

Nutsedge and Kyllinga Control Strategies

Successful control of kyllinga and nutsedge requires maintaining growing environments that do not support weed encroachment and a herbicide program that specifically targets these hard-to-control weeds.

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Weed encroachment is possible on every golf course, regardless of grass type, weather, or budget. Even with a sound weed management program, breakthrough is inevitable. Some weeds, such as dandelion and clover, are easily controlled with herbicides. Unfortunately, not all weeds are as easily eradicated. Kyllinga and nutsedge require the implementation of more aggressive control strategies, usually involving a combination of preemergence and postemergence herbicides, to gain acceptable control.

CHARACTERISTICS

Yellow nutsedge (*Cyperus esculentus*) is a perennial plant that reproduces by underground tubers called nutlets. A single plant can produce several hundred tubers in one season, and they can persist for 10 years or more. Because of the proliferation of tubers, this weed can become a significant issue in just one summer. Yellow nutsedge will produce a seed if not mowed, but the seeds rarely germinate.

The growth rate of yellow nutsedge is what creates the greatest issue for golfers and turf managers. Patches of yellow nutsedge will often appear as if they haven't been mowed in weeks, even when the surrounding turf is properly manicured. Not only does this have a negative impact on course aesthetics, but playability and pace of play also suffer because of the difficulty involved in locating a golf ball and advancing it from a patch of nutsedge. This issue is highlighted during the summer when cool-season turf growth has slowed and nutsedge is firing on all cylinders.



Accurate applications are critical for weed control. Skips may not be noticeable when applications are made, but weed encroachment can later reveal where herbicide was not applied.

Encroachment in the rough is not the only area of concern with yellow nutsedge. This weed tolerates low mowing heights and can be found on tees, putting green collars, and fairways. As when it is found in the rough, its rapid growth impacts playability, and its pale green color is unsightly in closely mown turf areas.

Kyllinga (*Kyllinga spp.*) is also a perennial plant, but it encroaches in turfgrass environments through seed dispersal and the spread of underground rhizomes. This weed can be confused with yellow nutsedge, but it tends to form a denser patch

of growth. The ability of kyllinga to tolerate low mowing heights makes it an issue for every playing surface on a golf course, including putting greens. Like yellow nutsedge, its growth rate can outpace the surrounding turf and cause aesthetic and playability issues.

CULTURAL CONTROL

Specific conditions or growing environments encourage kyllinga and yellow nutsedge encroachment. Both weeds are opportunistic, invading bare soil when present. Areas with poor drainage that receive adequate sunlight are at high risk of invasion by kyllinga and

yellow nutsedge. With that said, both weeds will colonize shaded environments. Direct sunlight is critical for maintaining healthy turf, so addressing drainage issues is the key to shifting the competitive advantage to desirable turf over kyllinga or nutsedge.

For an area to drain properly, a combination of surface and internal drainage is required. Individual growing environments that are prone to invasion by nutsedge or kyllinga must be assessed to determine if internal drainage, surface drainage, or both must be improved to achieve the desired result.

Improper irrigation practices or uneven distribution of irrigation water can also create the saturated environments where nutsedge and kyllinga thrive. An evaluation of the soil profile, sprinkler run times, and sprinkler operation must be completed to determine if too much water is being applied or if water distribution is uneven.

Maintaining a healthy, dense stand of turf is the best line of defense for limiting kyllinga and nutsedge encroachment, or any weeds for that matter.

However, these hard-to-control weeds can still become an issue even if efforts are made to improve growing environments and maintain healthy turf. If small, isolated populations of these weeds are identified early enough, physical removal is an option. When this approach is implemented, it is imperative that all the underground reproductive structures are removed to prevent future issues. It must be noted that physical removal is a labor-intensive process.

CHEMICAL CONTROL

Turf managers often resort to herbicides to control nutsedge and kyllinga once weed populations are too high to be controlled by physical removal. Traditional herbicides used to control broadleaf weeds and crabgrass have no impact on nutsedge or kyllinga. Specialty herbicides must be applied, and timing is critical to achieve control.

