Taxon: Phyllostachys edulis (Carrière) J. Houz. **Family:** Poaceae

Common Name(s): moso bamboo
tortoise-shell bamboo

Synonym(s): Bambusa edulis Carrière
Bambusa heterocycla Carrière
P. edulis var. heterocycla J. Houz.
P. heterocycla (Carrière) Mitford
P. heterocycla f. pubescens (J. Houz.)
P. mitis auct.
P. pubescens Mazel ex J. Houz.
P. pubescens var. heterocycla

Assessor: Chuck Chimera **Status:** Assessor Approved **End Date:** 3 Apr 2018

WRA Score: 12.0 **Designation:** H(HPWRA) **Rating:** High Risk

Keywords: Running Bamboo, Environmental Weed, Edible, Dense Stands, Rarely Flowers

Qsn #	Question	Answer Option	Answer
101	Is the species highly domesticated?	y=-3, n=0	n
102	Has the species become naturalized where grown?		
103	Does the species have weedy races?		
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		
303	Agricultural/forestry/horticultural weed		
304	Environmental weed	n=0, y = 2*multiplier (see Appendix 2)	y
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	y
403	Parasitic	y=1, n=0	n
404	Unpalatable to grazing animals	y=1, n=-1	n

Qsn #	Question	Answer Option	Answer
405	Toxic to animals	y=1, n=0	n
406	Host for recognized pests and pathogens	y=1, n=0	y
407	Causes allergies or is otherwise toxic to humans	y=1, n=0	n
408	Creates a fire hazard in natural ecosystems		
409	Is a shade tolerant plant at some stage of its life cycle		
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)		
411	Climbing or smothering growth habit	y=1, n=0	n
412	Forms dense thickets	y=1, n=0	y
501	Aquatic	y=5, n=0	n
502	Grass	y=1, n=0	y
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		
604	Self-compatible or apomictic	y=1, n=-1	y
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)		
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		
705	Propagules water dispersed		
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	n
801	Prolific seed production (>1000/m2)		
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	n
803	Well controlled by herbicides		
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)		

Supporting Data:

Qsn #	Question	Answer
101	**Is the species highly domesticated?**	**n**
	Source(s)	**Notes**
	Chao, C., & Renvoize, S. (1988). Notes on Some Species of Phyllostachys (Gramineae: Bambusoideae). Kew Bulletin, 43(3), 415-422	[No evidence of domestication or breeding that reduces weediness] "P. edulis is the most valuable and important bamboo species in China, constituting up to 50 per cent of the total area of the bamboo forests. In addition to the typical form the five colour variants, listed above, are recognized as forms ..."

102	**Has the species become naturalized where grown?**	
	Source(s)	**Notes**
	WRA Specialist. 2018. Personal Communication	NA

103	**Does the species have weedy races?**	
	Source(s)	**Notes**
	WRA Specialist. 2018. Personal Communication	NA

201	**Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"**	**High**
	Source(s)	**Notes**
	Wu, C. et al. (2018). Moso bamboo (Phyllostachys edulis (Carriere) J. Houzeau) invasion affects soil phosphorus dynamics in adjacent coniferous forests in subtropical China. Annals of Forest Science, 75: 24. https://doi.org/10.1007/s13595-018-0703-0. [Accessed]	"Moso bamboo (Phyllostachys edulis) is widely distributed in subtropical China (Wang et al. 2013)."
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 2 Apr 2018]	"Native Asia-Temperate China: China Fujian, Henan, Hunan, Jiangsu, Jiangxi, Shandong, Shanxi, Zhejiang Cultivated Asia-Temperate Eastern Asia: Japan ; Korea Asia-Tropical Indo-China: Vietnam Malesia: Philippines Europe Europe"

Qsn #	Question	Answer
202	**Quality of climate match data**	**High**
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 2 Apr 2018]	

