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W260 Nutsedge and Kyllinga Species

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Introduction
Sedges (Cyperus spp.) and kyllingas (Kyllinga spp.) are weed species that are not only similar in appearance but also share the unique trait of being classified as neither a broadleaf nor grassy plant. Yellow nutsedge (Cyperus esculentus), purple nutsedge (Cyperus rotundus), green kyllinga (Kyllinga brevifolia) and false-green kyllinga (Kyllinga gracillima) are the primary species found in Tennessee. All sedges and kyllingas are perennial plants that are troublesome to manage and control in a turfgrass environment.

Life Cycle and Growth Habit in Tennessee
Sedges and kyllingas emerge in late spring and grow throughout the summer months in Tennessee until the first killing frost. Once growth ceases, leaves turn brown and plants enter winter dormancy (Figure 1). Reproduction occurs primarily through rhizomes and underground tubers (often called “nutlets”). Sedges and kyllingas are considered indicators of excessive irrigation and/or poor drainage, as they commonly invade turfgrasses grown on soils that have remained excessively moist for an extended period of time.

Sedge and Kyllinga Identification
Sedges are most easily identified by their triangular stem (Figure 2). Unlike grasses, they are devoid of hairs, auricles, collars and ligules. Leaves are slender and their waxy cuticle gives them a shiny appearance (Figure 3). Inflorescences (flowers/seed heads) produced from plants left un-mowed do not affect reproduction, as they contain few viable seeds. During the summer, vertical growth of sedges is often more rapid than of surrounding turf.
Yellow nutsedge leaves are light green to yellow, while purple nutsedge leaves are dark green. Yellow nutsedge leaf tips are tapered to a point (Figure 4) while purple nutsedge leaf tips have a more direct point. Inflorescences also aid in nutsedge identification; yellow nutsedge produces a yellow inflorescence (Figure 5), while purple nutsedge produces a purple inflorescence (Figure 6). Due to differences in cold tolerance, yellow nutsedge is more prevalent in East Tennessee, while purple nutsedge is found in greater abundance in West Tennessee.

Kyllingas have leaves that are smaller and less erect than those of yellow nutsedge, but similar in shape and color. Kyllingas can persist under low mowing heights (< 0.25 in) and unlike yellow and purple nutsedge, these plants produce flowers even under regular mowing (Figure 7). Spreading through short rhizomes, kyllinga infestations can form dense mats in a turfgrass stand. Kyllingas are differentiated only by flowering-time. Green kyllinga flowers during all warm months, while false-green kyllinga flowers only during late summer.

### Control Options

#### Selective Control
Herbicides from multiple families provide selective control of sedges and kyllingas in turfgrass (Table 1). In general, sedges are more easily controlled by these herbicides than either green- or false-green kyllinga. Of the two predominant sedge species in Tennessee, yellow nutsedge is more easily controlled than purple nutsedge. Herbicides for control of sedges and kyllingas are only effective when applied to actively growing plants, so applications should be made from May through August. If sedges and kyllingas are present in areas with poor drainage, long-term control is possible only if drainage issues are resolved.

#### Image 11 4 oz/acre
Injury will appear about two weeks after application, with complete desiccation developing within three to four weeks. Image is labeled for use in warm-season turfgrass only. Apply this herbicide only after turfgrass has completely greened-up in spring. Image controls several broadleaf weeds, sedges, kyllingas, cool-season grasses and seedling warm-season grasses. Add a non-ionic surfactant at 0.25% v/v to the spray solution.
Monument 0.53 oz/acre or Katana 2.25 oz/acre
Injury will appear about two weeks after application, with complete desiccation developing within three to four weeks. Monument and Katana also control certain broadleaf weeds and cool-season grasses in warm-season turf as well. Monument is labeled for use in zoysiagrass and bermudagrass, while Katana is labeled for use in zoysiagrass, bermudagrass and centipedegrass. Unlike Image, Monument and Katana can be applied during turfgrass green-up. For both herbicides, add a non-ionic surfactant at 0.25% v/v to the spray solution.

Sedgehammer 1.3 oz/acre
Injury will appear about two weeks after application, with complete desiccation developing within three to four weeks. Sedgehammer is labeled for use on most cool- and warm-season turfgrass species grown in Tennessee. Sedgehammer is less effective on green and false-green kyllinga than Monument, Katana or Image. Add a non-ionic surfactant at 0.25% v/v to the spray solution. Sedgehammer will not effectively control other grassy and broadleaf weeds.