Both weeds are a nuisance in the middle of the summer. Unfortunately, when rapid growth is becoming unsightly and impacting playability,

herbicide efficacy is marginal. Fall is the best time to control nutsedges and kyllinga because this is when translocation is enhanced to below-ground plant parts. Spring or early summer applications will also control both kyllinga and nutsedge to acceptable levels. Applications at this time will help reduce the spread of these weeds and limit the impact they have on playability and course aesthetics.

When developing a herbicide program to control nutsedge and kyllinga, include the following tactics:

- Plan to make treatments over multiple years. Rarely will one year of applications provide complete control.
- Map where nutsedge and kyllinga have been an issue so accurate repeat applications can be made.
- Rotate herbicides to reduce the likelihood of resistance.
- Ensure that soil moisture is adequate to support turf health but not excessive.
- Be aware of the mowing schedule so that a recently applied herbicide is not removed by mowing.



The growth habit of both nutsedge and kyllinga is such that it will create inconsistent lies, especially on closely mown turf.

Table 1.Commonly applied herbicides for **postemergence** control of nutsedge or kyllinga in **cool-season turf**.

Chemical Name	Trade Name	Mode of Action	Controls Kyllinga, Sedges, Both
Imazosulfuron	Celero *	2 - ALS inhibitor	Both
Halosulfuron-methyl	Sedgehammer * Sedgehammer * + Prosedge 2 Manage *	2 - ALS inhibitor	Both
Sulfentrazone	Dismiss *	14 - Protoporphyrinogen oxidase inhibitor	Both
Bentazon	Basagran *	6 - Photosystem II inhibitor	Sedges
MSMA	MSMA	27 - Nucleic acid inhibitor	Sedges
Mesotrione	Tenacity *	27 - Nucleic acid inhibitor	Sedges

CONTROL IN COOL-SEASON TURF

Controlling weeds in cool-season turf with preemergence herbicides is often the easiest, safest, and most cost-effective method. However, there are few preemergence herbicides labeled for the control of perennial weeds like nutsedge and kyllinga in cool-season turf. Those that are labeled often do not yield acceptable levels of control.

Several postemergence herbicides labeled for the control of kyllinga or nutsedge in cool-season turf must be applied at such low rates to limit turf damage that sequential applications of postemergence controls are necessary. For some courses, multiple applications are not a problem, but for many others the time required for two or more applications makes postemergence control challenging.

Scientists from [Purdue University](#) suggest that postemergence controls be applied in the early summer, similar to preemergence timing, when plants are young and tubers undeveloped. There are several herbicides labeled for postemergence control of nutsedge, including kyllinga, for cool-season turf. Herbicides used for kyllinga control or suppression will also control nutsedge, but the reverse is not always the case. It is important to read every label and understand [which products](#) are used to control specific weeds. Table 1 lists herbicides that are commonly used to control kyllinga and nutsedge. For additional information on control of kyllinga and nutsedge in cool-season turf, review the article ["Identifying and](#)

[Understanding False-Green Kyllinga in Cool-Season Turf."](#)

Rotating herbicide applications to utilize different modes of action can help combat the development of herbicide resistance. Another strategy for controlling or delaying resistance is tank mixing products with different modes of action. A good choice would be to mix sulfonylurea herbicides that are safe on the desired turf species with sulfentrazone to provide adequate control and reduce the likelihood of resistance developing.

Surfactants can improve chemical uptake, but be careful to apply the surfactant recommended by the product supplier. Most products call for the use of a nonionic surfactant. Be aware that nonionic surfactant rates vary by product. One exception to this is Sedgehammer Plus, the new

formulation of Sedgehammer, which comes blended with a surfactant so adding one is unnecessary.

CONTROL IN WARM-SEASON TURF

Managing weeds, especially difficult-to-control weeds like nutsedge and kyllinga, is easier in warm-season stands of turf because there are more [chemical control options](#) and timing is not as dependent on the weather as in cool-season turf. Warm-season turf managers can use any herbicide labeled safe for cool-season grasses, with the exception of Tenacity.

