

Family: *Urticaceae*

Taxon: *Boehmeria nivea*

Synonym: *Urtica nivea* L.
Urtica tenacissima Roxb.

Common Name Chinese silkplant
ramie
qing ye zhu ma

Questionnaire :	current 20090513	Assessor:	Chuck Chimera	Designation: H(HPWRA)
Status:	Assessor Approved	Data Entry Person:	Chuck Chimera	WRA Score 12
101	Is the species highly domesticated?		y=-3, n=0	n
102	Has the species become naturalized where grown?		y=1, n=-1	
103	Does the species have weedy races?		y=1, n=-1	
201	Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"		(0-low; 1-intermediate; 2-high) (See Appendix 2)	High
202	Quality of climate match data		(0-low; 1-intermediate; 2-high) (See Appendix 2)	High
203	Broad climate suitability (environmental versatility)		y=1, n=0	y
204	Native or naturalized in regions with tropical or subtropical climates		y=1, n=0	y
205	Does the species have a history of repeated introductions outside its natural range?		y=-2, ?=-1, n=0	y
301	Naturalized beyond native range		y = 1*multiplier (see Appendix 2), n= question 205	y
302	Garden/amenity/disturbance weed		n=0, y = 1*multiplier (see Appendix 2)	y
303	Agricultural/forestry/horticultural weed		n=0, y = 2*multiplier (see Appendix 2)	n
304	Environmental weed		n=0, y = 2*multiplier (see Appendix 2)	n
305	Congeneric weed		n=0, y = 1*multiplier (see Appendix 2)	y
401	Produces spines, thorns or burrs		y=1, n=0	n
402	Allelopathic		y=1, n=0	n
403	Parasitic		y=1, n=0	n
404	Unpalatable to grazing animals		y=1, n=-1	n
405	Toxic to animals		y=1, n=0	n
406	Host for recognized pests and pathogens		y=1, n=0	n
407	Causes allergies or is otherwise toxic to humans		y=1, n=0	n
408	Creates a fire hazard in natural ecosystems		y=1, n=0	n
409	Is a shade tolerant plant at some stage of its life cycle		y=1, n=0	y
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)		y=1, n=0	y

411	Climbing or smothering growth habit	y=1, n=0	n
412	Forms dense thickets	y=1, n=0	
501	Aquatic	y=5, n=0	n
502	Grass	y=1, n=0	n
503	Nitrogen fixing woody plant	y=1, n=0	n
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	y=1, n=0	n
601	Evidence of substantial reproductive failure in native habitat	y=1, n=0	n
602	Produces viable seed	y=1, n=-1	y
603	Hybridizes naturally	y=1, n=-1	
604	Self-compatible or apomictic	y=1, n=-1	n
605	Requires specialist pollinators	y=-1, n=0	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	y
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	3
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y=1, n=-1	
702	Propagules dispersed intentionally by people	y=1, n=-1	y
703	Propagules likely to disperse as a produce contaminant	y=1, n=-1	n
704	Propagules adapted to wind dispersal	y=1, n=-1	
705	Propagules water dispersed	y=1, n=-1	y
706	Propagules bird dispersed	y=1, n=-1	n
707	Propagules dispersed by other animals (externally)	y=1, n=-1	n
708	Propagules survive passage through the gut	y=1, n=-1	
801	Prolific seed production (>1000/m2)	y=1, n=-1	y
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	y
803	Well controlled by herbicides	y=-1, n=1	
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	y
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	y=-1, n=1	

Designation: H(HPWRA)

WRA Score 12

Supporting Data:

101	1981. Smith, A.C.. Flora Vitiensis Nova - A New Flora of Fiji (Spermatophytes Only). Volume 2.. Pacific Tropical Botanical Garden, Lawai, HI	"Of the two best known varieties of this species, var. nivea is the one usually cultivated in China and other temperate areas, while var. tenacissima (Roxb.) Miq. Is the more frequently grown in warm areas."
101	2010. eFloras. Flora of China - Urticaceae. Missouri Botanical Garden and Harvard University Herbaria, http://hua.huh.harvard.edu/china/mss/volume05/urticaceae.pdf	This species is extremely variable, but can be distinguished easily by its alternate leaves, cymose inflorescences, and stipitate achenes. Two varieties are recognized: var. nivea is known only from cultivation or from naturalized populations; it is a stout plant with dense, long, spreading hairs, free stipules, and broadly ovate to suborbicular leaf blades with the abaxial surface densely, rarely more thinly, white or gray tomentose. Naturalized plants are often smaller with smaller, relatively narrower leaves and shorter inflorescences. Truly wild populations are very variable in stature and indumentum, but can be consistently distinguished by the appressed to assurgent hairs on the stems and leaves and the connate stipules, and are here distinguished as var. tenacissima...Boehmeria nivea is cultivated widely in China, mainly in Jiangxi, but also in S Gansu, S Henan, Hubei, Hunan, S Shaanxi, and Sichuan. The history of the cultivation of this species in China can be traced back at least 3000 years. Ramie, which provides high-quality fiber, is used to make ropes, cloth, and some industrial materials. Ramie was introduced to Europe and North and South America in the early 18th century. Ramie plants are used medicinally to relieve internal fevers and treat infections of the urethra. In addition, young leaves are used as fodder for silkworms. [long history of cultivation, but no evidence that crop has been highly domesticated]
201	2010. Singh, D.P.. Ramie - (Boehmeria nivea). Central Research Institute for Jute & Allied Fibres, Parganas, India http://assamagribusiness.nic.in/RAMIE.pdf	Out of the two species available, B. nivea is mostly cultivated for commercial purpose in the world, and grows best in the temperate and subtropical regions.
201	2010. USDA, ARS, National Genetic Resources Program.. Boehmeria nivea - Germplasm Resources Information Network - (GRIN) [Online Database].. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?	Native: ASIA-TEMPERATE: China: China - Anhui [s.], Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, Shaanxi [s.], Sichuan, Yunnan, Zhejiang Eastern Asia: Japan; Korea; Taiwan. ASIA-TROPICAL: Indian Subcontinent: Bhutan; India; Nepal; Indo-China: Cambodia; Laos; Thailand; Vietnam; Malesia: Indonesia
202	2010. USDA, ARS, National Genetic Resources Program.. Boehmeria nivea - Germplasm Resources Information Network - (GRIN) [Online Database].. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?	Species suited to tropical and subtropical climates [quality of climate match data high]
203	2010. Dave's Garden. PlantFiles: Ramie, Chinese Silk Plant, China Grass. Dave's Garden, http://davesgarden.com/guides/pf/go/58524/	Hardiness: USDA Zone 7b: to -14.9 °C (5 °F) USDA Zone 8a: to -12.2 °C (10 °F) USDA Zone 8b: to -9.4 °C (15 °F) USDA Zone 9a: to -6.6 °C (20 °F) USDA Zone 9b: to -3.8 °C (25 °F)
203	2010. Plants for a Future Database. Boehmeria nivea. Plants for a Future Database, http://www.pfaf.org/database/plants.php?Boehmeria+nivea	Rocky places to 1200 metres[109]. A very common plant in China, growing in thickets, roadsides, edges of forests in mountains at elevations of 200 - 1700 metres[266]. [broad elevational range]
204	2010. USDA, ARS, National Genetic Resources Program.. Boehmeria nivea - Germplasm Resources Information Network - (GRIN) [Online Database].. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?	Native: ASIA-TEMPERATE: China: China - Anhui [s.], Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, Shaanxi [s.], Sichuan, Yunnan, Zhejiang Eastern Asia: Japan; Korea; Taiwan. ASIA-TROPICAL: Indian Subcontinent: Bhutan; India; Nepal; Indo-China: Cambodia; Laos; Thailand; Vietnam; Malesia: Indonesia
205	2010. USDA, ARS, National Genetic Resources Program.. Boehmeria nivea - Germplasm Resources Information Network - (GRIN) [Online Database].. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?	Widely cultivated
301	1981. Smith, A.C.. Flora Vitiensis Nova - A New Flora of Fiji (Spermatophytes Only). Volume 2.. Pacific Tropical Botanical Garden, Lawai, HI	"sparingly cultivated and rarely naturalizing along roadsides near sea level." [Fiji]
301	1993. Tutin, T.G.. Flora Europaea: Psilotaceae to Platanaceae. Cambridge University Press, Cambridge, UK	"cultivated in S Europe for fibre and ornament, and is perhaps locally naturalized"

