Cenchrus clandestinus 简体中文 正體中文 **System:** Terrestrial

Kingdom	Phylum	Class	Order	Family
Plantae	Magnoliophyta	Liliopsida	Cyperales	Poaceae

Common name capim-quicuio (Portuguese), kikuyo (English, Colombia, Peru, Uruguay), kikuyu grass (English, Australia, Eastern Africa, Hawaii, India, Jamaica, Philippines, United States), kikuyugras (German, Germany), pasto africano (Spanish), West African pennisetum (English), xi fei lang wei cao (Chinese, China), kikuyu pul (Tamil, Sri Lanka), kikuyu tana (Sinhalese, Sri Lanka)

Synonym *Pennisetum longstylum* , var. *clandestinum* (Hochst. ex Chiov.) Leeke
Pennisetum longstylum , Hochst.
Pennisetum inclusum , Pilg.

Similar species *Stenotaphrum secundatum, Cynodon dactylon*

Summary *Cenchrus clandestinus* (*Pennisetum clandestinum*) is a creeping, mat-forming grass that originates from tropical eastern Africa. It gets its common name, kikuyu grass, from the fact that it is native to the area in which the Kikuyu tribe live. *C. clandestinus* is an aggressive invader of pasture, crops and natural areas. It spreads via an extensive network of rhizomes and stolons, and smothers all other vegetation. It is difficult to control manually, but the use of herbicides can yield good results.

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Species Description
Cenchrus clandestinus (*Pennisetum clandestinum*) can be distinguished by its extensively creeping rhizomes and stolons which form a dense mat, its culms with overlapping leaf sheaths and by its flowers which, if present at all, appear on leafy, vegetative side shoots with only the stamens visible above the leaf sheaths. This species grows prostrate with rooting from the nodes, internodes short, profuse vertical leafy branches arise from the stolons and rhizomes; blades narrow, spreading, blunt to pointed, 1.25 to 5cm long, 3 to 4mm wide, folded at first, later flat, the margins rough. The small white or tawny panicles are not borne at the top of the culms as in other grasses but are enclosed within short leaf sheaths at the top of short side shoots which resemble regular vegetative shoots. The seeds can be found only by dissecting the leaf sheaths. (Holm *et al.* 1977).

Notes
Cenchrus clandestinus is also referred to as *Pennisetum clandestinum*.

Lifecycle Stages
Seedlings can emerge from soil depths of around 6cm (CDFA, 2003).

Uses
Soil stabilisation and erosion control (South Coast Weeds, 2003). A widely-used pasture grass for dairy and beef production (Holm *et al.* 1977). Can be used as turf on golf courses, but is high maintenance and may be considered a weed (StatMasters, 2003). Useful as a lawn grass (FAO, 2003).

Habitat Description
Cenchrus clandestinus (*Pennisetum clandestinum*) is usually found within the latitudes 35°N to 37°S. It grows at up to 3000m in dry and mesic habitats (Holm *et al.* 1977). It will invade wet environments when the forest is disturbed (Smith, 1985 in PIER, 2003). Grows best in moist, humid conditions. Particularly invasive in coastal areas (Environment BoP, 2003). Intolerant of dense shade, so is not a major problem in established forest areas, although can form the dominant understorey in forest margins and plantation crops (Holm *et al.* 1977). Usually needs more than 900mm of annual rainfall (DPI, 1999), but is able to survive long periods of dry weather if well-established. Requires soils with good drainage (FAO, 2003). Can tolerate a light frost, but will not survive sustained cold weather (FAO, 2003). Grows best at temperatures bewteen 21°C and 40°C (CDFA, 2003). Able to withstand frequent and severe defoliation eg. through mowing or overgrazing (Holm *et al.* 1977).

Reproduction
This species is tetraploid and spreads by underground runners (rhizomes) and stolons at the periphery of the main clonal patch (Haubensak & Smyth, 1999). PIER (2003) states that it can spread by wind-dispersed seeds although this is rare. Seeds are able to germinate in cow pats, after having passed through the animal's digestive tract (Wilson & Hennessy, 1977 in FAO, 2003). Regenerates well from rhizome fragments (PIER, 2003). Seed yield can be up to 500kg/ha from established swards (FAO, 2003).