For preemergence control, the herbicides listed in Table 2 are effective at controlling nutsedge and kyllinga before they germinate on warm-season turf playing surfaces. Some of these products will also provide temporary suppression of emerging nutsedge. However, the flowable formulation of oxadiazon should not be applied to actively growing turf. If warm-season turf has broken dormancy, a granular formulation or fertilizer carrier should be used. Also, oxadiazon does not prune warm-season turf roots as several other commonly used preemergence herbicides do. This is another reason turf managers choose this product.

One caveat to the preemergence herbicides listed in Table 2 is that field observations and research suggest that the older formulation of Specticle



Even if rough has been mowed recently, the rapid growth of nutsedge quickly becomes unsightly and makes it difficult to locate and advance a ball.



Low areas, such as this drainage swale in native rough, create saturated conditions that favor nutsedge.

Table 2.

Commonly applied herbicides for **preemergence** control of nutsedge or kyllinga.

Chemical Name	Trade Name	Mode of Action	Controls Kyllinga, Sedges, Both
Oxadiazon	Ronstar *	14 - Protoporphyrinogen Oxidase inhibitors	Sedges
Sulfentrazone + proflaminate	Echelon *	14 - Protoporphyrinogen Oxidase inhibitors 3 - Mitosis inhibitors	Both
Dimethenamid	Tower *	15 - Mitosis inhibitors	Both
Dimethenamid + pendimethalin	Freehand *	15 - Mitosis inhibitors 3 - Mitosis inhibitors	Both
S-metolachlor	Pennant Magnum *	15 - Mitosis inhibitors	Sedges
Indaziflam	Specticle Flo *	29 - Cellulose inhibitors	Both (control can be erratic)

Table 3.

Commonly applied herbicides for **postemergence** control of nutsedge or kyllinga in **warm-season turf**.

Chemical Name	Trade Name	Mode of Action	Controls Kyllinga, Sedges, Both
Trifloxysulfuron-sodium	Monument *	2 - ALS inhibitor	Both
Sulfosulfuron	Certainty *	2 - ALS inhibitor	Both
Flazasulfuron	Katana *	2 - ALS inhibitor	Both

Flo caused turf damage on sandy soils. Thus, the rates have been adjusted for the new formulation, which is safe on all soil types. If your course has sandy soil and organic matter content is low (less than 1%), caution is needed to select the appropriate formulation for your site.

For postemergence control, warm-season turf managers have nearly endless options. All the cool-season options listed in Table 1 are available, with the exception of Tenacity, or you may select from the more targeted products listed in Table 3 that offer quicker control of sedges.

APPLICATION RATE ADJUSTMENTS

Depending on the product used to suppress weeds, application rate adjustments may be necessary based on time of year, product, and grass type. For example, seashore paspalum



A thin turf canopy or an area where turf decline occurred creates an opportunity for nutsedge or kyllinga to encroach. Once they gain a foothold, eradication will be challenging.

is often more sensitive to sulfentrazone in summer than bermudagrass. If you are managing seashore paspalum, rates will need to be lower than the suggested bermudagrass rate. Another common example is the different sensitivities that common bermudagrass and hybrid bermudagrass have to various products. Rates for some commonly used herbicides, including Specticle Flo, need to be lower on common bermudagrass than hybrid bermudagrass. These examples illustrate that it is always important to consider the time of year and the desired grass, and to know that application rates might need to be modified based on label recommendations for various turf species.

HERBICIDE RESISTANCE

Other field cropping systems have reported herbicide resistance in sedges,

underscoring the importance of rotation of mode of action. For example, farmers have reported ALS-resistant yellow nutsedge, rice flatsedge, small-flower umbrella sedge, and others in row crops. Although row crops require different management than turfgrass, the herbicide use patterns are similar for superintendents. It is important that superintendents look to other agricultural industries and learn from their challenges, herbicide resistance being one of the most important. Without proper rotation of herbicide mode of action, the risk of superintendents seeing similar herbicide resistance among sedge species will remain high.

CONCLUSION

Controlling kyllinga and nutsedge can be difficult, but it is possible. A combination of preemergence and

postemergence herbicides should be utilized to ensure the highest possible chance of eradication. However, implementing the most consistent way to prevent these weeds from becoming a problem starts with sound agronomic programs. Maintaining a good growing environment with appropriate soil moisture levels is the best and often cheapest way to discourage weeds.

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