301	2001. Werren, G.. Environmental Weeds of the Wet Tropics Bioregion: Risk Assessment & Priority Ranking. Rainforest CRC, Cairns, Australia http://www.wettropics.gov.au/res/downloads/Weeds.pdf	Appendix 2 – List of exotic plants that have naturalised within the Wet Tropics Bioregion [includes <i>B. nivea</i>]
301	2009. Bureau of Plant Industry. Publications - <i>Boehmeria nivea</i> . http://www.bpi.da.gov.ph/Publications/mp/pdf/r/ramie.pdf	Ramie is found in Batan and Babuyan Islands where it is naturalized, and is cultivated in Mindanao and in other parts of the Philippines for its fiber. It is a native of southern China and is now cultivated in many tropical and subtropical countries.
301	2010. Calflora. The Calflora Database - <i>Boehmeria nivea</i> . http://www.calflora.org/cgi-bin/species_query.cgi?where-calreclnum=1103	<i>Boehmeria nivea</i> , a dicot, is a shrub (stem succulent) that is not native to California; it was introduced from elsewhere and naturalized in the wild.
302	2004. Miyawaki, S./Washitani, I.. The Contribution of Agricultural Weeds, Revegetation Species and Aquacultural Species. <i>Global Environmental Research</i> . 8 (1): 89-101.	Table 5 Invasive alien plant species identified along 123 rivers (109 river systems) in Japan. [list includes <i>B. nivea</i> , which is supposedly native to Japan, but apparently regarded as a weed in this instance]
302	2006. iVillage Garden Web. Ornamental Grasses Forum - Removing Chinese Grass. http://forums.gardenweb.com/forums/load/grasses/msg020826012245.html?8	Posted by gidget1963 (My Page) on Fri, Feb 24, 06 at 8:26: I have a small lot and several years ago, someone planted Chinese Grass as a natural barrier between my lot and my neighbors. Over the years, this grass has expanded into my lawn and now is threatening to take it over. In the past, I have tried digging it out to keep it in "check" but it is a losing battle. Any suggestions as to how I can kill this thing in order to bring it back to the initial row of grass. Thanks G. RE: Removing Chinese Grass: * Posted by donn_7a, GSB, LI, NY (My Page) on Fri, Feb 24, 06 at 8:51 The "Chinese Grass" I know isn't a grass at all, but a perennial shrub. If you can't dig it up, and don't have livestock to browse it down, RoundUp will kill it. Cut it down to ground level, and paint the exposed stems with undiluted RoundUp, the tough brush and ivy strength. It may take more than one treatment, but it'll eventually kill it. [regarded as a yard/garden nuisance in on-line grass forum using common name Chinese grass]
302	2007. Randall, R.P.. The introduced flora of Australia and its weed status. CRC for Australian Weed Management, Glen Osmond, Australia	<i>Boehmeria nivea</i> (L.) Gaudich. Urticaceae Weed - N - 1A [N: This plant has naturalised somewhere in Australia.; 1: This plant has been recorded as a weed of the natural environment; The capital A after any of the preceding numbers indicates that this species has met this criterion in Australia.]
302	2009. Carter, R./Baker, W.W./Morris, M.W.. Contributions to the Flora of Georgia, U.S.A.. <i>Vulpia</i> . 8: 1-54.	<i>Boehmeria nivea</i> (L.) Gaudich. (Urticaceae) U.S.A. GEORGIA. Lowndes Co.: Valdosta, Winding Way, UTM 17 278797E 3416859N (NAD27), weed in residential yard, locally common, 27 Sep 2003, R. Carter 15099 (VSC).— Known as ramie, <i>B. nivea</i> is grown commercially in Asia as a source of bast fibers (Schery 1972). Wunderlin and Hansen (2008) map <i>B. nivea</i> in southern and central peninsular Florida. Herein, we provide the first documentation of this species in Georgia.
302	2010. Dave's Garden. PlantFiles: Ramie, Chinese Silk Plant, China Grass. Dave's Garden, http://davesgarden.com/guides/pf/go/58524/	May be a noxious weed or invasive
303	2007. Randall, R.. Global Compendium of Weeds - <i>Boehmeria nivea</i> [Online Database]. Hawaii Ecosystems at Risk Project (HEAR), http://www.hear.org/gcw/species/boehmeria_nivea/	Listed as a weed, [but evidence of impacts minimal, and typically regarded as a nuisance plant. See question 3.02]
304	2007. Randall, R.. Global Compendium of Weeds - <i>Boehmeria nivea</i> [Online Database]. Hawaii Ecosystems at Risk Project (HEAR), http://www.hear.org/gcw/species/boehmeria_nivea/	Listed as an environmental weed [but evidence of environmental impacts minimal. See question 3.02]
305	2008. Global Invasive Species Database. <i>Boehmeria penduliflora</i> . National Biological Information Infrastructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG), http://www.issg.org/database/species/ecology.asp?si=1275&fr=1&sts=&lang=EN	<i>Boehmeria penduliflora</i> is a pioneering species of open disturbed environments. It displaces native plants, thereby preventing natural plant succession. In active volcanic areas, it is one of the first plants to make an appearance on recent lava flows. This small tree persists while natural vegetation develops and it replaces native plant species.
401	2010. Plants for a Future Database. <i>Boehmeria nivea</i> . Plants for a Future Database, http://www.pfaf.org/database/plants.php?Boehmeria+nivea	Although members of the nettle family, plants in this genus do not have stinging hairs

