4 pt./A. 2% 6 to 9% 50%	Noncrop, aquatic, forestry, natural areas
Picloram + fluroxypyr	Surmount	Broadcast	3 to 6 pt./A.	Grass pastures
Picloram + 2,4-D	Grazon P+D	Broadcast IPT foliar	4 qt./A. 1%	Grass pastures
Triclopyr amine	Garlon 3A, Renovate	IPT foliar	2%	Noncrop, aquatic, natural areas, forestry
Triclopyr ester	Garlon 4, Pathfinder II	Basal bark Cut stump	20 to 30% 25%	Noncrop, forestry, natural areas

<sup>a</sup> The addition of a nonionic surfactant at 0.25% v/v for almost all foliar herbicide treatments or methylated seed oil at 1% v/v for imazamox is highly recommended.

<sup>b</sup> IPT = individual plant treatment. This term is used to distinguish herbicide rate recommendations on a percentage basis rather than on a per acre basis.

**Additional notes on chemical control:** Foliar broadcast and individual plant treatments are most effective when applied from late summer to early fall. Do not apply foliar treatments after leaves begin changing color in the fall. Cut-stump treatments are easiest and most effective when applied in the late fall and can be used on any diameter stump. For water-based cut-stump treatments, such as aminopyralid, imazamox, or triclopyr amine, always apply the herbicide immediately after cutting. Basal bark and hack and squirt treatments are also most effective when applied in the fall. Basal bark treatments are effective on trees less than 6 inches in diameter at the base. Hack and squirt treatments are effective on any size trees. For all application methods, avoid treatment in the spring when sap flow is upward and new leaves are forming.



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