

## Japanese climbing fern

### *Lygodium japonicum*

Japanese climbing fern is a highly invasive non-native plant present in much of the southeastern U.S. It grows in moist or dry woods, along ditches and rivers, and in various disturbed sites. It tolerates sun and shade. Native to Eastern Asia, it was likely introduced into Florida as an ornamental plant in 1932. Most common in North and West Florida, it now appears to be spreading down the peninsula and has been found as far south as Collier and Broward Counties.

Like Old World climbing fern (*Lygodium microphyllum*), Japanese climbing fern climbs over shrubs and into the tops of trees forming dense canopies that shade out and eliminate the vegetation below. Old World climbing fern has unlobed leaflets that are glabrous (smooth, not hairy) below. Japanese climbing fern is a perennial vine-type fern, reaching up to 90 feet in length. Its leaves are lacy and finely divided, arranged opposite on the vine. The vines are green to orange to black and wiry, often infesting trees and shrubs forming dense mats of vegetation.

#### Identification:

- Tangle of wiry, twining fronds
- Fern-type leaflets with hairs on undersides
- Sporangia under cured leaflet margins



#### Management:

Preventative: Constant monitoring is very important and can aid in the detection of new populations. Steps to prevent spore movement or formation are the key in controlling climbing fern. Microscopic spores are easily transported via clothing, wind and possibly water, so contamination is a constant threat. Control measures should be employed when the fern is not producing spores, which occurs in the late summer/early fall (October is peak spore release time in north Florida). If control measures must be employed during spore formation and dispersal, then these areas should be treated at a time when workers will not be traveling to other sites in the same day. Prescribed fire alone has not been successful in controlling Japanese climbing fern, which is a ladder fuel that allows fire to climb into the forest canopy. The fern also re-grows quickly following fires.

#### Chemical:

- Use foliar method (July-October) with care if treating around desirable plants
- Treat leaflets with glyphosate (Ex. Roundup) or (\*\*\*)SEE BELOW/next page)
- Wash clothes, tools, and vehicle before entering into a new, uninfested area.

**Foliar Method:** Apply herbicide with a backpack or similar hand-operated pump sprayer equipped with a flat spray tip or adjustable cone nozzle. Apply herbicide to the leaves and stems of target plants using a consistent back and forth motion. Herbicide should thoroughly cover foliage, but not to the point of runoff. All recommended herbicides require complete foliar coverage to be effective. FOLLOW LABEL OF HERBICIDE CONTAINER.

\*\*\* Some research suggests that using glyphosate, imazapyr, or metsulfuron methyl, herbicides that inhibit the formation of amino acids in plants, produces the best results in controlling Japanese climbing fern in north Florida. Combinations of glyphosate and metsulfuron methyl were generally more effective than combinations of glyphosate and imazapyr. Damage to associated vegetation not sprayed with herbicide was greatest with imazapyr. Least injury to associated vegetation was with metsulfuron methyl.

Table 1. Herbicide control measures as described by Miller (2003). All foliage must be thoroughly covered with the spray.

Escort® XP <sup>1</sup> (metsulfuron methyl)	1-2 oz product /acre	Mix 0.3 to 0.6 dry oz per 3 gallons water, and as a mixture with glyphosate
Arsenal® AC <sup>2</sup> (imazapyr)	1% in water	Mix 4 fluid oz per 3 gallons water
Glyphosate <sup>3</sup> , Garlon 3A <sup>4</sup> , or Garlon 4 <sup>5</sup> (triclopyr)	4% in water	Mix 16 fluid oz per 3 gallons water, or a combination of these herbicides

<sup>1</sup>Escort® XP contains 60% metsulfuron methyl as the active ingredient.

<sup>2</sup>Arsenal® AC contains 4 lb acid equivalent imazapyr per gallon as the active ingredient

<sup>3</sup>Glyphosate is the active ingredient in Roundup®, Accord®, and many other products.

<sup>4</sup>Garlon® 3A contains 3 lb active ingredient per gallon as an amine salt of triclopyr.

<sup>5</sup>Garlon® 4 contains 4 lb acid equivalent triclopyr ester per gallon as the active ingredient.

**NOTES: When using Arsenal AC or Escort, be sure to add a surfactant (wetting agent) according to label directions to improve plant uptake. Best results are obtained with application in late season (July to early October), prior to peak spore release. Arsenal (imazapyr) is a residual, soil-active herbicide and may damage hardwood trees if their roots extend into the treated area. Pines however, are tolerant to imazapyr.**