402	2008. Zeng, R.S./Mallik, A.U./Luo, S.M.. Allelopathy in Sustainable Agriculture and Forestry. Springer, New York, NY	Chen Fu Nong Shu (1149) described that root exudates and leaf leachates of ramie (<i>Boehmeria nivea</i>) stimulate growth of mulberry. [no evidence of allelopathy]
403	2010. eFloras. Flora of China - Urticaceae. Missouri Botanical Garden and Harvard University Herbaria, http://hua.huh.harvard.edu/china/mss/volume05/Urticaceae.pdf	Not parasitic
404	2001. Trung, L.T./Cayabyab, A.M./Velasco, N.B./Montealto, E./Atega, T.A./Nazareno, L.E.. Feeding value of ramie (<i>Boehmeria nivea</i> (L.) Gaud.) to Holstein x Brahman replacement heifers: a field trial. UPLB College, Manila, Philippines	This field trial, conducted in Davao [Philippines], consist of a palatability trial lasting for 28 days and a feeding trial lasting for 100 days. In the palatability trial, 24 Holstein x Brahman replacement heifers were randomly assigned to 3 diets, ramie tops alone, grass alone, and equal parts of ramie tops and grass in a randomized complete block design. Feeding trial followed using the same animals randomly allotted to four treatments: T1 - 1 kg concentrate/head/day + ramie tops ad lib; T2 - 1kg concentrate/head/day + grasses ad lib; T3 - 15 kg fresh ramie (am) + grass ad lib; T4 - 30 kg ramie (am) + grass ad lib. Palatability of ramie was comparable to grass but preference for the mixture of grass + ramie was less (P0.05) than either grass or ramie alone. Highest total dry matter intake (TDMI) (8.44 kg) was obtained with the heifers fed grass + 30 kg ramie while the lowest (6.32 kg) was with grass + 15 kg ramie. Average daily gain was found highest with T1 (0.31 kg) followed by T3 (0.30 kg), T2 (0.21 kg), and T4 (0.18 kg) with significant difference (P0.05) between T1 and T3 vs T4. Feed efficiency (21.16 to 39.29) did not differ significantly among the rations.
404	2008. de Toledo, G.S.P./da Silva, L.P./de Quadros, A.R.B./Retore, M./Araújo, I.G./Brum, H.S./Ferreira, P./Melchior, R.. Productive Performance of Rabbits Fed with Diets Containing Ramie (<i>Boehmeria nivea</i>) Hay in Substituion to alfalfa (<i>Medicago sativa</i>) Ha	In this context, ramie (<i>Boehmeria nivea</i>), textile plant belonging to Urticaceae family and with extraordinary potential as fiber source, appears like a viable alternative to substitute alfalfa hay in rabbits feeding and other non ruminant species of functional caecum, because it tolerates less favorable conditions of growing, keeping satisfactory palatability and digestibility (Ferreira et al., 1995).
405	2010. WRA Specialist. Personal Communication.	Palatable to animals [see question 4.04] with no evidence of toxicity
406	1981. Sarma, B. K.. Diseases of Ramie (<i>Boehmeria nivea</i>). International Journal of Pest Management. 27 (3): 370 - 374.	Ramie, the vegetable fibre, is obtained from the stem of <i>Boehmeria nivea</i> (L.) Gaud, and is used in many textile products. It is grown in tropical, sub-tropical and temperate regions and the main countries where it is grown are China, Brazil and the Philippines. However, it is only a minor crop in terms of world trade. The diseases of ramie are discussed in relation to their occurrence, symptoms and control measures. The major and most widespread diseases are white fungus caused by <i>Rosellinia necatrix</i> , leaf spot caused by <i>Cercospora</i> spp. and <i>Phyllosticta</i> spp., seedling rot caused by <i>Rhizoctonia solani</i> , cane rot caused by <i>Macrophomina phaseolina</i> and eye rot caused by <i>Myrothecium roridum</i> . A number of diseases of minor importance are also reviewed.
406	2010. Singh, D.P.. Ramie - (<i>Boehmeria nivea</i>). Central Research Institute for Jute & Allied Fibres, Parganas, India http://assamagribusiness.nic.in/RAMIE.pdf	The infestation of insects pests and diseases in this crops has not been so alarming in India at present (Ghosh and Ghosh, 1971). Among the insects, hairy caterpillar (<i>Spilosoma obliqua</i>) has been reported to infect the ramie plants only moderately. Ramie leaf roller (<i>Syleptra derogata</i>) and leaf eating caterpillar (<i>Spodoptera exigua</i>) have also been observed from time to time (Ghosh and Ghosh, 1971, Mustafee, 1977). The incidence of the attack of these insects can easily be controlled by spraying 0.04% of endosulfan or sumithion. No major diseases have been reported in Ramie. Carpospores leaf spot caused by <i>Cercospora boehmereae</i> is sometimes observed in the ramie plantations, but the damage has never been so high (Chaudhury, 1957). this disease can be controlled by dusting or spraying any common copper fungicide. Chlorosis, caused by the deficiency of calcium and organic matter, sometimes assumes serious nature. It can, however, be controlled by adopting proper cultural practices.

