

Miscanthus sinensis 简体中文 正體中文

System: Terrestrial

Kingdom	Phylum	Class	Order	Family
Plantae	Magnoliophyta	Liliopsida	Cyperales	Poaceae
Common name	plume grass (English), maiden grass (English), eulalia (English, Australia), pampas grass (English), Japanese silver grass (English), Chinese silver grass (English), Gemeines Chinaschilf (German, Germany), eulalia grass (English), Chinese fairy grass (English, Germany), Chinesisches Stielbluetengras (German), zebra grass (English), prachtriet (English, Netherlands), miscanthus (English), susuki (Japanese, Japan), Schilfras (German, Germany)			
Synonym	Eulalia japonica , Trin. Miscanthus condensatus , Hack. Miscanthus purpurascens , Anderss. Miscanthus sinensis , var. condensatus (Hack) Makino Miscanthus sinensis , var. formosanus Hack. Miscanthus sinensis , f.glaber Honda Miscanthus sinensis , var.gracillimus Hitchc. Miscanthus sinensis , var.purpurascens (Anderson) Matsum. Miscanthus sinensis , var.zebrinus Beal Miscanthus sinensis , var.zebrinus Beal Saccharum japonicum , Thunb. Xiphagrostis condensatus , (Hack) W. Wight			
Similar species	Saccharum giganteum, Miscanthus sacchariflorus, Andropogon gerardii			
Summary	Originially introduced from Asia in the nursery trade, Miscanthus sinensis is one of the most common ornamental plants. Its height and fast growth enable it to eclipse native vegetation growing close to the soil surface. Although it has not caused as much damage as some invasive grasses, its ability to inhabit disturbed areas and its popularity as an ornamental species make it a serious threat to native flora.			



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Species Description

Miscanthus sinensis is a robust perennial plant that can reach up to 3m (10 feet) in height. It is usually found in large clumps. It consists of long arching branches and leaves that spread or droop. The leaves can be up to a metre (3 feet) long and 25mm (1 inch) wide. Each leaf has a silvery-white midrib with sharp tips that are recurving. (USDA Forest Service, 2006). Mature plants have large, showy, feather-like flowers appearing in Sept.-Oct. It has very short, inconspicuous rhizomes. (Meyer, 2003(a)). Pinkish-silvery 8-10'' plumes remain into the winter. *M. sinensis* turns a rich golden brown in the winter and the colour persists throughout the season. (Gilman, 1999).

\"The fan-shaped terminal panicle is 15cms to 60cms (6 to 24 inches) long and can be silvery to pale pink in colour. The branches of the panicle are erect or ascending. These panicles reach full maturity in the fall. The glabrous spikelets are very small, yellow-brown in colour and encircled at the base with white or purple-coloured hairs. The fertile lemma contains an awn that is spirally twisted at its base.\" (USDA Forest Service, 2006). The seeds are yellowish brown to slightly reddish, sparsely hairy, and have a twisted tip. They occur from September to January and have membranous husks with a hidden grain. (Miller, 2003)

Uses

Miscanthus sinensis is most commonly used as an ornamental plant. (ARS-GRIN, 2005). As an ornamental, it is used as a mass planter, yard border, privacy screen, container or above-ground planter, or as an accent. (Gilman, 1999). It has the potential to be used as biomass for energy production. (ARS-GRIN, 2005). The flowers of *M. sinensis* can be used for dyeing. (MSUE, 1999). *M. sinensis* has been found to slow runoff in areas with concentrated flow erosion from agricultural fields. After 4 years, researchers found that *M. sinensis* had 20cms to 38cms (8-15 inches) of sedimentation deposits above the plants. (Ritchie *et al*, 2006). *M. sinensis* is appreciated for its winter appearance, including: persistent fruits, a showy trunk, and an overall golden brown colour. (Gilman, 1999).

Habitat Description

Miscanthus sinensis can adapt to several different habitats, but prefers rich, moist, well-drained soil to attain maximum growth potential. (The Bugwood Network *et al*, 2003). Plants can tolerate cold climates, but do not grow well in humid, hot southern climates. Horticulturalists claim that the plant can live between USDA hardiness zones 5-9, able to survive temperatures as low as -26°C (-14.8 F). (USDA Forest Service, 2006). Once established, *M. sinensis* can tolerate a variety of poor conditions, including soils of various pH, compacted soils, nutrient poor soils, heat, and drought. (OSU, undated). The plant doesn't survive in soil with a high salt content. (Gilman, 1999) *M. sinensis* is intolerant of shade but can be found in sparsley forested areas and small sunlit openings. Common in many natural and disturbed areas, *M. sinensis* is often found on abandoned home sites, roadsides, forest edges, sides of reservoirs, and in old fields following fires. (The Bugwood Network *et al*, 2003).

Reproduction

Miscanthus sinensis reproduces primarily through rhizomes, however it does make seeds which are mainly dispersed by wind. (USDA Forest Service, 2006). Large buildup of seeds in seed banks can also lead to further establishment of *M. sinensis*. (Meyer, 2003(a)).

General Impacts

D'Antonio and Vitousek (1992) report that fast growing grasses (*M. sinensis*) can reduce the photosynthetic capability of competitors by reducing light availability at the soil surface. In Japan, *M. sinensis* colonized abandoned fields, reducing the regeneration or encroachment of oak seeds by reducing the light availability and daily carbon gain by oak seedlings.

M. sinensis is known to carry several pathogens, including barley yellow dwarf luteovirus-MAV, barley yellow dwarf luteovirus-PAV, and cereal yellow dwarf luteovirus. (Harris *et al*, 2000).