Nutrition
Grows rapidly with high nitrogen levels, but will also respond well to phosphorus and sulfur on soils that are deficient. Often associated with volcanic soils and the red soils found in tropical and sub-tropical climates (Holm *et al.* 1977).

General Impacts
Under certain conditions *C. clandestinus* can accumulate high levels of soluble oxalates and nitrates that are toxic when eaten by livestock (CDFA, 2003). Can invade areas of turf, such as golf courses and lawns (Haubensak & Smyth, 1999). Forms mats, which inhibit regeneration by smothering seedlings. Also produces allelopathic chemicals that kill other plant species in its vicinity (Sanchez & Davis, 1969 in PIER, 2003). Invades agricultural areas and roadsides, and is able to climb over and smother shrubs and young trees (South Coast Weeds, 2003). In Peru, *C. clandestinus* has invaded ancient Inca ruins, causing destruction through its roots growing in crevices and cracking the stones (Environment and Conservation, 1999).

Management Info
Preventative measures: A Risk Assessment of \r\r\n*Cenchrus clandestinus (Pennisetum clandestinum)* for Hawai'I and other Pacific islands was prepared by Dr. Curtis Daehler (UH Botany) with funding from the Kaulunani Urban Forestry Program and US Forest Service. The alien plant screening system is derived from Pheloung *et al*. (1999) with minor modifications for use in Pacific islands (Daehler *et al.* 2004). The result is a score of 18 and a recommendation of: \"Likely to cause significant ecological or economic harm in Hawai'I and on other Pacific Islands as determined by a high WRA score, which is based on published sources describing species biology and behaviour in Hawai'I and/or other parts of the world.\"
A Risk assessment of \r\r\n*Cenchrus clandestinus (Pennisetum clandestinum)* for Australia was prepared by Pacific Island Ecosystems at Risk \r\r\n(PIER) using the Australian risk assessment system (Pheloung, 1995). The result is a score \r\r\nof 12 and a recommendation of: reject the plant for import (Australia) or species likely to \r\r\nbe a pest (Pacific).
Physical: Difficult to dig out as all rhizomes must be removed to prevent resprouting (PIER, 2003).
Chemical: Roundup (without Pulse) 1%, Dowpon 740-SP (16-20 g/l sater), Gallant (0.5%) (Timmins & Mackenzie, 1995 in PIER, 2003)
For large areas, graze or mow kikuyu grass right down before spraying the new growth with Roundup while it is still short. For areas that contain desirable species, spray with Gallant (Environment BoP, 2003). The application of methylarsonic acid (MSMA) and triclopyr may reduce the competitive ability of *C. clandestinus*, allowing desirable species to reestablish (Cudney *et al.* 1993 in Haubensak & Smyth, 1999).
\r\nBiological: A rust fungus (*Phakopsora apoda*) has become established in South Africa, but it appears to only decrease the photosynthetic capacity of the leaves and does not kill the plant (Adendorff & Rijkenberg, 1995 in Haubensak & Smyth, 1999). Two insect pests, *Sphenophorus ventus vestitus* and *Herpetogramma licarsicalis*, damage kikuyu grass in Hawai'I (Cronk & Fuller, 1995 in PIER, 2003), and Mootooka *et. al.* (2002 in PIER, 2003) states that it is also susceptible to the yellow sugarcane aphid (Sipha sp.). Plants are also affected by a fungus disease caused by *Pyricularia grisea*, which kills seedlings (FAO, 2003).

Pathway
Used as a pasture grass (Holm et. al., 1977).Used as a lawn grass (FAO, 2003).

Principal source: Pacific Island Ecosystems at Risk (PIER)

Compiler: IUCN/SSC Invasive Species Specialist Group (ISSG)

Review:

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ALIEN RANGE

[3] AUSTRALIA
[1] COLOMBIA
[2] ECUADOR
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[1] PHILIPPINES
[1] SAINT HELENA
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[1] TAIWAN
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[1] COSTA RICA
[1] FRENCH POLYNESIA
[1] INDIA
[1] KENYA
[3] NEW ZEALAND
[2] PERU
[1] REUNION
[1] SOUTH AFRICA
[1] SWAZILAND
[1] TANZANIA, UNITED REPUBLIC OF
[9] UNITED STATES

