

## Best Management Practices: Perennial Nutsedge and Kyllinga

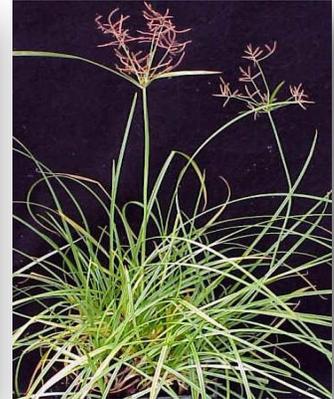
### Description

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 will vary depending on geographic location and soil type.

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* sp. distributed throughout the world. The most common perennial kyllingas are green and false-green kyllinga. Compared to turfgrass species, *Kyllinga* sp. 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 are able to thrive and reproduce at mowing heights ranging from 0.5 in to 3 in.

### Habitat

Nutsedge and kyllinga species thrives in moist, poorly-drained soils. However, established plants 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 species 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 factors why 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 out-compete 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 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 not produced in chains. 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.



Similarly, Kyllinga has a triangular-shaped stem as well. These weeds are described as mat-forming perennials often times producing red to purple-colored rhizomes. Perennial kyllingas produce 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 will continuously flower through the warm season months. False-green kyllinga seedhead production is influenced by day-length. As day length gets shorter in the fall, false-green kyllinga begins to flower. In many cases, *Kyllinga* sp. is misdiagnosed as a nutsedge. Probably the easiest way to distinguish *Kyllinga* sp. 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, then it is likely a perennial kyllinga. *Kyllinga* sp. produce a more dense growth habit 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 perennial 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 late June/early July applications compared to applications later in summer. Yellow nutsedge begins new tuber development during an 8 to 10 hr photoperiod which typically correlates to the summer solstice. Targeting applications prior to new tuber development may prevent formation of new tubers. Research has 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 made more so 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.

### References

Photographs courtesy of Virginia Tech Weed Identification Guide, Shawn Askew, Ph.D.

Color Atlas of Turfgrass Weeds: A Guide to Weed Identification and Control Strategies. L.B. McCarty et al. 2<sup>nd</sup> ed. 2008 John Wiley and Sons, Inc.

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