FOR189

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Biology and Management of Chinese Privet[1]

Rick Williams and Patrick Minogue[2]

Chinese privet, *Ligustrum sinense* Lour., is a semi-evergreen to evergreen, thicket-forming shrub which occurs most densely in open disturbed areas, especially low wet places. Privet also invades less disturbed upland hammocks and pinelands, river and stream floodplains, lake shores and edges of swamps and marshes (Langeland and Burks, eds 1998). Chinese privet was introduced as an ornamental shrub in the South in 1852 (Dirr 1983) and was naturalized as early as 1933 (Small 1933). In Florida, Chinese privet is widely naturalized in the Panhandle and northern counties, but also occurs south on the Peninsula in Hernando, Hillsborough and Dade counties (Wunderlin et al. 1995). It is still cultivated as an ornamental shrub in 10 southern states (Meyer et al. 1994) and often planted as an evergreen hedge around homes and landscapes.

Biology

Chinese privet typically grows with multiple trunks and can reach heights of 30 feet. Privet is common along fence rows and in the understories of pine and hardwood forests. Privet can thrive in these understory settings since it is shade tolerant. It has rapid growth, often growing in dense clusters that shade out native vegetation. The leaves of privet are arranged oppositely along the branches and are usually 1 to 1.5 inches long. Privet has showy, fragrant white flowers that appear in clusters at the ends of branches between April and June. The fruits are single-seeded drupes that are pale green in summer and ripen to a dark purple in fall. Privet is spread by birds and animals that feed on the fruit and

Figure 1. Chinese privet in bloom in the spring. Credits: Rick Williams

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2. Rick Williams is an associate professor and extension forestry specialist, University of Florida IFAS at the West Florida Research and Education Center, 5988 Hwy 90 Bldg 4900, Milton, FL 32583. Patrick (Pat) Minogue is an assistant professor of silviculture, North Florida Research and Education Center, 155 Research Road, Quincy, FL 32303.

Figure 2. Drupes forming after being pollinated. Credits: Rick Williams

drop the seeds as they travel. It also can spread locally by root sprouts. Once privet is established in an area, it is difficult to remove.

Management Strategies

Biological Strategies

Since privet is out of its native range in the southeastern U.S., the normal biological control organisms are not present. Research in biological control methods is focused on the identification of agents which will effectively maintain privet without significant adverse impacts to native plants and animals. To date, no such control agents have been identified.

Fire

Fire provides some control of Chinese privet since the plant is relatively thin-barked and shallow-rooted. Dense, old stands of privet usually withstand fire well because they typically shade out the understory vegetation that could carry a fire. Weather hot and dry enough to allow areas of established privet to burn would put the entire forest in danger from fire. Small, young infestations of privet, though, can be controlled by repeated burning. The fire will kill the above-ground stems, but under normal prescribed fire conditions, privet root systems will generate new stems. Thus, repeated burning every 2 to 3 years will be necessary to control and eventually eliminate privet.

Machinery

Privet can be mowed when it is young using common machinery such as a bush-hog. Older dense stands of privet can be cut with heavier cutting machines like a brown tree cutter. Even with repeated mowing, privet will continue to re-sprout, so mowing or cutting privet must be combined with fire or herbicides to have effective control. In fact, cutting privet and treating the cut stems with herbicides or allowing new growth to form and then spraying with herbicides is an effective method of managing privet.

Herbicides

Herbicides can be applied to the foliage between June and early October, as long as the plants are actively growing and not under drought stress. Basal bark applications use herbicides mixed with diesel fuel, mineral oil or vegetable oil sprayed on the lower 12 to 18 inches of each stem. Basal applications can be applied almost any time of the year except during the period of strong sap-flow in the early spring. Stump treatments should be effective at any time of the year unless the stem is frozen or the herbicide freezes when applied.

Foliar sprays

Foliar sprays work best when the privet crowns are less than 8 feet high and are ideal when stems are between 3 to 6 feet high. Foliar sprays may be applied from June to October to control this evergreen shrub. Effective foliar herbicide treatments to manage privet include a combination of the active ingredients *imazapyr* (Arsenal® AC, Chopper® Gen2) and *glyphosate* (Roundup® Pro, Accord® XRT II). Prepare a spray solution containing 0.75% Arsenal® AC (or 1.5% Chopper® Gen2) plus 3% Roundup® Pro or Accord® XRT II. For a typical 3-gallon backpack sprayer, mix 3 oz. Arsenal® or 6 oz. Chopper® plus 12 oz. Roundup® or Accord® into 3 gallons of water (3.16 gallons total mix). All of these product formulations except Arsenal® AC contain ample surfactants and penetrants to aid absorption by the foliage so other "surfactants" and additives are not needed.

