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# KIKUYUGRASS

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*Integrated Pest Management for Home Gardeners and Professional Horticulturalists*

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Kikuyugrass (*Pennisetum clandestinum*) is an extremely aggressive perennial weed of turfgrass, ornamental plantings, orchards, and noncrop areas in California. Native to Africa, kikuyugrass is well adapted to warm, temperate climates such as those of the coast and inland valleys of southern and central California. Kikuyugrass was originally imported to California around 1918 as a ground cover to reduce erosion on ditchbanks. With its rapid stolon growth and thatch formation, it quickly moved from these sites and became a serious weed pest. In the past kikuyugrass was often confused with St. Augustinegrass and may have been mistakenly propagated and planted in its place.

## 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 allows it to assimilate carbohydrates at a high rate and to grow rapidly during periods of high light intensity and warm temperatures. But, unlike bermudagrass, kikuyugrass is able to maintain its steady growth rate at lower temperatures. In coastal and some inland valley areas, kikuyugrass may 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 on temperature. After kikuyugrass resumes growth in late spring, a rapid growth rate is reached by early summer and maintained through early fall. When



Figure 1. Kikuyugrass stolon showing rooting at nodes.

growing rapidly, kikuyugrass is capable of sustained shoot growth rates exceeding 1 inch per day. Flowering begins in late spring and is stimulated by mowing. Seed production continues throughout summer and fall.

Kikuyugrass is a prostrate plant that spreads by producing a network of thick, fleshy stems (Fig. 1). These stems (stolons) often form a thick mat or thatch above the soil surface or a network of underground stems (rhizomes) from 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. Thus kikuyugrass can easily be moved from one area to another on mowing and renovation equipment. Kikuyugrass, left unmowed, can attain a height of about 18 inches; it can also grow up over fences

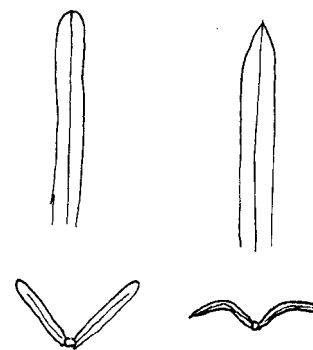


Figure 2. Side and top view of St. Augustinegrass (*left*) with folded, blunt leaves compared to the flatter, pointed leaves of kikuyugrass.

and into trees and shrubs. When mowed, kikuyugrass can survive cutting heights of less than ½ inch.

Leaves of kikuyugrass are light green in color and range in length from 1 to 10

inches. It has pointed leaf tips and flat leaf blades that are about  $\frac{1}{8}$  to  $\frac{1}{4}$  inch wide (Fig. 2). St. Augustinegrass, on the other hand, has rounded leaf tips with sharply folded or creased leaf blades. Another identifying characteristic of kikuyugrass is the long fringe of hairs that parallels the stem in the leaf collar region (Fig. 3).

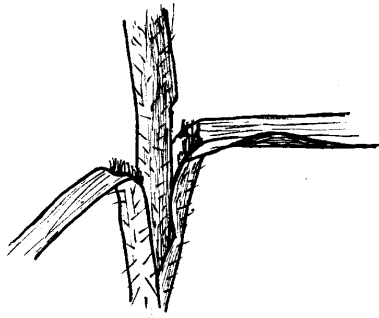
The pollen sacs, or anthers, (Fig. 4) extend above the turf surface on slender white filaments and give infested areas a whitish cast. The female portion of the flower (pistil) and seed are produced beneath the mowed surface of the turf; the seed is dark brown and about  $\frac{1}{8}$  inch in length with a rather large scar at its rounded base.

### IMPACT

Kikuyugrass is a major weed problem in turfgrass and ornamental areas but can also be found in coastal and inland valley orchards of southern and central California. It causes physical, aesthetic, and competition problems. In turfgrass it 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 from infested areas. Kikuyugrass also spreads in contaminated soil,



**Figure 3. Kikuyugrass leaf with ridge of hairs at collar and hairs on leaf sheath and stem.**

sod, and planting stock. Make sure that 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. Dense turfgrass and ornamental plantings shade the soil surface, making the establishment of kikuyugrass sprigs and seedlings more difficult. Vigorous tall fescue varieties have been effective at reducing kikuyugrass invasion when used in turfgrass. Regularly inspect orchards and noncrop areas for the presence of kikuyugrass and other invading weed species. Remove the invading species by hand or spot-treat them with an herbicide to prevent their spread.

