



VEGETATION MANAGEMENT GUIDELINE

Japanese Stilt Grass [*Microstegium vimineum* (Trin.) A. Camus]

SPECIES CHARACTER

DESCRIPTION

Japanese stilt grass (*Microstegium vimineum*) is an introduced, colonial, warm season, species of the Poaceae (Grass family). It is characterized by asymmetrical, lance-shaped, pale green leaves that grow 2.5 - 7.5 cm (1 - 3 inches) long. The leaves have a ciliate leaf collar and a silvery midrib running down the center of the upper blade. The stems are slender, wiry, ascending to reclining and up to 120 cm (4 feet) long. They often branch near the base of the plant where they can be purple, brown, or green in color. The small, hairy spikelets consist of two flowers, one sessile the other stalked, that bloom in September - October. A small ellipsoid grain is produced shortly after flowering.

SIMILAR SPECIES

Microstegium vimineum can be confused with *Leersia virginica* (white grass) and Lady's thumb (*Polygonum persicaria*). White grass lacks the silvery midrib of the upper leaf blade, has hairy nodes, and flowers in early August. Lady's thumb (*Polygonum persicaria*) has leaves that are similar in shape to *Microstegium vimineum*, but lack the silvery midrib, usually has a reddish blotch near the center of the upper blade surface, and has pink, beadlike flowers arranged in elongated clusters. If identification of Japanese stilt grass is in doubt, the plant's identity should be confirmed by a knowledgeable person or by consulting appropriate manuals or keys.

DISTRIBUTION

Microstegium vimineum is native to Japan, China, India, Nepal and East Asia. Dried stilt grass was used as a packing material to cushion fragile imported goods during the late 1800's and early 1900's. It is thought to have entered the United States around 1920 when packing material containing stilt grass seeds was discarded. *Microstegium vimineum* is found from New York to Florida, throughout the mid-Atlantic states, and west into Texas, Arkansas, Missouri and Illinois. In Illinois, it has been known from the extreme southern counties of Pope, Johnson, Pulaski, and Union since the late 1960's. More recently, it has been observed at numerous locations in the southern half of the state.

This species is commonly found along streams, creeks, river bluffs, trails, roadsides, ditches, damp meadows, forested floodplains, early successional fields, and mesic uplands.

LIFE HISTORY

Japanese stilt grass is an annual with each plant capable of producing up to 1,000 seeds that can remain viable in the seed bank



for three to five years. Barring heavy snows, its whitish-tan stems can remain standing all winter. Water, animals and humans readily spread these seeds. Anthropogenic seed dispersal can occur from mowing, or use of other equipment in infested areas, and seeds that have become attached to shoes and clothing.

EFFECTS UPON NATURAL AREAS

Microstegium vimineum has the ability to form dense monocultures, can crowd out native vegetation and proliferate in low light conditions. Once established populations can rapidly increase and occupy areas of several acres in size. Native plants that are heavily browsed upon are easily invaded and displaced by *Microstegium vimineum*. Soil pH tends to increase in stands of *Microstegium vimineum*, while litter and organic soil horizons decrease. In areas where *Microstegium vimineum* is prevalent, nonnative earthworms are found in greater abundance in comparison to nearby areas not infested with this plant.

CONTROL RECOMMENDATIONS

RECOMMENDED PRACTICES IN NATURAL COMMUNITIES OF HIGH QUALITY

Control of Japanese stilt grass most successful when populations are detected early and before they develop reserves in the seedbank. Efforts that focus on elimination of seed production are critical for control of this species. Regardless of the control method implemented, monitoring and/or follow-up treatments will be needed for several years to ensure eradication.

CHEMICAL CONTROL

Selective postemergence systemic herbicides are recommended for control efforts in high quality natural areas. Sethoxydim (tradename Poast and Poast Plus), Fenoxaprop-p-ethyl (Acclaim Extra), Fluazifop-P-butyl (Fusilade DX), Fluazifop-P-butyl + Fenoxaprop-P-ethyl (Fusion), and Clethodim (Envoy) are post emergence that are selective for annual or perennial grasses, but do not control broadleaf species or sedges. The aforementioned herbicides are most effective when applied to grasses that are 15 - 20 cm (6 - 8 inches) tall, actively growing, and not stressed by drought or cold growing conditions. For optimal control, plants should be sprayed until thoroughly wet, but **do not spray to the point that herbicide drips off the targets plants**. The herbicide should be applied while backing away from the area to avoid walking through wet herbicide. Personal protective wear is recommended when applying herbicide. By law, herbicides may only be applied as per label instructions and by licensed herbicide applicators or operators when working on public properties.

