

Forest Health



Invasive Plant Hit List: Japanese Stilt Grass

by Jeff Stringer

Japanese stilt grass (*Microstegium vimineum*), also known as Nepalese browntop or by its genus name of *Microstegium*, is a sprawling annual grass that is common to disturbed sites throughout Kentucky. It is native to Japan, Korea, China, Malaysia, and India. It was first reported in the United States in the early 1900s initially in Knoxville, Tennessee, in 1919, and in the 1930s in Virginia, North Carolina, Alabama, Kentucky, and Pennsylvania. The most probable means of introduction was from its use as a packing material for china and other fragile products from Asia. This species is now a common invasive exotic throughout the eastern United States and the South.

The species spreads by seed. It flowers in late summer, and the small, abundant seeds can float and readily move with wildlife. It normally establishes on disturbed areas, both natural and manmade, and can tolerate a range of soil conditions. However, it is most abundant and aggressive in moist environments such as bottomlands, north-facing slopes, coves, or any moist soil environment. Unfortunately, this species can establish and maintain itself in the shade, responding with vigor to increased light if an opening in the forest canopy occurs. It can grow to form thick mats up to 3 and 4 feet in height and has the ability to smother other ground cover and even lodge newly planted trees on moist sites. Forest roads, trails, regeneration openings, rights-of-way, and stream banks are all likely candidates for invasion.

Identification and Life Cycle

This species does not have long blades like fescue or other common lawn grasses. It more resembles a small delicate bamboo, having pale green 1- to 3-inch lance-shaped leaves that emerge alternately from a branched stalk. The off-centered midrib of the

leaves has a pale, silvery strip of hairs along the midrib. The flowers of this annual grass produce 1- to 3-inch-long seed heads in September and October. The seeds stay alive for up to five years in the soil, building up a considerable seedbed. Look-alikes include perennial whitegrass (Virginia cutgrass), a native species, and lady's thumb (*Polygonum persi-*

Japanese stilt grass.

Photo courtesy: James H. Miller, USDA Forest Service, www.forestryimages.org



caria), a non-grass species. Most foresters, wildlife specialists, and natural resource professionals can identify Japanese stilt grass, or you can contact the UK Forestry Extension Department at 859.257.7597 (forestry.extension@uky.edu) for help with identification.

Woodlands at Risk

The majority of this grass will occur within or along a woodland road, forest or field edge, or disturbed bottom. It can move from these areas slowly into undisturbed and shaded areas. If these areas are exposed to sunlight, this grass will respond with vigor. As with most invasive species, preventing or reacting quickly to invasion is critical. Disturbed ground that is moist and highly productive is most likely to be at risk for invasion.



A bottomland forest understory that was completely invaded by Japanese stilt grass after a shelterwood harvest. Tree seedlings had been underplanted and many were lodged by the heavy stilt grass cover. Photo courtesy: Chris Oswalt

Control

Long-term control requires not only the eradication of the plants but continued control of germinating seed that may occur for several years after controlling the initial plant population. The species is fairly shallow-rooted and can easily be pulled in a similar fashion to crabgrass. Mowing must be done very close to flowering time in late August or early September. If mowing is completed earlier, the grass will generate new flowers and ultimately seed. The mowing or hand pulling must continue until the seed stored in the surface soil is depleted; in some instances, this may take up to five years. Unfortunately, many infestations cannot be mowed or are too large to be hand pulled; then chemical control is required.

Japanese Stilt Grass

Kentucky Forest Health Task Force

Herbicides can be effective in controlling Japanese stilt grass. Broad-spectrum herbicides that kill both broadleaves and grasses can be used (for example, Roundup and other glyphosate products) as well as herbicides that are specifically designed to kill grasses. The advantage of using grass herbicides is that they limit the unwanted killing of beneficial and native broadleaf herbaceous plants, shrubs, and trees. Foliar sprays can be used to kill existing plants, and some preemergent herbicides have been tested and shown effective in killing the germinating seed. The latter is useful given that the species is an annual and must reseed every year, and the seed stay viable in the surface soil for several years.

A single foliar application of glyphosate herbicide (examples include Roundup, Accord, Rodeo) at the typical 2 percent foliar solution has been shown to provide effective control of established plants. These nonselective herbicides are best used in situations where Japanese stilt grass is the only plant present. Research¹ using various grass herbicides such as clethodim (Select or Select Max), sethoxynil (Post),

and fluzifop-P (Fusilade) were shown to provide 50 to 88 percent control with one application and 82 to 99 percent control when applied twice. Preemergent herbicides such as oryzalin (Surflan) and imazameth (Plateau and Journey) have been shown to be effective, resulting in close to 90 percent control eight weeks after application. Grass herbicides are a better choice where other plant species are mixed with the stilt grass.

The key to controlling this species is to stop seed production and continue to treat plants that emerge from the seeds in the surface soil. Cultivating or disturbing the ground could significantly increase the emergence of plants from stored seed. This could be used to advantage if preemergent or postemergent treatments could be administered to kill the exposed seed or newly established plants. By stopping seeding for several years, the invasion can be slowed and potentially stopped.

Table 1. Control methods for Japanese stilt grass (*Microstegium vimineum*)

Method	Timing	Details and Cautions
hand pulling	July – early September	Pull plants before seeds form. Plan on hand pulling annually until plants are no longer germinating (3 to 5 years).
mowing weed eating	Late August early - September	Treat directly prior to flower formation. Mowing too early can cause reflowering. Plan on continued mowing 3 to possibly 5 years or until plants no longer are germinating.
herbicide ¹ - nonselective (glyphosate)	June – July	Foliar applications of 2% glyphosate. Accord is labeled for use in woodlands and Rodeo for wetland areas. Use other glyphosate products for other areas ² .
herbicide ¹ grass	June – July	Use foliar applications at recommended rates for crabgrass control. (ex. Select, Select Max, Fusilade, Post, based on location and label instructions).
herbicide ¹ - preemergent	early spring	Apply at recommended rates. (ex. Plateau or Journey at 6 ounces per treated acre).

¹ Other herbicide brands can be used for Japanese stilt grass. The herbicides that are listed are those that have been used regionally.
² There are currently a large number of brand names for glyphosate herbicides. Many are for use in fields or fencerows. Few such as Accord are labeled for use inside a forest (see Kentucky Woodland Magazine 1(1)) for more information on glyphosate herbicides.

Mention or display of a trademark, proprietary product, or firm in text or figures does not constitute an endorsement and does not imply approval to the exclusion of other suitable products or firms.

¹Judge and others. 2005. Preemergence and Postemergence Control of Japanese Stiltgrass (*Microstegium vimineum*). Weed Technology 19: 183-189.

Graphic courtesy: Ted Bodner, Southern Weed Science Society, www.forestryimages.org

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