BIBLIOGRAPHY

21 references found for **Cenchrus clandestinus**

Managment information
Daehler, C.C; Denslow, J.S; Ansari, S and Huang-Chi, K., 2004. A Risk-Assessment System for Screening Out Invasive Pest Plants from Hawaii and Other Pacific Islands. Conservation Biology Volume 18 Issue 2 Page 360.
Summary: A study on the use of a screening system to assess proposed plant introductions to Hawaii or other Pacific Islands and to identify high-risk species used in horticulture and forestry which would greatly reduce future pest-plant problems and allow entry of most nonpests.
Environment Bay of Plenty. 2003. Weeds in New Zealand.
Haubensak, K., and Smyth, A. 1999. Kikuyu grass fact sheet. Southwest Exotic Plant Information Clearinghouse.
Summary: Some good information on the spread of *P. clandestinum* and experimental control methods.
Available from: http://usgssrv1.usgs.nau.edu/swepic/factsheets/Pennisetum_clandestinum.pdf [Accessed 30 January 2003]
IUCN/SSC Invasive Species Specialist Group (ISSG)., 2010. A Compilation of Information Sources for Conservation Managers.
Summary: This compilation of information sources can be sorted on keywords for example: Baits & Lures, Non Target Species, Eradication, Monitoring, Risk Assessment, Weeds, Herbicides etc. This compilation is at present in Excel format, this will be web-enabled as a searchable database shortly. This version of the database has been developed by the IUCN SSC ISSG as part of an Overseas Territories Environmental Programme funded project XOT603 in partnership with the Cayman Islands Government - Department of Environment. The compilation is a work under progress, the ISSG will manage, maintain and enhance the database with current and newly published information, reports, journal articles etc.
PIER (Pacific Island Ecosystems at Risk), 2002. *Pennisetum clandestinum*
Summary: Ecology, synonyms, common names, distributions (Pacific as well as global), management and impact information.
Available from: http://www.hear.org/pier/species/pennisetum_clandestinum.htm [Accessed 5 February 2003].
South Coast Weeds. 2003. Eurobodalla Shire Council, NSW, Australia.
Summary: Useful information on dispersal methods and habitats that this species invades. Has descriptions of two lookalikes.
Available from: http://www.esc.nsw.gov.au/Weeds/Sheets/grasses/G%20Kikuyu.htm [Accessed 5 August, 2003]
Swaziland s Alien Plants Database., Undated. *Pennisetum clandestinum*
Summary: A database of Swaziland s alien plant species.
Varnham, K. 2006. Non-native species in UK Overseas Territories: a review. JNCC Report 372. Peterborough: United Kingdom.
Summary: This database compiles information on alien species from British Overseas Territories.
Available from: http://www.jncc.gov.uk/page-3660 [Accessed 10 November 2009]
Wotherspoon and Wotherspoon, 2002. The evolution and execution of a plan for invasive weed eradication and control, Rangitoto Island, Hauraki Gulf, New Zealand. In *Turning the tide: the eradication of invasive species*: 381-388. Veitch, C.R. and Clout, M.N.(eds). IUCN SSC Invasive Species Specialist Group. IUCN. Gland. Switzerland and Cambridge. UK.
Summary: Eradication case study in Turning the tide: the eradication of invasive species.

