



Nutsedge

Integrated Pest Management for Home Gardeners and Landscape Professionals

Nutsedges are common weeds in landscapes and gardens in the coastal valleys, Central Valley, and southern areas of California. Nutsedges are aggressive and persistent weeds that commonly infest lawns, vegetable and flower gardens, and home landscapes. They thrive in waterlogged soil, and their presence often indicates drainage is poor, irrigation is too frequent, or sprinklers are leaky. Once established, however, they will tolerate normal irrigation conditions or drought.

The two most common weedy species of nutsedge in California are yellow nutsedge, *Cyperus esculentus* (Figure 1), and purple nutsedge, *C. rotundus* (Figure 2). Yellow nutsedge grows throughout California, while purple nutsedge is more often found in the southern coastal and desert portions of the state as well as the Central Valley.

IDENTIFICATION AND BIOLOGY

Although nutsedges resemble grasses and often are referred to as “nutgrass,” they aren’t grasses but belong to a group of plants called sedges. Nutsedge leaves are thicker and stiffer than most grasses and are arranged in sets of three at their base (Figure 3) while grass leaves grow across from each other in sets of two. Nutsedge stems are solid, and in cross section they are triangular; grass stems are hollow and round, and in cross section they are almost flat or oval.

Nutsedge has three long, leaflike bracts at the base of each flower head. Yellow nutsedge has light brown flowers and seeds, while purple nutsedge flowers have a reddish tinge and the seeds are dark brown or black.

Yellow and purple nutsedge both produce tubers, which are incorrectly called “nuts” or “nutlets,” thus the origin of their common name. The plants produce these tubers on rhizomes, or underground stems, that grow as deep as 8 to 14 inches below the soil surface. Buds on the tubers sprout and grow to form new plants and eventually form patches that can range up to 10 feet or more in diameter.

Author:

Cheryl A. Wilen, UC Statewide IPM Program, San Diego County (emerita).



Figure 1. Mature yellow nutsedge plant.



Figure 2. Mature purple nutsedge flower.

Yellow nutsedge produces round, smooth, brown or black tubers that can be up to $\frac{7}{16}$ inch (11 mm) wide at maturity (Figure 4). Only a single tuber forms at the end of a rhizome, and the tubers have a pleasant almond taste.

Red or red-brown scales cover purple nutsedge tubers. The tubers grow in chains with several tubers on a single rhizome (Figure 5), and they have a bitter taste. Purple nutsedge tubers are generally have

tubers up to ½ inch (10-12 mm) wide but can be 7/16 to 1-½ inch (10 to 35 mm) long.

One weed often confused with yellow or purple nutsedge is tall flatsedge, *Cyperus eragrostis* (Figure 6), another perennial sedge that grows in wet, soggy soils. Tall flatsedge is a large, light green sedge that does not produce tubers. It spreads by seed or by new plants that form on short, thick rhizomes around the base of the mother plant. If left unmowed, tall flatsedge grows taller than nutsedges, but in a mowed turf you can distinguish it from nutsedges by its tendency to grow in tight clumps that are less than 1 foot in diameter, its wider leaves and stems, and its short, thick rhizomes and lack of tubers.

Another weed often confused with nutsedge is green kyllinga, *Kyllinga brevifolia* (Figure 7), which also is a major problem in turf and ornamental plantings in California (See *Pest Notes: Green Kyllinga* in References). Green kyllinga flowers are visibly different from those of nutsedges, and like tall flatsedge, the plant produces rhizomes but not tubers and spreads by seeds or rhizomes.

Yellow and purple nutsedge are perennial plants. Their leaves and flowering stalks generally die back in fall as temperatures decrease, but tubers and rhizomes survive in the soil and sprout the following spring once soil temperatures remain higher than 43°F for yellow nutsedge and higher than 59°F for purple nutsedge.

The majority of tubers can be found in the top 6 inches of soil and can survive for 1 to 3 years. In field crops, research indicates most nutsedge plants sprout from tubers, and seeds don't contribute much to the spread of the plant as the seeds have very low viability in yellow nutsedge and nearly none in purple nutsedge; however, no work has been done to examine the role of seed in the spread of nutsedge in the landscape where lower competition with other plants may allow for some seedlings to establish.



Figure 3. Yellow nutsedge leaves and bracts are arranged in sets of three.

DAMAGE

Nutsedges are a problem in lawns because they grow faster, have a more upright growth habit, and are a lighter green color than most turf species, resulting in a nonuniform lawn. In gardens and landscapes, nutsedges will emerge through various types of mulches (Figure 8) in shrub plantings and vegetable and flower beds throughout the growing season.

MANAGEMENT

The best approach for avoiding nutsedge problems is to prevent establishment of the weed in the first place.

