



Overview

The two most common perennial nutsedge species that infest turfgrass are yellow (*Cyperus esculentus*) and purple (*Cyperus rotundus*) nutsedge. Nutsedge reproduce primarily by tubers, sometimes referred to as nutlets. They do produce seed, but often nutsedge seedlings do not survive due to turfgrass competition. Nutsedge can be spread from one location to another by planting infested sod or spreading soil containing viable tubers. Many may confuse nutsedge with grasses mostly due to the thin leaf blade and pale-green color that both nutsedge and grass weeds have compared to a dark green turfgrass. Emergence typically occurs when soil temperatures reach 60 - 65°F. Generally, these weeds can emerge as early as April and thrive throughout the summer months into the fall. According to the Weed Science Society of America, these weeds have been categorized as two of the world's worst weeds.

The genus *kyllinga* is a member of the Cyperaceae plant family. There are approximately 40 to 45 *kyllinga* species distributed throughout the world. The green and false green are the most common perennial *kyllinga* species. Compared to turfgrass species, *kyllinga* often look pale green and grow in tufts or bunches. *Kyllinga* species are becoming a more wide-spread problem weed in highly managed turfgrass. They can thrive and reproduce at mowing heights ranging from 0.5 in to 3 in.

Habitat

Nutsedge and *kyllinga* species thrive in moist, poorly drained soils. However, established weeds can proliferate in soils with adequate to low moisture. It is not uncommon to find these weeds growing on high spots in landscaped areas or in well drained soils. Nutsedge can produce an abundant number of tubers in a season, with most located in the top 6 inches of the soil profile. Tubers can remain viable for multiple years and emerge from depths of up to 10 inches. Yellow nutsedge tubers are more cold tolerant than purple nutsedge. This is one of the main reasons yellow nutsedge is more widely distributed across the United States than purple nutsedge. Purple nutsedge is predominately found in warm-season turfgrass climates throughout the Southern U.S.

Kyllinga can produce viable seed as well as reproduce by rhizomes. These rhizomes (underground stems) aid in producing dense, mat-forming populations that can quickly outcompete desirable turfgrass. Rhizomes can be spread through contaminated soil and/or sod, as well as on contaminated cultivation equipment; thereby establishing new populations in areas not previously infested. *Kyllinga* can produce viable seed, which contributes to the aggressiveness of this weed.

Identification

Plants in the Cyperaceae family have triangular shaped stems. They have a three-ranked leaf arrangement, which means one leaf is produced on each point of the triangle. This is different than a grass weed like crabgrass which has round to flat stems and a two-ranked leaf arrangement. To distinguish between yellow & purple nutsedge newly produced leaves have a different leaf tip shape. Purple nutsedge will have a blunt leaf tip where yellow nutsedge will have a more tapered leaf tip. Purple nutsedge has dark brown to black tubers produced in chains. Yellow nutsedge has tan to light brown colored tubers produced at the end of rhizomes. One of the easiest ways to distinguish yellow from purple nutsedge is the color of the seed head. Yellow nutsedge has golden colored seed heads arranged in a cluster of spikelets. Purple nutsedge produces maroon to purple seed heads arranged similarly.

Kyllinga also has a triangular-shaped stem and is a mat-forming perennial often producing red to purple-colored rhizomes. Perennial kyllinga produces a similar circular to oblong seedhead with three short leaves, or bracts, just below the seedhead. One way to distinguish between green and false-green kyllinga is flowering periods. Green kyllinga flowers throughout the summer until frost. In North Carolina, false green kyllinga flowers from late August until frost. In many cases kyllinga is misdiagnosed as nutsedge. The easiest way to distinguish kyllinga from yellow or purple nutsedge is to allow the plant to produce a seedhead. Yellow and purple nutsedge will produce a cluster of spikes as a seedhead. Another diagnosis key is to look for the rhizomes. If there are red to maroon-colored rhizomes without tubers then it is likely kyllinga. Kyllinga produce much denser growth compared to nutsedge.

Management

Cultural

Weed management always begins with establishing a competitive turfgrass. That means providing the turfgrass with balanced fertility, adequate irrigation and proper mowing techniques. Managing soil moisture by reducing

irrigation cycles and/or improving drainage in low areas will aid in reducing weed competitiveness. Thoroughly cleaning cultivation equipment will also aid in reducing spread of vegetative fragments of kyllinga.

Chemical

There are three essential factors in applying either Dismiss® NXT or Dismiss® South for nutsedge and/or kyllinga control.

1. *Application Timing.* Research has demonstrated yellow nutsedge can be more effectively controlled by making applications when soil temperatures reach 65°F for 7 consecutive days at a soil depth of 2 inches. Yellow nutsedge begins new tuber development during an 8 to 10 hour photoperiod, which typically correlates to the summer solstice. Targeting applications after shoot emergence but prior to new tuber development may prevent formation of new tubers. Research has also demonstrated yellow nutsedge tuber viability can be greatly reduced by applying Dismiss NXT Herbicide.

2. *Soil and Foliar Contact.* It has been documented that Dismiss NXT had a significantly greater impact on yellow nutsedge when the herbicide was absorbed via the roots and foliage. Ensuring both soil and foliar absorption would also benefit in kyllinga management. Adequate soil moisture is important for root absorption. If applications need to be made under dry conditions, it may be beneficial to irrigate prior to the application.

3. *Application Technique.* As nutsedge and kyllinga most often grow in patches, spot applications are more common than broadcast applications. In these situations, it is important to apply the herbicide evenly across these patches, moving from one direction to the next (i.e. left to right). If using a backpack sprayer, a flat fan nozzle would be the preferred nozzle type. In some cases, applicators make more than one swath, or apply in circular pattern over the target area. However, these application techniques may result in 2x or greater application rate thus increasing the risk of turfgrass injury.

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