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# KIKUYUGRASS

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*Integrated Pest Management for Home Gardeners and Landscape Professionals*

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Kikuyugrass, *Pennisetum clandestinum*, (Fig. 1) is an extremely aggressive perennial weed of turfgrass, ornamental plantings, orchards, and noncrop areas in California. Native to East Africa, kikuyugrass is well adapted to warm, temperate climates such as those of the coast and inland valleys of Southern and Central California.

Kikuyugrass originally was imported to California around 1918 as a ground cover to reduce erosion on ditch banks. With its rapid growth of its creeping stems into thick mats, it quickly moved from these sites and became a serious weed pest.

In the past kikuyugrass often was confused with St. Augustinegrass (Fig. 2) and might have been mistakenly propagated and planted in its place. There are also some commercial varieties of kikuyugrass that have characteristics that are desirable for turf, such as finer blades and fast establishment.

## IDENTIFICATION AND LIFE CYCLE

Kikuyugrass is a perennial grass that grows best under cool to warm temperatures (60° to 90°F) and moist conditions; however, it also survives well at high temperatures (100°F). Like bermudagrass, kikuyugrass has a special photosynthetic pathway that enables it to assimilate carbohydrates at a high rate and grow rapidly during periods of high light intensity and warm temperatures. Unlike bermudagrass, kikuyugrass is able to maintain its steady growth rate at lower temperatures.

In coastal and some inland valley areas, kikuyugrass might not go dormant in winter. In other inland areas of California, it often turns brown in late November and remains dormant until February or March, depending upon the temperature.

Once kikuyugrass resumes growth in late spring, it grows rapidly through summer and early fall. Kikuyugrass is capable of sustained shoot growth rates exceeding 1 inch per day, and a patch can expand an average of 4 square feet per month when growing without competition.

Flowering, which mowing stimulates, begins in late spring. Flowering is more prolific during cool, humid conditions, and seed production continues throughout summer and fall.

Kikuyugrass is a prostrate plant that spreads by producing a network of thick, fleshy stems that root at the nodes (Fig. 3). These stems often form a thick mat or thatch above the soil surface (as stolons) or a network of underground stems (rhizomes) 1 to 4 inches deep in the soil. Carbohydrates are stored in the stems and can be utilized for regrowth after mowing or cultivation. If the stems are chopped into small pieces, each section is capable of producing new shoots and roots from its nodes.

Kikuyugrass can easily be moved from one area to another on mowing and renovation equipment, resulting in new infestations. Left unmowed, kikuyugrass can attain a height of



Figure 1. Kikuyugrass.

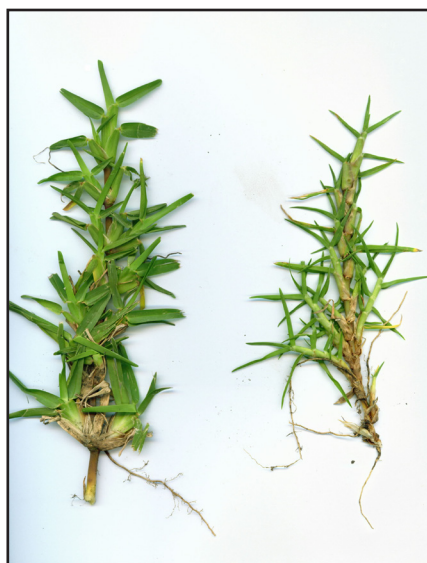


Figure 2. St. Augustinegrass (left) has rounded leaf tips with sharply folded or creased leaf blades, unlike kikuyugrass (right), which has flatter, pointed leaves. These samples are from mowed turf.



Figure 3. Kikuyugrass stolon showing roots at nodes.

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# PEST NOTES

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about 18 inches (Fig. 4); it also can grow up over fences and into trees and shrubs. When mowed, kikuyugrass can survive cutting heights of less than  $\frac{1}{2}$  inch.

Leaves of kikuyugrass are light green and 1 to 10 inches long. It has pointed leaf tips and flat leaf blades that are about  $\frac{1}{8}$  to  $\frac{1}{4}$  inch wide; St. Augustinegrass, on the other hand, has rounded leaf tips with sharply folded or creased leaf blades. Kikuyugrass leaves and stems are slightly hairy while St. Augustinegrass is smooth. Another identifying characteristic of kikuyugrass is the long fringe of hairs that parallels the stem in the leaf collar region (Fig. 5).

The pollen sacs, or anthers, (Fig. 6) extend above the leaves on slender, white filaments and give infested areas a whitish cast that often is mistaken for a fungus. The female portion of the flower (pistil) is found lower on the plant, and there are separate male and female flowers. Seeds are produced in terminal leaf sheaths, and are not visible; the seed is dark brown and about  $\frac{1}{8}$  inch long with a rather large scar at its rounded base.

## IMPACT

In turfgrass, kikuyugrass forms thick mats that crowd out desirable species. The thick mat makes golf and other athletic uses difficult and in some cases dangerous. The light green color and coarse texture of kikuyugrass is not aesthetically desirable compared to other turf species. In golf courses it often invades greens and requires hand removal.

In ornamental areas it invades ground covers and flower beds, often completely choking them out. Kikuyugrass can invade low-growing shrubs, blocking out light and reducing their vigor. In orchards it can compete with trees for nutrients, interfere with irrigation by blocking sprinklers and emitters or drainage ditches, and overgrow fences.