### Turfgrass

Kikuyugrass cannot be controlled with a single treatment or procedure in turfgrass. A vigorously growing turf coupled with early grubbing (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 will also kill the turfgrass, leaving open areas in which kikuyugrass can easily reestablish itself. Overseed the open spots with the desired grass species to establish a vigorous turfgrass.

When they are applied in March, preemergent herbicides have been successful in limiting germination of kikuyugrass seeds in spring and early summer. Pendimethalin, bensulide,



**Figure 4. Kikuyugrass anthers protruding from stem.**

benefin, and prodiamine are available for use around the home. Because this weed spreads primarily by regrowth from stem sections, multiple applications of a postemergent herbicide are required to control established infestations. In cool-season turfgrass (tall fescue, perennial ryegrass, and Kentucky bluegrass) about three to four applications per year are necessary. Best control has been obtained from sequential applications of a combination of triclopyr and MSMA applied 4 to 6 weeks apart. Both are available for use around the home. Sequential applications of either MSMA or triclopyr alone will reduce kikuyugrass vigor and growth, but are not as effective as the combination.

In bermudagrass turf, either quinclorac or MSMA can be used alone or in combination to reduce a kikuyugrass invasion. Sequential applications will be necessary. Quinclorac is only available to commercial applicators.

### Ornamentals

There are few options for the control of 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, is generally 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 overlapped and no light is allowed to penetrate to the soil. Use a polypropylene or polyester fabric or black polyethylene (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 oryzalin and pendimethalin can be used to limit the germination of seeds in sites where product labels allow their use. (In landscape ornamentals, pendimethalin may be applied only by a licensed applicator.) Apply preemergent herbicides in March before seeds germinate. Preemergent herbicides are of little benefit if established kikuyugrass is already present because these materials only prevent seed germination.

For more information contact the University of California Cooperative Extension or agricultural commissioner's office in your county. See your phone book for addresses and phone numbers.

AUTHORS: D. W. Cudney, C. L. Elmore, and V. A. Gibeault

EDITOR: B. Ohlendorf

TECHNICAL EDITOR: M. L. Flint

DESIGN AND PRODUCTION: M. Brush

ILLUSTRATIONS: Karin Ling

Produced by IPM Education and Publications, UC Statewide IPM Program, University of California, Davis, CA 95616-8620

**This Pest Note is available on the World Wide Web (<http://www.ipm.ucdavis.edu>)**



This publication has been anonymously peer reviewed for technical accuracy by University of California scientists and other qualified professionals. This review process was managed by the ANR Associate Editor for Pest Management.

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.

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 fluazifop are available for use by the home gardener; professional pesticide applicators may also use clethodim. Spot treatment with glyphosate kills kikuyugrass but do not allow the spray to get on desirable plants or injury will result. Application of glyphosate with a sponge applicator may allow more selectivity.

### Orchards

Prevention is very effective as a control method in orchards. Hand-removal or spot treatment with glyphosate can be very cost-effective. Mulching with organic mulches will probably not be effective against this competitive perennial plant.

Most of the soil-applied herbicides used in orchards will limit seed germination of kikuyugrass. The availability of these herbicides for use varies depending on the tree species; check product labels.

Oryzalin and trifluralin limit root growth from kikuyugrass stem sections. Herbicides such as norflurazon and bromacil in citrus reduce established kikuyugrass infestations. These herbicides are available for use in commercial orchards only.

Postemergent treatments with glyphosate in summer and fall are very effective, but additional treatments may be

necessary as new seedlings develop or new stem sections are brought in.

### Noncrop

In noncrop areas kikuyugrass only grows where water is readily available, such as in ditchbanks. Discing kikuyugrass in these areas should be avoided because it may transplant and ultimately increase the kikuyugrass 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.

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### WARNING ON THE USE OF CHEMICALS

Pesticides are poisonous. Always read and carefully follow all precautions and safety recommendations given on the container label. 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, pets, and livestock.

Confine chemicals to the property being treated. Avoid drift onto neighboring properties, especially gardens containing fruits or vegetables ready to be picked.

Do not place containers containing pesticide in the trash nor pour pesticides down sink or toilet. Either use the pesticide according to the label or take unwanted pesticides to a Household Hazardous Waste Collection site. Contact your county agricultural commissioner for additional information on safe container disposal and for the location of the Household Hazardous Waste Collection site nearest you. Dispose of empty containers by following label directions. Never reuse or burn the containers or dispose of them in such a manner that they may contaminate water supplies or natural waterways.

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