Once established, nutsedge plants are difficult to control. Prevent establishment by removing small plants before they develop tubers, usually when they have less than 5 leaves, eliminating the wet conditions that favor nutsedge growth, using certain fabric mulches in landscape beds, and making sure nutsedge tubers aren't brought in with topsoil or other materials. In addition to consistently removing small plants, you can reduce nutsedge populations by drying, shading, and using properly timed applications of herbicides.



Figure 4. Yellow nutsedge roots, rhizomes, and tubers.



Figure 5. Purple nutsedge root system showing tubers linked in chains.

Cultural Control

Removing Plants and Tubers

Tubers are key to nutsedge survival. If you can limit production of tubers, you'll eventually control the nutsedge population.

To limit tuber production, remove small nutsedge plants before they have 5 to 6 leaves; in summer this is about every 2 to 3 weeks. Up to this stage, the plant hasn't formed new tubers yet. Removing as much of the plant as possible will force the tuber to use a new bud to sprout, drawing its energy



Figure 6. Flowers of tall flatsedge (shown here) are dense and headlike in contrast to the looser flowers of nutsedge. Plants also lack tubers and are taller and have wider leaves than the nutsedges.



Figure 7. Green kyllinga doesn't have tubers but instead spreads by rhizomes and seeds.

reserves from tuber production to the production of new leaves.

Continually removing shoots eventually depletes the energy reserves in the tuber, because the nutsedge will have to use 60% of its reserves to develop the first plant and 20% for the second. However, mature tubers can resprout more than 3 times. Even though these newer sprouts start out weaker than the previous ones, plants can develop from them and produce new tubers unless you subsequently remove the new sprouts as well.

The best way to remove small plants is to pull them up by hand or to hand hoe out the new tubers and the basal bulb (Figure 9). If you hoe, be sure to dig down at least 8 to 14 inches to remove the entire plant. Using a tiller to destroy mature plants will only spread the infestation, because it will move the tubers around in the soil. However, repeated tillage of small areas before the plants have 6 leaves will reduce populations. If you find nutsedge in small patches in your turf, dig out the patch down to at least 8 inches deep, refill, and then seed or sod the patch. Be sure to monitor the area through the spring and summer and remove any new nutsedge plants that emerge.

Drying

During the middle of summer, you can reduce the next year's population of purple nutsedge by cultivating the infested area to bring tubers and rhizomes to the surface and then withholding all moisture to allow the sun to dry the tubers. Repeated tilling and drying cycles each summer are required to have a significant impact. This method is effective only in areas where other plants don't need irrigation. Raking off and removing rhizomes will help reduce the population as well. Drying isn't effective for controlling yellow nutsedge.

Shading

Nutsedge does not grow well in shade, so increasing shade in infested areas might reduce their growth. For example, an infested flower bed could be replaced with a tall, dense ground cover or shrub. Low-growing ground covers do not provide enough shade to reduce nutsedge growth.

Mulching

Black or clear polyethylene plastic mulches don't control yellow or purple nutsedge, because the sharp

points at the ends of their leaves can penetrate them. Landscape fabrics made from polypropylene polymers are available that effectively suppress nutsedge growth and have the added benefit of being water and air permeable, unlike polyethylene. If the planting permits, laying down a thick, nonwoven landscape fabric and then covering it with a bark or gravel mulch will suppress nutsedge growth. For complete control, however, you still will need to remove any emerging nutsedge plants.



Figure 8. Yellow nutsedge seedling emerging through bark mulch.

Chemical Control

Few herbicides are effective at controlling nutsedge in landscapes, either because of a lack of selectivity to other plants or a lack of uptake. For herbicides that are suitable, apply them when they'll be most effective (Table 1). Most herbicides do not have preemergent activity against tubers. Most of the herbicides listed below are available only to licensed professionals.

Nonselective Postemergent Herbicides

The only nonselective systemic postemergent herbicide currently available to help control nutsedge in the home landscape is glyphosate. This herbicide requires repeated applications, and its use will result only in limited suppression of these weeds.

Many people mistakenly use glyphosate on mature nutsedge plants to try

to kill the tubers. Unfortunately, at this stage the herbicide usually doesn't move very well from the leaves to the tubers, thus leaving many of them unaffected. Instead, apply glyphosate when the plants are young, actively growing, and haven't recently been mowed or cut.

Selective Postemergent Herbicides

Postemergent herbicides that have some selectivity, particularly in turf, are halosulfuron (Sedgehammer and Sedgehammer+), sulfentrazone (Dismiss CA, Ortho Nutsedge Killer for Lawns), trifloxysulfuron-sodium (Monument), mesotrione (Tenacity), and sulfosulfuron (Certainty). These herbicides move through the plant rapidly, but to be effective, you must apply them to nutsedge before the fifth-leaf stage, when the plant is still building energy reserves by drawing energy from its leaves to the newly forming tubers. After this stage, this

translocation to the tubers slows down or ceases, and the herbicide will kill only the aboveground portion of the plant, leaving the tubers unaffected.