For Poast and Poast Plus a 0.3% active ingredient solution with 0.5 % (0.6 ounces/gallon) spray adjuvant or 1.0 % (1.3 ounces/gallon) crop oil is recommended. Acclaim Extra should be mixed at the rate of 0.02% active ingredient solution. Do not apply more than 120 ounces of herbicide per acre per growing season. Fusilade DX should be mixed at the rate of 0.15% active ingredient solution and should always include either 1% of crop or vegetable oil or 0.5% of nonionic surfactant/gallon of solution. For Fusion, apply 0.06% active ingredient solution. Good coverage is important and the

addition of nonionic surfactant at the rate of 3.2 ounces /gallon is recommended. A 0.1% active ingredient solution is recommended for Envoy and applications rates should not exceed 68 ounces of herbicide per acre per year. Acclaim Extra, Envoy, Fusilade DX and Fusion are rainfast in one hour.

MECHANICAL

Japanese stilt grass is easily pulled by hand and one or two people can pull all of the plants in a relatively large population in short period of time. To be most effective, pulling should be conducted prior to seed production and before germination of new plants. Hand pulling after seed set will likely aid in the spread of the Japanese stilt grass. Shoes should be thoroughly scraped and clothes brushed before leaving a infested area to reduce the spread of seed.

Mowing, cutting with a weed whip or torching can be an effective control measure if it is conducted before seeds are produced in late summer. Mowing can also be used to weaken a plant before a herbicide is applied and reduce the amount of herbicide needed to treat regrowth. An early to mid-summer mowing is preferred as regrowth from late summer mowing may not allow for sufficient regrowth for treatment. However, mowing may also aid in seed dispersal if infested soil becomes attached to the mower. Mowing equipment should be thoroughly washed before it is stored or used in non-infested areas. Well-established populations of Japanese stilt grass will likely require many years of follow-up treatments.

RECOMMENDED PRACTICES IN BUFFER AND SEVERELY DISTURBED SITES

Same as for high quality areas.

Additionally, glyphosate (trade name Roundup) is a post-emergence, broad spectrum herbicide that controls most plants. A 0.4% active ingredient solution is recommended for annual weeds over 15 cm (6 inches tall). Care should be exercised to avoid spraying non-target species. Roundup should not be applied if rain is anticipated within six hours after application.

Also, broadcast applications of dithiopyr (trade name Preen) in areas known to be infested with Japanese stilt grass may be an effective control. Preen is a pre-emergent herbicide commonly used for control of annual crabgrass, but will not affect most established turf or other perennial grasses. Dithiopyr does not prevent seed germination, but causes uncontrolled or disorganized growth in newly emerged seedlings resulting in their death. To be most effective, Preen should be applied at the rate of 4.4 pounds of product per 1,000 square feet before seedlings emerge and may need to be re-applied after four months. Since prescribed burning seems to encourage Japanese stilt grass seed germination, use of Preen in conjunction with prescribed burning could be an effective method for depleting the seedbank.

FAILED OR INEFFECTIVE PRACTICES

Regardless of the control method employed a single attempt will not result in complete control.

Grazing is not a viable control method as no animals are known to feed upon it.

No biological controls are known.

REFERENCES

- Barden, L.S. 1991. Element Stewardship Abstract for *Microstegium vimineum*, stilt grass. The Nature Conservancy's Wildland Invasive Species Team.
- Miller, J.H. 2003. Nonnative invasive plants of southern forests: a field guide for identification and control. Gen. Tech. Rep. SRS-62. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. 93 p.
- Mohlenbrock, R.H.. USDA SCS. 1991. Southern wetland flora: Field office guide to plant species. South National Technical Center, Fort Worth, TX.
- Tu, M. 2000. Element Stewardship Abstract for *Microstegium vimineum*, stilt grass. The Nature Conservancy's Wildland Invasive Species Team.
- USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (<http://plants.usda.gov>). Data compiled from various sources by Mark W. Skinner. National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

<http://tncweeds.ucdavis.edu>

<http://www.invasive.org>

<http://www.invasivespeciesinfo.gov>

<http://www.issg.org/database/species/ecology>

<http://www.nps.gov/plants/alien/fact/mivi1.htm>

Personal Communications

John Schwegman, Botanist, Illinois Department of Natural Resources, retired.

Written by:

Tiffany L. Osborne
USDA Forest Service and
Illinois Department of Natural Resources
Ferne Clyffe State Park
P. O. Box 67
Goreville, IL 62939

and

Bob Edgin
Illinois Nature Preserves Commission
9940E 500th Ave
Newton, IL 62448

Equal opportunity to participate in programs of the Illinois Nature Preserves Commission (INPC), Illinois Department of Natural Resources (IDNR) and those funded by the U.S. Fish and Wildlife Service and other agencies is available to all individuals regardless of race, sex, national origin, disability, age, religion or other non-merit factors. If you believe you have been discriminated against, contact the funding source's civil rights office and/or the Equal Employment Opportunity Officer, IDNR, One Natural Resources Way, Springfield, Ill. 62702-1271; 217/785-0067; TTY 217/782-9175.



Image courtesy of: USDA-NRCS PLANTS Database / USDA NRCS. Wetland flora: Field office illustrated guide to plant species. USDA Natural Resources Conservation Service.