Dismiss 4-12 fl oz/acre
Injury will appear just a few days after application, with complete desiccation occurring in ~1 week. Dismiss is labeled for use on most cool- and warm-season turfgrasses in Tennessee. Dismiss is less effective on green and false-green kyllinga than Monument, Katana or Image. This herbicide is most effective on kyllinga when split-applications are made (see label), as re-growth of kyllingas will likely occur within four weeks after the initial application.

Non-chemical control
Increasing mowing frequency and decreasing mowing height can reduce the vigor of yellow nutsedge; however, proper identification is critical as kyllingas can tolerate low mowing heights (< 0.25 in). It is important to ensure mowing practices do not reduce desirable turfgrass vigor.

Hand-removal of sedges is effective if care is taken to remove all underground tubers and rhizomes. If tubers are not removed, new plants will emerge and repeated hand-weeding will be required.

Final Thoughts
Control of sedges and kyllingas can be difficult. Long-term control of these weeds is possible only if the underlying cause of their competitive advantage is resolved. In the case of sedges and kyllingas, this is often prolonged periods of excessive soil moisture that reduce competition from desirable turfgrass.

This publication contains herbicide recommendations that are subject to change at any time. The recommendations in this publication are provided only as a guide. It is always the herbicide applicator’s responsibility, by law, to read and follow all current label directions for the specific herbicide being used. The label always takes precedence over the recommendations found in this publication.

Always refer to the product label for specific information on proper use, tank-mix compatibility and turfgrass tolerance. For more information on turfgrass weed control, visit the University of Tennessee’s turfgrass weed science website at www.tennesseeturfgrassweeds.org

Visit the UT Extension website at http://utextension.tennessee.edu/

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Table 1: Herbicide options for sedge and kyllinga control in warm- and cool-season turf

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Active Ingredient(s)</th>
<th>Use rate (product/acre)</th>
<th>Turf Species</th>
<th>Yellow nutsedge (Cyperus esculentus) control</th>
<th>Purple nutsedge (Cyperus rotundus) control</th>
<th>Kyllinga (Kyllinga spp.) control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certainty</td>
<td>Sulfosulfuron</td>
<td>1.25 oz</td>
<td>Bermudagrass, Zoysiagrass, Centipedegrass, St. Augustinegrass, Seashore Paspalum</td>
<td>E</td>
<td>LND</td>
<td>G</td>
</tr>
<tr>
<td>Dismiss</td>
<td>Sulfentrazone</td>
<td>4 - 12 fl oz</td>
<td>Kentucky Bluegrass, Tall Fescue, Perennial Ryegrass, Creeping Bentgrass, Fine Fescue, Bermudagrass, Zoysiagrass, Centipedegrass, St. Augustine, Seashore Paspalum</td>
<td>E</td>
<td>LND</td>
<td>G</td>
</tr>
<tr>
<td>Dismiss South</td>
<td>Sulfentrazone + Imazethapyr</td>
<td>9.5 - 14.4 fl oz</td>
<td>Bermudagrass, Zoysiagrass, Centipedegrass</td>
<td>E</td>
<td>LND</td>
<td>G</td>
</tr>
<tr>
<td>Image</td>
<td>Imazaquin</td>
<td>8.6 - 11.4 oz</td>
<td>Bermudagrass, Zoysiagrass, Centipedegrass, St. Augustine, Seashore Paspalum</td>
<td>E</td>
<td>LND</td>
<td>E</td>
</tr>
<tr>
<td>Katana</td>
<td>Flazasulfuron</td>
<td>1.5 - 2.25 oz</td>
<td>Bermudagrass, Zoysiagrass, Centipedegrass</td>
<td>E</td>
<td>LND</td>
<td>E</td>
</tr>
<tr>
<td>Monument</td>
<td>Trifloxysulfuron</td>
<td>0.53 oz</td>
<td>Bermudagrass, Zoysiagrass</td>
<td>E</td>
<td>LND</td>
<td>E</td>
</tr>
<tr>
<td>Sedgehammer</td>
<td>Halosulfuron</td>
<td>0.66 - 1.33 oz</td>
<td>Kentucky Bluegrass, Tall Fescue, Perennial Ryegrass, Creeping Bentgrass, Fine Fescue, Bermudagrass, Zoysiagrass, Centipedegrass, St. Augustine, Seashore Paspalum</td>
<td>E</td>
<td>LND</td>
<td>P</td>
</tr>
</tbody>
</table>

*Excellent (E) = 90-100%; Good (G) = 80-90%; Fair (F) = 70-80%; Poor (P) ≤ 60%; LND = herbicide is labeled for control but no UT efficacy data is available.*