Most of these herbicides are used in minute amounts and may require the addition of a specific type of surfactant to be effective. Sedgehammer+ is prepackaged with the surfactant. Follow all label directions for optimal control of nutsedge, such as how often the product should be applied, and understand that some of these products are safe to use only on specific turf species.

Preemergent Herbicides

Although no preemergent herbicides control purple nutsedge, those that reduce yellow nutsedge include dichlobenil (Casoron), S-metolachlor (Pennant Magnum), and dimethenamid-P (a component of Freehand). Metolachlor and dimethenamid-P are

Table 1. Herbicides Available for Managing Nutsedge. None of these products effectively controls mature plants.

Herbicides	Commercial product examples	Apply before nutsedge plants emerge	Apply to young nutsedge plants	Available to home gardeners
dichlobenil	Casoron 4G	yes (yellow nutsedge only)	no	yes
dimethenamid-P	Freehand/Tower	yes (yellow nutsedge only)	no	no
glyphosate	Roundup	no	yes	yes
halosulfuron	Sedgehammer/ Sedgehammer+	no	yes	yes
S-metolachlor	Pennant Magnum	yes (yellow nutsedge only)	no	no
sulfosulfuron	Certainty	no	yes	no
trifloxysulfuron-sodium	Monument	no	yes	no
mesotrione	Tenacity	no	yes (yellow nutsedge only)	no
sulfentrazone	Dismiss CA	no	yes	no
sulfentrazone	Ortho Nutsedge Killer for Lawns	no	yes	yes

safer around many ornamentals than dichlobenil, but they are available only to professional pesticide applicators.

No preemergent herbicides that effectively control nutsedge can be used on turfgrass, but you can use them around selected ornamental plants. Read the label directions to see which ornamentals will tolerate each herbicide, and follow all label instructions regarding how to apply the product. Preemergent herbicides reduce the number of emerging nutsedge plants, but for long-term control, re-treatment is necessary.

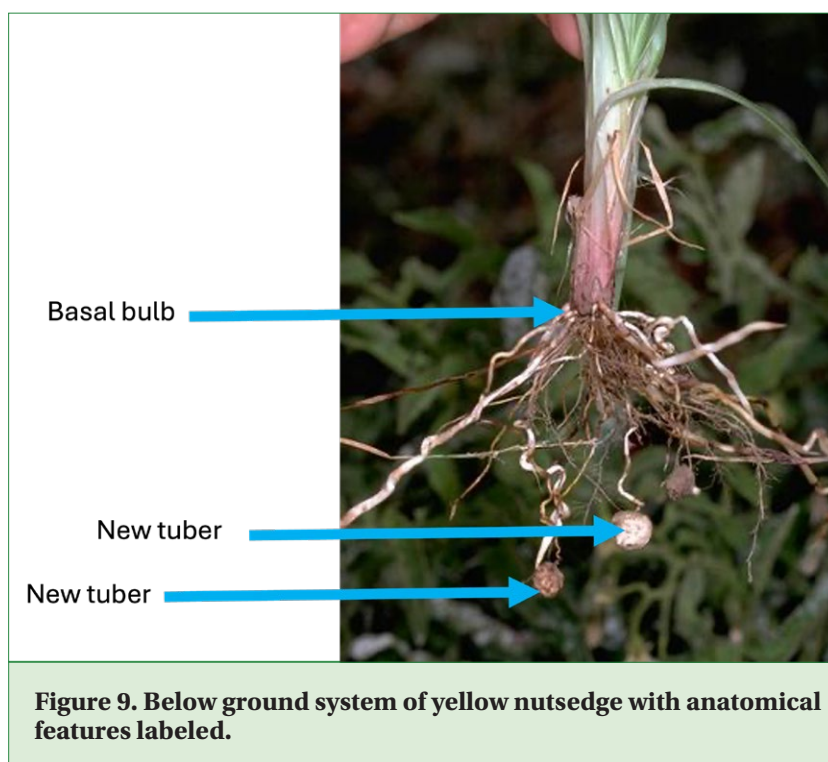


Figure 9. Below ground system of yellow nutsedge with anatomical features labeled.