407	1993. Miura, N.. Ramie (<i>Boehmeria nivea</i>) pollen-induced bronchial asthma and allergenic cross-reactivity of ramie and <i>Parietaria. Arerugi.</i> 42 (5): 6490655.	Abstract: Ramie (<i>Boehmeria nivea</i>), a plant of the <i>Urticaceae</i> family, is widely distributed in the Nagasaki area, and has been established to be a cause of asthma. The rate of positive reactions to ramie in intradermal tests was 11.7% among adult asthmatic patients in the Nagasaki area. In this study, 10 patients were positive in provocation tests using ramie pollen. Ramie pollen-specific IgE antibodies were measured by ELISA, with the positive provocation test group showing higher O.D. values than the positive intradermal test group ($p < 0.05$). Ramie is of the same family as <i>Parietaria</i> , an important allergen in Europe. The cross-reactivity of ramie and <i>Parietaria</i> was examined by an ELISA inhibition test using <i>P. officinalis</i> and <i>P. judaica</i> (Pj10), but no cross-reactivity was found, suggesting that ramie may be a new independent allergen. As ramie is widely distributed throughout Japan and South-east Asia, further study is needed to determine whether it is an important allergen of the <i>Urticaceae</i> family in this region, as is <i>Parietaria</i> in Europe, and <i>Urtica</i> in America.
407	2010. Plants for a Future Database. <i>Boehmeria nivea</i> . Plants for a Future Database, http://www.pfaf.org/database/plants.php?Boehmeria+nivea	Edible Parts: Leaves; Root. Root - peeled and boiled. A pleasant, sweet taste[179]. We can detect very little flavour, but the root has a very strange mucilaginous texture that does not appeal to most people who have tried it[K]. Once in the mouth, it takes a lot of chewing before it is ready to be swallowed[K]. The leaves are used for making cakes[283]. This report could refer to the plants use as a poultice[K]. [no evidence or mention of toxicity or allergenic properties]
408	2006. iVillage Garden Web. Ornamental Grasses Forum - Removing Chinese Grass. http://forums.gardenweb.com/forums/load/grasses/msg020826012245.html?8	Hi Everyone -- Unfortunately, I don't know what kind of Chinese grass I have but I can try to describe it -- it grows at least 10 feet high and is all green. No flowers. When the frost hits, it turns brown and looks to be a fire hazard. Over the years, I have tried digging it out as it seems to have a tubular root system, however, it takes quite a bit of effort just getting through it. Once dug out, I have tried planting grass over it, but it comes up through the grass. It's stalks are very tough in that they are even hard to cut through -- sometimes a small chain saw works the best to cut these stalks down. Hope this description helps. G. [potential fire hazard in cultivation]