General information
CalEPPC (The California Exotic Pest Plant Council), 1999. Pg. 7.
Summary: Habitats of concern and some distribution information.
Available from: http://ucce.ucdavis.edu/files/filelibrary/5319/4897.pdf [Accessed 30 January 2003].
Chinabiodiversity.com. 2003. Invasive Species in China.
Summary: General information on invasive species and a list of invasive species in China.
Available from: http://www.chinabiodiversity.com/ruqinge.htm [Accessed 12 August, 2003].
CONABIO. 2008. Sistema de informaci□n sobre especies invasoras en M□xico. Especies invasoras - Plantas. Comisi□n Nacional para el Conocimiento y Uso de la Biodiversidad. Fecha de acceso.
Summary: English:
The species list sheet for the Mexican information system on invasive species currently provides information related to Scientific names, family, group and common names, as well as habitat, status of invasion in Mexico, pathways of introduction and links to other specialised websites. Some of the higher risk species already have a direct link to the alert page. It is important to notice that these lists are constantly being updated, please refer to the main page (http://www.conabio.gob.mx/invasoras/index.php/Portada), under the section Novedades for information on updates.
Invasive species - Plants is available from: http://www.conabio.gob.mx/invasoras/index.php/Especies_invasoras_-_Plantas [Accessed 30 July 2008]
Spanish:
La lista de especies del Sistema de informaci□n sobre especies invasoras de m□xico cuenta actualmente con informaci□n aceca de nombre cient□fico, familia, grupo y nombre com□n, as□ como h□bitat, estado de la invasi□n en M□xico, rutas de introducci□n y ligas a otros sitios especializados. Algunas de las especies de mayor riesgo ya tienen una liga directa a la p□gina de alertas. Es importante resaltar que estas listas se encuentran en constante proceso de actualizaci□n, por favor consulte la portada (http://www.conabio.gob.mx/invasoras/index.php/Portada), en la secci□n novedades, para conocer los cambios.
Especies invasoras - Plantas is available from: http://www.conabio.gob.mx/invasoras/index.php/Especies_invasoras_-_Plantas [Accessed 30 July 2008]
Conservatoire Botanique National De Mascarin (BOULLET V. coord.) 2007. - *Pennisetum clandestinum* Index de la flore vasculaire de la R□union (Trach□ophytes) : statuts, menaces et protections. - Version 2007.1
Summary: Base de donn□es sur la flore de la R□union. De nombreuses informations tr□s utiles.
Available from: http://flore.cbnm.org/index2.php?page=taxon&num=4fbe073f17f161810fdf3dab1307b30f [Accessed 9 April 2008]
Food and Agriculture Organisation of the United Nations (FAO). 2003. *Pennisetum clandestinum* Hochst. ex Chiov.
Summary: Very good information regarding the use of *P. clandestinum* as a pasture grass.
Available from: http://www.fao.org/ag/AGP/AGPC/doc/Gbase/DATA/Pf000298.htm {Accessed 30 January 2003]

Holm, L. G., Plucknett, D. L., Pancho, J. V., Herberger, J. P. 1977. The World s Worst Weeds: distribution and biology. University Press of Hawaii, Honolulu. 609 pp.
Summary: Very good plant description, as well as excellent coverage of biology and agricultural importance. Has useful line drawings too.
ITIS (Integrated Taxonomic Information System), 2005. Online Database *Pennisetum clandestinum*
Summary: An online database that provides taxonomic information, common names, synonyms and geographical jurisdiction of a species. In addition links are provided to retrieve biological records and collection information from the Global Biodiversity Information Facility (GBIF) Data Portal and bioscience articles from BioOne journals.
Available from: http://www.cbif.gc.ca/pls/itisca/taxastep?king=every&p_action=containing&taxa=Pennisetum+clandestinum&p_format=&p_ifx=plglt&p_lang= [Accessed March 2005]
Mets&#65533;hallitus, 2001. Machu Picchu Project Website. Mets&#65533;hallitus - Forest and Park Service.
Summary: Details about Finnish participation in management of Machu Pichu sanctuary including mention of Kikuyu grass as a major threat.
Available from: http://www.metsa.fi/eng/tat/machupicchu/webpages/pohja1.htm [Accessed 20 October, 2003]
Owen, S.J. 1996. Ecological weeds on conservation land in New Zealand: a database. 118p. Department of Conservation, Wellington.
Summary: List of ecological weeds on conservation land in New Zealand.
Available from: http://www.hear.org/weedlists/other_areas/nz/nzecoweeds.htm#weedsofconcern [Accessed 30 January 2003]
StatMasters. 2003.
Summary: A golf website with a small amount of information on the use of *P. clandestinum* on golf courses.
Available from: http://www.leaderboard.com/glossary_kikuyu [Accessed 5 August, 2003].
University of Melbourne. 1999. Multilingual multiscript plant name database.
Summary: A useful database with a few common names for *P. clandestinum*.
Available from: http://gmr.landfood.unimelb.edu.au/Plantnames/Sorting/Pennisetum.html [Accessed 12 August, 2003].
USDA (United States Department of Agriculture). 2003. Invaders database. Query: *Pennisetum clandestinum* (kikuyu grass).
Summary: Distribution of Kikuyu grass in the United States.
Available from: http://invader.dbs.umt.edu/scripts/esrimap.dll?name=Noxious_map&Plant_Name=Pennisetum+clandestinum&submit1=Submit&Choice=1&CMD=Map [Accessed 12 August, 2003].