REFERENCES

- California Weed Conference. 2003. *Principles of Weed Control in California*. 2nd ed. Fresno: Thomson Publications.
- Cudney DW, Elmore CL, Shaw DA, Wilen CA. April 2003. *Pest Notes: Green Kyllinga*. UCANR Publication 7459. Oakland, CA.
- Dreistadt SH, Clark JK, Flint ML. 2016. *Pests of Landscape Trees and Shrubs: An Integrated Pest Management Guide*. 3rd ed. UCANR Publication 3359. Oakland, CA.
- DiTomaso JM, Healy EA. 2006. *Weeds of California and Other Western States*. UCANR Publication 3488. Oakland, CA.
- Flint ML. 2018. *Pests of the Garden and Small Farm: A Grower's Guide to Using Less Pesticide*. 3rd ed. UCANR Publication 3332. Oakland, CA.
- Tucker GC. 2012. *Cyperus esculentus*, in Jepson Flora Project (eds.) *Jepson eFlora*, https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=21824 [Accessed on June 04, 2024]
- Tucker GC. 2012. *Cyperus rotundus*, in Jepson Flora Project (eds.) *Jepson eFlora*, https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=21932 [Accessed on June 04, 2024]
- USDA NRCS. 2000. Purple Nutsedge *Cyperus rotundus* L. Plant Guide. https://plants.usda.gov/DocumentLibrary/plantguide/doc/pg_cyro.docx [Accessed on June 04, 2024]
- Whitson TD, et al. 2006. *Weeds of the West*. 9th ed. L. Western Society of Weed Science. Las Cruces, NM.

WARNING ON THE USE OF PESTICIDES

Pesticides are poisonous. Some pesticides are more toxic than others and present higher risks to people, nontarget organisms, and the environment. A pesticide is any material (natural, organic, or synthetic) used to control, prevent, kill, suppress, or repel pests. "Pesticide" is a broad term that includes insecticides, herbicides (weed or plant killers), fungicides, rodenticides, miticides (mite control), molluscicides (for snails and slugs), and other materials like growth regulators or antimicrobial products such as bleach and sanitary wipes that kill bacteria.

Always read and carefully follow all precautions and directions provided on the container label. The label is the law and failure to follow label instructions is an illegal use of the pesticide. Store all chemicals in the original labeled containers in a locked cabinet or shed, away from food or feeds, and out of the reach of children, unauthorized persons, and animals. Never place pesticides in food or drink containers. Consult the pesticide label to determine active ingredients, correct locations for use, signal words, and personal protective equipment you should wear to protect yourself from exposure when applying the material.

Pesticides applied in your garden and landscape can move through water or with soil away from where they were applied, resulting in contamination of creeks, lakes, rivers, and the ocean. Confine pesticides to the property being treated and never allow them to get into drains or creeks. Avoid getting pesticide onto neighboring properties (called drift), especially onto gardens containing fruits or vegetables ready to be picked.

Do not place containers with pesticide in the trash or pour pesticides down the sink, toilet, or outside drains. Either use all the pesticide according to the label until the container is empty or take unwanted pesticides to your local Household Hazardous Waste Collection site. Contact your county agricultural commissioner for additional information on safe container disposal and for the location of the Hazardous Waste Collection site nearest you. Follow label directions for disposal of empty containers. Never reuse or burn the containers or dispose of them in such a manner that they may contaminate water supplies or natural waterways.

Produced by the **Statewide Integrated Pest Management Program**, University of California, 2801 Second Street, Davis, CA 95618-7774.

Technical Editor: K Windbiel-Rojas

ANR Associate Editor: K Windbiel-Rojas

Editor and Designer: B Messenger-Sikes

ILLUSTRATIONS: Figures 1, 3, 4, and 7-9, Jack Kelly Clark; Figures 2 and 5-6, J. M. DiTomaso.

This and other Pest Notes are available at ipm.ucanr.edu.

For more information, contact the University of California Cooperative Extension office in your county. See your telephone directory for addresses and phone numbers, or visit: ucanr.edu/County_Offices.

University of California scientists and other qualified professionals have anonymously peer reviewed this publication for technical accuracy. The ANR Associate Editor for Urban Pest Management managed this process.

To simplify information, trade names of products have been used. No endorsement of named products is intended, nor is criticism implied of similar products that are not mentioned.

This material is partially based upon work supported by the Extension Service, U.S. Department of Agriculture, under special project Section 3(d), Integrated Pest Management.

Suggested citation: Wilen CA. 2024. UC IPM *Pest Notes: Nutsedge*. UC ANR Publication 7432. Oakland, CA.

ANR NONDISCRIMINATION AND AFFIRMATIVE ACTION POLICY STATEMENT

It is the policy of the University of California (UC) and the UC Division of Agriculture & Natural Resources not to engage in discrimination against or harassment of any person in any of its programs or activities (Complete nondiscrimination policy statement can be found at ucanr.edu/sites/anrstaff/Diversity/Affirmative_Action/Resources/Policy-related_downloads/).

Inquiries regarding ANR's nondiscrimination policies may be directed to UCANR, Affirmative Action Compliance Officer, University of California, Agriculture and Natural Resources, 2801 Second Street, Davis, CA 95618, (530) 750-1343.