408	2010. Singh, D.P.. Ramie - (<i>Boehmeria nivea</i>). Central Research Institute for Jute & Allied Fibres, Parganas, India http://assamagribusiness.nic.in/RAMIE.pdf	No evidence that plant is a fire hazard in natural ecosystems
409	1992. IIRR. Trees and their management. International Institute of Rural Reconstruction, Silang, Philippines & New York	M = Moderately shade-tolerant
409	2010. Dave's Garden. PlantFiles: Ramie, Chinese Silk Plant, China Grass. Dave's Garden, http://davesgarden.com/guides/pf/go/58524/	Sun Exposure: Sun to Partial Shade
409	2010. Plants for a Future Database. <i>Boehmeria nivea</i> . Plants for a Future Database, http://www.pfaf.org/database/plants.php?Boehmeria+nivea	It can grow in semi-shade (light woodland) or no shade.
410	2010. Dave's Garden. PlantFiles: Ramie, Chinese Silk Plant, China Grass. Dave's Garden, http://davesgarden.com/guides/pf/go/58524/	Soil pH requirements: 4.6 to 5.0 (highly acidic) 5.1 to 5.5 (strongly acidic) 5.6 to 6.0 (acidic) 6.1 to 6.5 (mildly acidic) 6.6 to 7.5 (neutral)
410	2010. Plants for a Future Database. <i>Boehmeria nivea</i> . Plants for a Future Database, http://www.pfaf.org/database/plants.php?Boehmeria+nivea	The plant prefers light (sandy) soils and requires well-drained soil. The plant prefers acid, neutral and basic (alkaline) soils and can grow in very acid soil.
410	2010. Singh, D.P.. Ramie - (<i>Boehmeria nivea</i>). Central Research Institute for Jute & Allied Fibres, Parganas, India http://assamagribusiness.nic.in/RAMIE.pdf	SOIL: The soils best suited for ramie are sandy loam or loamy, very sandy. The clayey or gravel soil is not suitable. The plant is too much sensitive to soil moisture conditions. It grows well in land, which have adequate supply of moisture, well distributed throughout the growing season. Soil must be well-drained i.e. high land and should have no problem of water logging or flooding. Flat and slopy lands are good. Ramie plants give poor growth in the dry sandy soil and the poorly drained soils. The soils deficient in calcium and poor in Base Exchange capacity are also not suitable unless proper liming is done and sufficient organic manure is added. The pH of the soils for ramie should be around 5.5 to 5.6.
411	2010. Singh, D.P.. Ramie - (<i>Boehmeria nivea</i>). Central Research Institute for Jute & Allied Fibres, Parganas, India http://assamagribusiness.nic.in/RAMIE.pdf	Ramie is a plant of perennial nature, which sends up a large number of straight slender stalks. These stalks grow up to the length of about 150 to 200 cm with a diameter of" 12 to 20 mm. depending upon the growing conditions. The shoot consists of several long and short serial stems each called "Cane". Several canes together form a "clump" . [not climbing or smothering]

