

Insidious & Formidable Invasive JAPANESE STILTGRASS

Robbs Land of Scenic, Timber, Agricultural, and Wildlife Value

The Culprit

Because of its delicate bright green foliage and slender stems, Japanese stiltgrass (*Microstegium vimenium*) appears deceptively harmless, but it behaves very badly. Even where the grass has been established for only a few years, it forms a dense groundcover that smothers native plants and prevents regeneration of forests and fields. This trait dramatically decreases the scenic beauty, timber value, and wildlife habitat of the land stiltgrass invades. Besides out-competing native wildflowers, shrubs and saplings, this wolf in sheep's clothing destroys biodiversity and natural habitat for animals, birds, and insects. Stiltgrass also poses a threat of intense forest fire due to the thick mats of dried leaves and stems it leaves behind on the forest floor in autumn.



The Japanese stiltgrass blanketing this forest road is beginning to spread unchecked onto the forest floor.

A vigorous annual grass, stiltgrass is a nasty pest hailing from Asia. It was first sighted in North America near Knoxville, Tennessee, around 1919. Seeds from the dried grass, which was used as a packing material for imported porcelain, probably found their way out of a box into the soil. A single plant can produce up to 1,000 seeds, explaining why 100 years after its introduction, this aggressive species threatens 18 eastern states from New York to Florida and as far west as the Mississippi River and into Texas. In Virginia, stiltgrass occupies private and public land from coast to mountaintop.

Known Hangouts

Japanese stiltgrass can be found forming extensive infestations in forests, fields, meadows, lawns, roadsides, hiking trails, animal trails, power and gas line cuts, and riparian areas such

as wetlands, streamsides, floodplains, and edges of ponds and lakes. Areas in woodlands where fallen or cut trees open the canopy to sunlight and areas of disturbed soil are especially vulnerable to invasion by this relentless plant.

Modus Operandi

Undemanding, stiltgrass flourishes in full sun to deep shade, wet, moist or dry conditions. It grows tallest in sunny, moist areas, but whether 3 feet or 3 inches tall, this invasive sets copious seed. In mid- to late summer, flowers form low down on the stems hidden between stem and leaf sheaths – you can see them by peeling back the base of a leaf. These hidden flowers do not open but are self-pollinating, assuring seed set. Later, more-visible flowers bloom at the stem tips and are wind-pollinated. Flowering begins any time from July into October, and seeds ripen and drop to the ground from August to December. Seed germinates in following years from April into June. Seeds may be viable in the ground for up to seven years, but germination rates drop off dramatically after two or three years.

Surface water washes stiltgrass seed downhill to be deposited for later germination. Wild and domestic animals, humans, and vehicles spread seed-laden soil as they move along roads and trails or open land, carrying this nasty plant in all directions. Where deer are overpopulated, stiltgrass wins the competition because deer decimate native plants, making it easy for stiltgrass to spread unchecked where native plants are struggling. As if all these wily ways are not enough, stiltgrass releases chemicals that change soil chemistry and effectively stop other plants from growing, which allows the invader to spread quickly.



Japanese stiltgrass grows tall and thick in this powerline cut. It turns dry and straw colored in winter and poses a fire hazard.



Japanese stiltgrass is shown here engulfing a milkweed plant. Note the silvery stripe on mid-veins of the stiltgrass leaves.

Positive Identification

Slender and wiry, Japanese stiltgrass grows 6 inches to 4 feet tall, depending upon growing conditions. Tall plants branch at the nodes and may flop and root at stem joints. Leaf blades are flat, 2 to 4 inches long, lance-shaped to slightly oblong, and alternate along the stem. Leaves usually have a faint silvery main vein, which resembles a slug trail and divides the leaf into two slightly unequal parts. The base of the leaf forms a sheath that clasps the stem. If you run your fingers along a stiltgrass stem it feels smooth. If you gently tug on the grass, it pulls easily from the ground, displaying slender branched roots that resemble stilts. In winter, the grass turns strawlike and forms thick mats of dry stems, making it highly visible during the dormant season.

Mistaken Identity

The delicate-looking native grass called Virginia cutgrass or Virginia whitegrass (*Leersia virginica*) often grows alongside stiltgrass and it may be mistaken for it. You can tell it from the invasive by its leaves, which are longer, more slender and pointed, and are held at sharp angles from its stems. Unlike stiltgrass, whitegrass's stems feel sand-papery if you run your fingers along them. And unlike stiltgrass, it's difficult to pull this well-rooted perennial grass from the ground.

Search & Destroy

Look for Japanese stiltgrass along streams where high running water might dump the seed as the water slows and spreads out. Look for it along driveways, logging roads, powerline cuts, and trails where human and animal feet or vehicles may deposit seed and where seed may be splashed or pushed to the side. Search for it in forest interiors; stands of the grass begin in sunny openings, and even in deep shade, if carried by animals or water. Look for stiltgrass in fields and wetlands. It grows tallest in moist, sunny sites.

Manual & Mechanical: Hand-pulling small infestations before plants set seed is effective but labor intensive. Plants pull easily from moist soil. Consider hand-weeding around desirable native plants before applying herbicide.

Mowing and weed-whacking can greatly reduce seed formation, but only if done correctly. Mowing is feasible only in open areas, not in forest settings. If stiltgrass is cut in June, flowers low on the stems may bloom earlier than usual, so repeat mowing is needed. Mowing is best done just before flowering in August and September and need be done only once if you wait until then. Cut stiltgrass as low as possible, scalping the ground, to remove all flowers. To effectively use a string-trimmer to control stiltgrass, hold the trimmer at a slight downward angle so the string digs about a quarter inch into the ground to sever roots from stems. Leave clippings from mowed or cut stiltgrass in place to die if seeds haven't formed.

Foliar Spray: Japanese stiltgrass is easily killed with low concentrations of herbicides. Researchers at Virginia Tech showed that a grass-selective herbicide is the most effective control method. And, they showed, when a grass-selective herbicide is used more native plants return than when a non-selective type of herbicide is used. This proved true even at the very low concentration that kills stiltgrass and spares many desirable plants. The recommended time for spraying is from July into early September and before a particular area of stiltgrass flowers and sets seed. A broad-spectrum herbicide works best when stiltgrass is actively growing in spring and summer and works less well in late summer and fall or during drought. Grass-specific herbicides work throughout the season, but cost more, so some recommendations state to use them only when the broad-spectrum herbicide does not work well.

If you aim to protect native plants, herbicide choice and timing is important. In that case, go with a grass-selective herbicide, especially in spring and early summer when ephemeral wildflowers are not dormant. After dormancy, or where stiltgrass is mixed with plants you want to target, apply a recommended broad-spectrum herbicide at the higher concentration needed to control those plants. Where stiltgrass grows in a lawn, treat the lawn in spring and summer with a pre-emergent crabgrass killer to stop stiltgrass seed germination.

No matter which method you choose, two or three consecutive years of treatments are usually needed for effective control. And you must also wipe out infestations higher up in a watershed to prevent reinfestation. Continue to monitor and treat all new occurrences over the next few years.

For currently approved herbicide recommendations, check the Virginia Department of Forestry chart *Non-Native Invasive Plant Species Control Treatments*, which you can download from the Blue Ridge PRISM website.



Left: Japanese stiltgrass is the grass with the bolder texture; Virginia whitegrass is the finer-textured grass. Right: Stiltgrass flower buds.