Japanese stiltgrass (Microstegium vimineum)

**Description**

- Refer to the DCNR Invasive Exotic Plant Tutorial stiltgrass page (http://www.dcnr.state.pa.us/forestry/invasivetutorial/Japanese_stiltgrass.htm).
- Herbaceous, annual, warm-season grass.
- Tolerant of full sun to heavy shade.
- Has a sprawling growth habit, with a canopy height between 12 and 24 inches.
- Seedheads emerge late-August to early-September.
- Infestations commonly start along road or trail edges, then spread outward.

**Management Keys**

As a plant, stiltgrass is not hard to suppress. However, treatment often begins after stiltgrass has spread extensively and established a persistent seedbank, making control difficult.

**Target the Seedbank**
To eliminate stiltgrass, you have to prevent seed production, and exhaust the seed lying in wait in the soil. You should plan on at least a five-year process.

**Prevention is Easier**
If stiltgrass is just getting onto your site, determine where it’s coming from. Shale and gravel for roadwork are common sources. Roadwork where stiltgrass is already established spreads it even further.

**Mechanical Control**
Small infestations of stiltgrass are readily pulled. A trimmer can be effective later in the season (Figure 1), if you cut the stiltgrass off at ground level. A lawnmower cuts too high and will not work, as stiltgrass is a common weed in turf.

**Early Control**
It is common to first observe stiltgrass along roads or trails. The infestation tends spread along the road or trail, then spread away into the understory. It is relatively easy to treat stiltgrass while it occurs as a narrow, linear infestation.

**Recommended Herbicides**
Stiltgrass is susceptible to a number of herbicides, allowing you to tailor a program that fits your schedule and the plant community you are trying to preserve.

- Preemergence herbicides that are effective against stiltgrass include pendimethalin (‘Pendulum’), imazapic (‘Panoramic’), and sulfometuron (‘Oust XP’).
- Imazapic and sulfometuron can also be applied postemergence for effective control of stiltgrass. Pendimethalin will have the least effect on non-target species of these three materials, but it is also the least flexible to use. Pendimethalin must already be in the soil where the seed is germinating – it has to be absorbed by the emerging root tip to be effective. Pendimethalin has no effect on already established vegetation.

Imazapic and sulfometuron provide more flexibility in terms of application timing, but they will cause more injury to non-target herbaceous plants than pendimethalin.

Three postemergence herbicides that are effective against stiltgrass include glyphosate (‘Aquaneat’), glufosinate (‘Finale’), and quizalofop (‘Assure II’). Glyphosate is non-selective and systemic, and will injure all treated vegetation. Glufosinate is also non-selective, but it is a ‘contact’ herbicide, so the damage to treated non-target plants will be limited to where the spray contacted the plant.

The herbicide quizalofop only injures grasses. Stiltgrass is affected by quizalofop at low rates, so you can control stiltgrass but leave native woodland grasses such as whitegrass (Leersia virginica), nimblewill (Muhlenbergia schreberi), and autumn bentgrass (Agrostis perennans) largely intact.

**Alternate Groundcover**
If conditions permit, you should try to establish a groundcover to compete with the stiltgrass. If there already is groundcover, try to encourage its growth. Turf that is mowed too short and too often is more prone to stiltgrass infestation than a properly maintained turf.

**Be Persistent**
Stiltgrass can only be effectively controlled with repeated, annual effort. If you back off one season, the seedbank will be replenished, and your progress to date will be set back.

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By Art Gover, Jon Johnson, Kirsty Lloyd, and Jim Sellmer, 2008. The contents of this work reflect the views of the authors who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the PA DCNR or The Pennsylvania State University at the time of publication.

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Table 1. Prescriptions for elimination of Japanese stiltgrass focus on preventing seed set. Stiltgrass is susceptible to a number of herbicides suitable for use in parks. Small infestations can be pulled or cut at ground level, which facilitates the use of volunteers.

<table>
<thead>
<tr>
<th>timing</th>
<th>treatment</th>
<th>product rate</th>
<th>comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>early- to mid-March</td>
<td>‘Pendulum Aquacap’</td>
<td>4.2 qts/acre</td>
<td>Preemergence applications of ‘Pendulum’ (<em>pendimethalin</em>) prevent stiltgrass establishment, and have little effect on plants that are already present. It is critical that <em>pendimethalin</em> be applied two to three weeks prior to germination to allow rainfall to move it into the soil profile. <em>Pendimethalin</em> is also effective against mile-a-minute.</td>
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<tr>
<td>early-March through May</td>
<td>‘Panoramic’ or ‘Oust XP’</td>
<td>8 to 12 oz/acre or 1 to 3 oz/acre</td>
<td>‘Panoramic’ (<em>imazapic</em>) and ‘Oust XP’ (<em>sulfometuron</em>) have pre- and postemergence activity against stiltgrass. Preemergence applications will cause less damage to non-target species than postemergence applications. There comes a point in the season when you are better off using an herbicide that is not soil active (see below), to reduce the impact on non-target plants.</td>
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<tr>
<td>mid-May through August</td>
<td>‘Aquaneat’ or ‘Finale’ or ‘Assure II’</td>
<td>24 oz/acre or 4 qts/acre or 4 oz/acre</td>
<td>‘Aquaneat’ (<em>glyphosate</em>) and ‘Finale’ (<em>glufosinate</em>) are non-selective herbicides with no soil activity. ‘Finale’ only injures the parts of the plant it contacts, while ‘Aquaneat’ is systemic, and will kill the entire plant. ‘Assure II’ (<em>quizalofop</em>) only affects grasses, but the rate used for stiltgrass is low enough that desirable grasses such as whitegrass (<em>Leersia virginica</em>), and nimblewill (<em>Muhlenergia schreberi</em>) are only temporarily affected.</td>
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<tr>
<td>July through August</td>
<td>pulling or cutting</td>
<td>n/a</td>
<td>Small infestations of stiltgrass can be mechanically controlled. If you’re cutting, use a trimmer that will cut the stiltgrass at the ground line to prevent resprouting from the lower nodes of the stem. The key to this treatment is to wait so that more stiltgrass will not germinate, but finish before the seedheads emerge.</td>
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