412	2010. eFloras. Flora of China - Urticaceae. Missouri Botanical Garden and Harvard University Herbaria, http://hua.huh.harvard.edu/china/mss/volume05/Urticaceae.pdf	Forest margins, thickets, moist places along streams, occasionally cultivated [unknown if <i>B. nivea</i> forms monocultures]
501	2010. eFloras. Flora of China - Urticaceae. Missouri Botanical Garden and Harvard University Herbaria, http://hua.huh.harvard.edu/china/mss/volume05/Urticaceae.pdf	Terrestrial shrub
502	2010. eFloras. Flora of China - Urticaceae. Missouri Botanical Garden and Harvard University Herbaria, http://hua.huh.harvard.edu/china/mss/volume05/Urticaceae.pdf	Urticaceae
503	2010. eFloras. Flora of China - Urticaceae. Missouri Botanical Garden and Harvard University Herbaria, http://hua.huh.harvard.edu/china/mss/volume05/Urticaceae.pdf	Urticaceae [not a nitrogen fixing woody plant]
504	2010. Singh, D.P.. Ramie - (<i>Boehmeria nivea</i>). Central Research Institute for Jute & Allied Fibres, Parganas, India http://assamagribusiness.nic.in/RAMIE.pdf	The plants have rhizomatous roots which contain storage roots, small fibrous roots and rhizomes (sometimes also called as reproductive or lateral roots). [although not a true geophyte]
601	2010. eFloras. Flora of China - Urticaceae. Missouri Botanical Garden and Harvard University Herbaria, http://hua.huh.harvard.edu/china/mss/volume05/Urticaceae.pdf	No evidence of substantial reproductive failure in native habitat
602	2010. Plants for a Future Database. <i>Boehmeria nivea</i> . Plants for a Future Database, http://www.pfaf.org/database/plants.php?Boehmeria+nivea	Propagation: Seed - sow spring in a warm greenhouse and only just cover the seed.
603	2010. WRA Specialist. Personal Communication.	Unknown if <i>B. nivea</i> is able to hybridize naturally
604	2003. Liu1, Fei-Hu./Li, Z./Liu, Q./He, H./Liang, X./Lai, Z.. Introduction to the wild resources of the genus <i>Boehmeria</i> Jacq. In China. Genetic Resources and Crop Evolution. 50: 793–797.	The apomixis (obligate self-determined) has been found in the species <i>B. longispica</i> , <i>B. tricuspis</i> , <i>B. gracilis</i> , <i>B. formosana</i> var. <i>formosana</i> etc. The apomixis gene (s) may be transferred into the ramie cultivars under the help of genetic engineering. This would be a breakthrough in the ramie breeding. [apparently <i>B. nivea</i> is not apomictic]
604	2010. Plants for a Future Database. <i>Boehmeria nivea</i> . Plants for a Future Database, http://www.pfaf.org/database/plants.php?Boehmeria+nivea	The flowers are monoecious (individual flowers are either male or female, but both sexes can be found on the same plant)
605	2010. Singh, D.P.. Ramie - (<i>Boehmeria nivea</i>). Central Research Institute for Jute & Allied Fibres, Parganas, India http://assamagribusiness.nic.in/RAMIE.pdf	Male and female flowers are found on the same stalk. The female flowers are in axillary panicles, unisexual with five sepals and no petals. They are found on the upper part of the stalk. They have one celled, one seeded ovary and a slender style, hairy on one side (Fig. 1 c). The male flowers are arranged on the lower part, have five stamens and a rudimentary ovary (Fig.1 b). The male flowers open first and the flowers are wind pollinated.
606	1906. Hart, E.. Ramie and its possibilities. <i>Journal of the Society of Arts</i> . 54: 561-572.	The root of the ramie plant throws out suckers in the same way as do strawberries. On planting these they grow into independent plants in the course of two or three months, when they themselves also throw off a number of suckers, so that a few mother plants furnish, in a comparatively short time, the material for a plantation.
607	2010. WRA Specialist. Personal Communication.	Time to first flower unknown, but vegetative spread more rapid (<4 years)
701	2010. eFloras. Flora of China - Urticaceae. Missouri Botanical Garden and Harvard University Herbaria, http://hua.huh.harvard.edu/china/mss/volume05/Urticaceae.pdf	achenes subovoid, ca. 0.6 mm, base stipitate [small seeds could theoretically be dispersed in mud, on boots, etc. but no direct evidence found]