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Management Info

Physical: Digging out the root system, especially the entire rhizome, is a proven method for removing individual plants. (Meyer, 2003(a)). USDA Forest Service (2006) warns that digging out plants will probably result in resprouts and would need further treatment. Cutting and disking methods may also result in increased dispersal due to rhizome pieces that are cast into uninhabited areas. Meyer (2003(a)) also recommends looking for flowers in the fall and removing them early to eliminate self-seeding. Removing the seed head also helps curb seed bank deposits and control plant spread. (Meyer, 2003(a)). Repeated mowing, as short as possible throughout the summer may kill *M. sinensis* in as few as 2 seasons. Areas with a larger seed bank will take longer. *M. sinensis* cannot tolerate repeated mowing during growth season, however, dormant stage cutting of plants may increase growth if cuttings are removed. Grazing has proved to be a successful management tool in Japan, stopping the plant's growth by allowing cattle, horses, and sheep to graze on *M. sinensis* in the beginning of June. Burning increases growth, vigor, and seedset of *M. sinensis*. \"Burning should only be done as a management practice when it can be followed by chemical control\". (Meyer, 2003(a)). Proposed ideas to develope sterile froms of *M. sinensis* could be a great solution to the green industry and for commercial selling of plants. (Li *et al*, 2004).

<u>Chemical/Mechanical</u>: Late winter/early spring: remove previous year's growth by cutting or burning entire plant to ground. This enables higher chemical control efficiency. When growth is 12" tall, spray with glyphosate (Meyer, 2003(a)) or imazapyr. (USDA Forest Service, 2006). Allow the plant to die and cut dead foliage back to ground. If previous year's growth still exists, wait until plant reaches 12-24" prior to spraying. Repeat spraying if necessary in late summer or fall when regrowth is 12" tall. An abundant amount of green foliage is necessary for effective chemical control. (Meyer, 2003(a)). Miller (2003) recommends Arsenal AC as a one percent solution for control of *M. sinensis*, or a combination of glyphosate and arsenal AC. In the fall, a 2% solution of Roundup or 1% solution of fusilade should be effective against *M. sinensis*. In the spring, apply a 4% solution of Roundup or 2% solution of fusilade. (Morisawa, 1999).

M. sinensis can tolerate a high intensity of salt spray at an inland position. In one study, the salt spray combined with sandblasting limited the establishment of many grasses to the dune and beach area. Sandblasting was found to regulate the establishment of *M. sinensis* near beaches. (Yura & Ogura, 2006).

Pathway

M. sinensis was introduced from Asia about a century ago for ornamental plantings. (Swearingenet al, 2002)

Principal source:

Compiler: National Biological Information Infrastructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG)

Review:

Pubblication date: 2011-02-17

ALIEN RANGE

[2] AUSTRALIA [28] UNITED STATES [1] CHILE

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Summary: A fact sheet with a good description of plant characteristics and management information. Available from: http://hort.ufl.edu/shrubs/MISSINA.PDF [Accessed 22 November 2006]



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Li, Y., Cheng, Z., Smith, W., Ellis, D., Chen, Y., Zheng, X., Pei, Y., Luo, K., Zhao, D., Yao, Q., Duan, H., Li, Q. 2004. Invasive Ornamental Plants: Problems, Challenges, and Molecular Tools to Neutralize Their Invasiveness. *Critical Reviews in Plant Sciences*, 23(5):381-389. **Summary:** Gave information about Connecticut, U.S. s labeling of *M. sinensis* as a potentially invasive species.

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Summary: Good management information.

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Summary: Plant description and a small amount of management information.

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Morisawa, T. 1999. Weed Notes: Miscanthus sinensis. Wildland Invasive Species Team. The Nature Conservancy.

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Summary: Includes plant description and management information.

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USDA Forest Service, Forest Health Staff. 2006. Chinese Silvergrass-Miscanthus sinensis Anderss. Weed of the Week.

Summary: Habitat, management, and plant description information.

Available from: http://www.na.fs.fed.us/fhp/invasive_plants/weeds/chinese-silvergrass.pdf [Accessed 28 November 2006]

General information

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 información sobre especies invasoras de móxico cuenta actualmente con información aceca de nombre cientófico, familia, grupo y nombre comón, asó como hóbitat, estado de la invasión en Móxico, rutas de introducción y ligas a otros sitios especializados. Algunas de las especies de mayor riesgo ya tienen una liga directa a la pógina de alertas. Es importante resaltar que estas listas se encuentran en constante proceso de actualización, por favor consulte la portada

(http://www.conabio.gob.mx/invasoras/index.php/Portada), en la seccin novedades, para conocer los cambios.

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Summary: Includes general information about *M. sinensis*, and gives a number of common names.

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ITIS (Integrated Taxonomic Information System), 2007. Online Database Miscanthus sinensis

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.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=41874 [Accessed 3 May 2007]



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http://tenn.bio.utk.edu/vascular/database/vascular-database.asp?CategoryID=Monocots&FamilyID=Poaceae&GenusID=Miscanthus&SpeciesI D=sinensis [Accessed 21 November 2006]

Meyer, M. 2003. Identification and Description of Miscanthus. University of Minnesota.

Summary: Comparison of *M. sinensis* and a similar species, *M. sacchariflorus*.

Available from: http://horticulture.coafes.umn.edu/miscanthus/identification.html [Accessed 27 November 2006]

Michigan State University Extension. 1999. *Miscanthus sinensis*- Japanese Silver Grass. Ornamental Plants plus Version 3.0. **Summary:** Discusses uses and propagation.

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