When treating privet in areas where desirable hardwood trees and shrubs are present **do not use** *imazapyr* herbicide products because this herbicide may damage or kill desirable vegetation by root uptake. In these situations, *glyphosate* alone should be used for foliar sprays since it is not absorbed by roots and enters the plant only through the foliage that is sprayed. Miller (2003) recommends using a 3% solution of a glyphosate herbicide plus additional surfactant to manage privet. Mix 12 oz. of *glyphosate* herbicide product in 3 gallons of water plus 1% surfactant. Glyphosate treatments have been enhanced by adding 2 oz. ammonium sulfate and 4 oz. MSO (methylated seed oil) per 3 gallons of glyphosate spray mixture.

Basal stem applications

If the stems are too tall to use foliar sprays on expansive privet crowns, or if you are applying herbicide during the dormant season, apply herbicide to the lower 12 to 18 inches of the privet stems using a "basal oil" carrier. The oils improve herbicide uptake through the bark. The two most common herbicides for this approach are imazapyr and triclopyr (Garlon® 4). Basal bark treatments are appropriate for stem diameters less than 4 inches at the ground line, which is typical for Chinese privet.

- *Imazapyr* in an emulsifiable formulation such as Stalker® may be applied to the lower 12 to 18 inches of each stem using 30 fluid oz. of herbicide product mixed into 3 gallons of diesel or penetrating oil. Remember that if desirable hardwood trees or shrubs are present with the privet, do not use *imazapyr* products.

- *Triclopyr* in an ester formulation such as Garlon® 4 can be applied to the lower 12 to 15 inches of each stem using a 20% herbicide product mixed into a commercially available basal oil, diesel fuel, or kerosene (2.5 quarts per 3-gallon mix).

A backpack sprayer fitted with a typical spray wand and an adjustable cone or flat fan nozzle may be used to spray the bases of individual stems. Spray each stem in an up-and-down motion to a height of at least a foot, and apply the spray from at least two sides to ensure coverage around the stem circumference.

Stump applications

In some cases, it may be desirable to remove privet stems to improve aesthetics or reduce fire hazard. Cutting alone will not eliminate privet, though: new stems will quickly emerge from the cut stumps and roots. To prevent re-sprouting, treat the cut stems with a herbicide mixture.

Several herbicides are labeled for cut stump or cut stubble applications, which are either mixed with water, diesel or basal oil as the carrier. For small diameter stems, typical for privet, the basal oil treatments may be more effective than water-based sprays because they provide for some uptake through the bark as well as the cut surface. *Imazapyr* treatments also have the advantage of soil activity or root uptake, but this may be a concern if the roots of desirable hardwoods or shrubs are present in the area to be treated. Hardwood tree roots extend well out from the trunk of the tree, growing past the outside of the tree's crown (dripline).

The most common oil-based herbicide treatments include *imazapyr* (8 to 16 oz. Stalker® per gallon of diesel or basal oil) or *triclopyr* ester (24 to 38 oz. of Garlon® 4 per gallon of diesel fuel or basal oil).

The most common herbicides for water-based treatments include *imazapyr* (1 quart of Arsenal® AC per gallon of water), *triclopyr* in the amine formulation (20 to 30% Garlon® 3A per gallon of water) or *glyphosate* (25oz/gal up to 100% Roundup® Pro or 50 oz/gal up to 100% Accord® XRT II).

These herbicides are mixed with water and applied to the cut surface as soon after cutting as possible (as soon as possible means hours or the next day, not next week) because to delay means that the plants will not move the herbicides effectively. A paint brush, wick applicator, common spray bottle or a backpack sprayer can be used to apply the herbicide solution to the cut stumps or stems. Be sure to treat the entire cambium. (The cambium is the green or light brown ring just inside the bark.) If you spray around wetlands, use *imazapyr* Habitat® , *triclopyr*

Garlon® 3A or *glyphosate* Accord® XRT II because these herbicides are labeled for use in wetlands.

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