702	2010. Plants for a Future Database. <i>Boehmeria nivea</i> . Plants for a Future Database, http://www.pfaf.org/database/plants.php?Boehmeria+nivea	Grown for medicinal, food, and fiber uses.
703	2010. eFloras. Flora of China - Urticaceae. Missouri Botanical Garden and Harvard University Herbaria, http://hua.huh.harvard.edu/china/mss/volume05/Urticaceae.pdf	achenes subovoid, ca. 0.6 mm, base stipitate [small seeds could theoretically become a contaminant of produce, but no direct evidence found]
704	2009. Leung, G.P.C./Hau, B.C.H./Corlett, R.T.. Exotic plant invasion in the highly degraded upland landscape of Hong Kong, China. <i>Biological Conservation</i> . 18: 191–202.	No obvious dispersal adaptations [no obvious adaptations for wind dispersal]
704	2010. eFloras. Flora of China - Urticaceae. Missouri Botanical Garden and Harvard University Herbaria, http://hua.huh.harvard.edu/china/mss/volume05/Urticaceae.pdf	achenes subovoid, ca. 0.6 mm, base stipitate [small seeds could theoretically be dispersed by wind, but no obvious adaptations for wind dispersal]
705	2009. Leung, G.P.C./Hau, B.C.H./Corlett, R.T.. Exotic plant invasion in the highly degraded upland landscape of Hong Kong, China. <i>Biological Conservation</i> . 18: 191–202.	No obvious dispersal adaptations [small seeds potentially buoyant, but no direct evidence of water dispersal]
705	2009. Mossman, R.E.. Seed Dispersal and Reproduction Patterns Among Everglades Plants. Florida International University, Miami, Florida	<i>Boehmeria cylindrica</i> seeds, Length: 0.88 mm, dispersed by water [B. <i>nivea</i> with similar seed length, probably also water dispersed]
705	2010. eFloras. Flora of China - Urticaceae. Missouri Botanical Garden and Harvard University Herbaria, http://hua.huh.harvard.edu/china/mss/volume05/Urticaceae.pdf	Forest margins, thickets, moist places along streams, occasionally cultivated [distribution along streams suggests seeds are water dispersed]
706	2009. Leung, G.P.C./Hau, B.C.H./Corlett, R.T.. Exotic plant invasion in the highly degraded upland landscape of Hong Kong, China. <i>Biological Conservation</i> . 18: 191–202.	No obvious dispersal adaptations [not fleshy fruited]
707	2009. Leung, G.P.C./Hau, B.C.H./Corlett, R.T.. Exotic plant invasion in the highly degraded upland landscape of Hong Kong, China. <i>Biological Conservation</i> . 18: 191–202.	No obvious dispersal adaptations [no evidence of external animal dispersal, or means of external attachment, but theoretically possible due to small seed size 0.6 mm length]
708	2010. WRA Specialist. Personal Communication.	Unknown if seeds survive passage through gut [although unlikely that seeds would be ingested]
801	2010. Singh, D.P.. Ramie - (<i>Boehmeria nivea</i>). Central Research Institute for Jute & Allied Fibres, Parganas, India http://assamagribusiness.nic.in/RAMIE.pdf	Seeds are produced in great number. They are very small in size and weigh nearly 7000 seeds per gram.
802	2006. Baskin, C.C./Baskin, J.M.. Symposium: The natural history of soil seed banks of arable land. <i>Weed Science</i> . 54: 549–557.	"Combining data from both studies, the list of weeds for which some seeds were alive after 39 or 40 yr is impressive: velvetleaf (<i>Abutilon theophrasti</i> Medik.), redroot pigweed (<i>Amaranthus retroflexus</i> L.), common ragweed (<i>Ambrosia artemisiifolia</i> L.), chinagrass [<i>Boehmeria nivea</i> (L.)]"
803	2010. WRA Specialist. Personal Communication.	No information found on control of B. <i>nivea</i>
804	2000. Angelini, L.G./Lazzeri, A./Levita, G./Fontanelli, D./Bozzi, C.. Ramie (<i>Boehmeria nivea</i> (L.) Gaud.) and Spanish Broom (<i>Spartium junceum</i> L.) fibres for composite materials: agronomical aspects, morphology and mechanical properties. <i>Industrial Crops and Products</i> .	Results demonstrate that Ramie grown in Central Italy under temperate environment can be harvested three times a year. The third cutting is usually performed during late autumn and therefore is often at risk for the low temperatures and rainy conditions during this period. [will tolerate being repeatedly cut back]
805	2010. WRA Specialist. Personal Communication.	Unknown if any effective natural enemies present locally