## MANAGEMENT

The best way to control kikuyugrass is to prevent its spread into new areas. Kikuyugrass can be spread both from seed and from stem sections. It seems to be most commonly spread by mowing, cultivation, and renovation equipment. Clean equipment to remove any kikuyugrass seed or stem sections before moving it out of infested areas. Kikuyugrass also spreads in contaminated soil, sod, and planting stock. Make sure any incoming materials are free of contamination.

Maintain turfgrass and ornamental areas to assure they are at maximum vigor so that these plantings are as competitive as possible to help slow the invasion of this weed. Monitor areas and remove patches as soon as possible. Dense turfgrass and ornamental plantings shade the soil surface, making the establishment of kikuyugrass sprigs and seedlings more difficult, although it still may become established.

Vigorous tall fescue varieties can reduce kikuyugrass invasion but not to a great enough extent to consider it a method of control in turfgrass. In fact, once kikuyugrass is about 40% of the turf, it often is easier to maintain it as the primary turf species rather than try to suppress it. Regularly inspect orchards and noncrop areas for the presence of kikuyugrass. Remove kikuyugrass by digging up patches or spot-treating it with an herbicide to prevent its spread.

Solarization may control infestations in areas that are to be replanted. For solarization to be effective, it must be used in full sun during the hottest part of the year (generally mid-July to mid-September for most of California), and the area must be kept covered with clear plastic mulch for 4 to 6 weeks. (See *Pest Notes: Soil Solarization for Gardens and Landscapes* in References.) It is unlikely that solarization will be effective in coastal locations due to seasonal fog and overcast skies.



Figure 4. Left unmowed, kikuyugrass will grow up to 18 inches tall with long, pointed leaves.



Figure 5. Kikuyugrass leaf with ridge of hairs at collar and hairs on leaf sheath and stem.



Figure 6. Kikuyugrass pollen sacs protruding above leaves.

## Turfgrass

A single treatment or procedure can't control kikuyugrass in turfgrass. A vigorously growing turf coupled with early grubbing (i.e., removal of the entire plant, roots and all) of solitary infestations has been successful when practiced diligently. Spot-spraying isolated plants with glyphosate can be helpful but also will kill the surrounding turfgrass, leaving open areas into which kikuyugrass easily can reestablish. Overseed the open spots with the desired grass species.

Kikuyugrass seeds are more likely to grow in less vigorous or thin turf. Overseeding and fertilizing will make the desired turf more competitive and reduce weed establishment from seeds. When applied in March, preemergent herbicides have been successful in limiting germination of kikuyugrass seeds in spring and early summer. Products containing bensulide, benefin, dithiopyr, pendimethalin, and prodiamine are available for home use.

To control established plants, multiple applications of a postemergent herbicide are required. In cool-season turfgrass (e.g., Kentucky bluegrass, tall fescue, and perennial ryegrass) about three to four applications per year may be necessary; apply an herbicide whenever you observe new growth. Spot sprays of glyphosate are effective, but this also will kill surrounding turf. Selective postemergent suppression can be obtained from multiple applications of triclopyr (on cool-season turf) and quinclorac on most warm-season turf species.

As noted above, it usually is easier and more sustainable to maintain kikuyugrass as the turf species when it is it about 40% of the lawn. However, if you choose to renovate an entire lawn and replant with another turf species, solarization may be used as an alternative to herbicides.

### Ornamentals

There are few options for controlling kikuyugrass in ornamental plantings. Prevention is very important as is hand removal or spot spraying of solitary plants. Hand weeding is the primary method of control in the home garden. Cultivation or hand hoeing, although possible under some circumstances, generally is detrimental because it breaks rhizomes and transplants them to new areas. This is particularly true if irrigation follows hoeing.

Mulching with a strong landscape fabric can be effective if it is over-

lapped and no light is allowed to penetrate to the soil. Use a polypropylene or polyester fabric or black polyethylene (i.e., plastic tarp) to block all plant growth. Organic mulches may not offer effective control of kikuyugrass, because plants sprouting from rhizomes can grow through the mulch.

Preemergent herbicides such as those listed above can be used to limit the germination of seeds in sites where product labels allow their use. However, kikuyugrass produces little seed unless mowed, so seeds are a minor source of establishment in landscape beds. Preemergent herbicides are of little benefit if established kikuyugrass already is present, because these materials prevent only seed germination.

Use postemergent herbicides to control kikuyugrass in established ornamental plantings. Selective grass control herbicides reduce kikuyugrass growth in plantings where product labels allow their use. Sethoxydim and fluzifop are available for use by the home gardener; professional pesticide applicators may also use clethodim. Spot treatments with glyphosate will kill kikuyugrass but also will injure surrounding desirable plants if spray contacts them. Applying glyphosate with a sponge or wick applicator may allow more selectivity.

### Noncrop

In noncrop areas kikuyugrass grows only where water is readily available, such as in ditch banks. Avoid discing kikuyugrass in these areas, as it may increase its population. Residual, soil-applied herbicides used in noncrop weed control will kill germinating kikuyugrass seedlings and limit growth of established kikuyugrass. A postemergent application of glyphosate, either as a spot treatment or as a broadcast application, controls established kikuyugrass. Solarization, as discussed above, may be used if appropriate to the situation.

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Pesticides applied in your home and landscape can move and contaminate creeks, rivers, and oceans. Confine chemicals to the property being treated. Avoid drift onto neighboring properties, especially gardens containing fruits or vegetables ready to be picked.

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