

# Japanese stiltgrass (*Microstegium vimineum*)



Figure 1. Japanese stiltgrass habit

## Identification and Management

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spreading dayflower (*Commelina* spp.). After frost, the foliage and wiry stems turn a distinctive light tan in color and persist through the winter. Vegetative identification characteristics include: rolled veneration, a very short membranous ligule, and leaf blades that are shorter and broader than most other grasses (Fig. 2).

### General Description

Japanese stiltgrass is a prostrate to erect, sprawling and freely branched summer annual with spreading stems that root at the nodes. The stems are stiff and climb over other vegetation reaching more than 3 feet (~1 meter) in height but will remain prostrate if mowed. Leaves are rolled in the bud; ligules are short (~0.5 mm) and membranous with hairs on the backside;

### Brief Description

Japanese stiltgrass (also known as annual jewgrass, bamboogras flexible sesagrass, Japanese grass, Mary's grass, microstegium, Nepal microstegium, or Vietnamese grass) is a summer annual commonly found in shady, moist areas (Fig. 1). It is spreading rapidly in woodlands as well as shaded landscapes and low maintenance turf throughout the southeastern U.S. and mid-Atlantic States. Japanese stiltgrass germinates in early spring, several weeks before crabgrass (*Digitaria* spp.), yet flowers and seeds much later, from mid-September through October. It has broader, shorter leaves than many other annual grasses, somewhat resembling broadleaf signalgrass (*Brachiaria platyphylla*) or



Figure 2. Japanese stiltgrass leafy shoot



Figure 3. Young seedlings have distinctively broad leaves.



Figure 4. In the winter Japanese stiltgrass vegetation covers the forest floor.

auricles are absent. Leaf blades are broader than many other grasses, particularly under shady conditions. Young seedlings are easily distinguished from other summer annual grasses by the very broad, rounded first leaf (Fig. 3). Leaves on older plants are narrowly elliptic, about 8 times longer than wide (3 to 8 cm long and 5 to 10 mm wide), sparsely hairy on the upper surface, and hairless or nearly so on the under side. The sheath has a hairy margin and hairs at the collar region but otherwise is not hairy. With age some of the hairiness of the upper leaf blade may diminish. Plants have a shallow fibrous root system. Plants tolerate mild frosts, often flowering after the first frost, but die with hard frost. Dead plant parts persist through winter and well into spring and early summer (Fig. 4).

### Habitat and Distribution

Japanese stiltgrass is most commonly found in shady, moist, disturbed areas including wetlands, ditch banks, utility rights of way, mulched landscape beds, and low maintenance turf. However, infestations are common in upland for-

ests as well. Infestations typically begin in disturbed sites; once established, infestations can spread to undisturbed areas. Introduced from tropical Asia, Japanese stiltgrass has spread rapidly in public lands throughout the eastern U.S. It has been reported throughout the southeastern US, north to Ohio and New York. It is most common in the piedmont and mountains of the southeast, less common in the coastal plains. More recently it has been reported to be encroaching on shaded lawns and landscape plantings throughout its distribution.

### Key Identification Characteristics:

- Rolled in the bud
- Short membranous ligule
- Auricles absent
- Upper blade sparsely hairy
- Sheath margin hairy
- Collar hairy
- Shady, moist habitats

### Reproduction and Spread

A summer annual, reproduction is by seeds that germinate in early to mid-spring (early to mid-March in central NC) and sporadically throughout the growing season. Plants flower in early to mid-autumn (late September through October in central NC). Flowers are produced in a branched spike, with 1 to 3 (rarely 6) branches (rachis), each 3 to 5 cm long. (Fig. 5)

Spikelets are in pairs on the rachis, each 4.5 to 6 mm long and hairy, one sessile and the other on a short pedicel. Only one of the spikelets in each pair



Figure 5. Japanese stiltgrass seedheads form in mid to late autumn.

is fertile; the fertile one sometimes having a slender awn 4 to 8 mm long. Japanese stiltgrass can produce large numbers of seeds — from 16,000 to 50,000 seeds per square meter. At least some of those flowers are cleistogamous (self-fertilized before the flower opens). Such an adaptation has direct implications on control measures; to prevent seed production, early removal before anthesis is imperative because some florets will produce seed before flowers have opened.

### Control

Since Japanese stiltgrass infestations typically begin in disturbed areas then spread from those sites, early detection and control can prevent severe infestations. Seeds are believed to be not long-lived in the soil. Although limited information on seed bank dynamics is available, research suggests that seeds last only 3 to 5 years in the soil. Therefore, long-term management programs should emphasize prevention of seedhead formation to deplete the seed reservoir. Mulches suppress germination; however, in shady moist areas it can grow in mulch. Preemergence and postemergence herbicides used for crabgrass control generally are equally, or more effective on Japanese stiltgrass. The only herbicide specifically labeled for Japanese stiltgrass control is Plateau (imazapic). Plateau may be applied preemergence or postemergence to Japanese stiltgrass. Consult the herbicide label for details.

In research, postemergence non-selective herbicides such as Roundup-Pro (glyphosate) and Finale (glufosinate) provided excellent control with one or two applications, respectively. Selective postemergence grass herbicides were generally effective on this weed. Of the selective graminicides tested, Vantage (sethoxydim) provided the best control followed by Fusilade II (fluzafop-p), which was equal to Acclaim Extra (fenoxaprop) and better than Envoy (clethodim). Research at the University of Tennessee also suggests that sulfentrazone (Authority or Oust) is effective. Dimension (dithiopyr), MSMA and Drive (quinclorac) were not effective for postemergence control. When

using selective graminicides, young seedling weeds will be better controlled than larger plants. Several preemergence herbicides controlled Japanese stiltgrass including: Preen (trifluralin), Dimension (dithiopyr), Surflan (oryzalin), Pendulum (pendimethalin), Barricade (prodiamine), Snapshot TG (isoxaben + trifluralin), Ronstar (oxadiazon) and XL (oryzalin + benefin). Pennant (metolachlor), Team Pro (benefin + trifluralin) and Devrinol (napropamide) were less effective. If preemergence herbicides are to be used, applications must be made before the weed germinates, which occurs several weeks before crabgrass germination.

Several preemergence and postemergence herbicides control Japanese stiltgrass. The goals of your site management program should influence your herbicide choices. If one wants to control Japanese stiltgrass without harming desirable vegetation, a selective grass herbicide might be most appropriate. If total herbaceous vegetation is the goal then non-selective herbicides or broad-spectrum soil residual herbicides may be a better choice.

\*\*Before using any herbicide, read

the label and follow all label directions and restrictions.

### Similar Species

Japanese stiltgrass resembles other coarse-textured summer annual grasses including smooth crabgrass and broadleaf signalgrass. In contrast, crabgrass has a tall membranous ligule (to 2 mm), longer and narrower leaf blades (15 to 20 times longer than wide), and lacks hairs on the margin of the sheath. Broadleaf signalgrass is easily distinguished from Japanese stiltgrass and crabgrass by its hairy (ciliate) ligule. Under shady conditions, Japanese stiltgrass resembles the foliage of dayflower; however, the presence of a membranous ligule readily separates Japanese stiltgrass from members of the dayflower family (Commelinaceae) which do not have ligules and are not grasses.

### Links

For more information visit the following links.

<http://tncweeds.ucdavis.edu/esadocs/documnts/micrvim.html>

<http://www.nps.gov/plants/alien/fact/miv1.htm>

<http://www.amesplantation.org/ForestryWildlife/jgrass.htm>

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