203	Broad climate suitability (environmental versatility)	y
	Source(s)	**Notes**
	Plants for a Future. 2018. Phyllostachys edulis. https://www.pfaf.org. [Accessed 3 Apr 2018]	"USDA hardiness: 6-9"
	Missouri Botanical Garden. 2018. Phyllostachys edulis. http://www.missouribotanicalgarden.org. [Accessed 3 Apr 2018]	"Zone: 7 to 10" ... "In the U.S., ideal growth occurs in warm climates with hot summers and cool to moderately cold winters. Plants will tolerate some frost, but will be seriously damaged if temperatures dip below 14 degrees F. Best growth typically occurs in USDA Zones 8 -9, but plants may survive in Zones 6b and 7 in a less vigorous much shorter form. In cold winter areas north of USDA Zone 6, plants may be grown in patio containers that are brought indoors for overwintering in a greenhouse, sunroom or sunny window."
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2006. Flora of China. Vol. 22 (Poaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[Elevation range exceeds 1000 m, & cultivated in temperate to tropical climates, demonstrating environmental versatility] "Mountain slopes; below 1600 m or more. Anhui, Fujian Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang [introduced in Korea, Japan, Philippines, Vietnam, and North America]."

204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	**Notes**
	Wu, C. et al. (2018). Moso bamboo (Phyllostachys edulis (Carriere) J. Houzeau) invasion affects soil phosphorus dynamics in adjacent coniferous forests in subtropical China. Annals of Forest Science, 75: 24. https://doi.org/10.1007/s13595-018-0703-0. [Accessed]	"Moso bamboo (Phyllostachys edulis) is widely distributed in subtropical China (Wang et al. 2013). Because of its typical clonal propagation, moso bamboo often spreads into the adjacent communities due to the extension of its underground rhizomes (Wang et al. 2016a). Over the last decades, the invasion of moso bamboo into adjacent forests has frequently been reported, particularly in the nature reserves where the harvesting of moso bamboo is prohibited (Zhang et al. 2010; Bai et al. 2016; Li et al. 2017a). As a result, several recent studies have regarded moso bamboo as a potentially invasive species in the subtropical regions (Mertens et al. 2008; Song et al. 2016; Ying et al. 2016; Li et al., 2017b)."
	Missouri Botanical Garden. 2018. Phyllostachys edulis. http://www.missouribotanicalgarden.org. [Accessed 3 Apr 2018]	"Where winter hardiness is not a problem, moso bamboo can spread aggressively by rhizomes to the point of being somewhat invasive. Rhizomatous spread combined with speedy upright growth (to 3' per day at its peak) enable it to take over and dominate large areas (forms dense monocultural thickets) because it simply outpaces the growth of other plants, shrubs and trees."

Qsn #	Question	Answer
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 3 Apr 2018]	[Cultivated in regions with tropical climates] "Cultivated Asia-Temperate Eastern Asia: Japan ; Korea Asia-Tropical Indo-China: Vietnam Malesia: Philippines Europe Europe"

205	Does the species have a history of repeated introductions outside its natural range?	y
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 2 Apr 2018]	"Cultivated Asia-Temperate Eastern Asia: Japan ; Korea Asia-Tropical Indo-China: Vietnam Malesia: Philippines Europe Europe"
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2006. Flora of China. Vol. 22 (Poaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"introduced in Korea, Japan, Philippines, Vietnam, and North America."

301	Naturalized beyond native range	y
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	[Cited as naturalized in a number of locations] "Phyllostachys edulis - References: United States of America-N- 101, Italy-U-251, Brazil-N-1597, Italy-U- 1887, -I-, Democratic Repubic of Korea- W-1977, India-W-1977, Italy-W-1977, Japan-W 1977, Republic of Korea-W- 1977, Taiwan-W-1977, South Korea-N- 2113, North Korea ." ... "Phyllostachys pubescens ... References: Taiwan-N-777, Australia-N-354, Europe-N-819, Georgia-U-1250, Taiwan-N-1403, Taiwan-W-1748."
	Suzuki, S., & Nakagoshi, N. (2008). Expansion of bamboo forests caused by reduced bamboo-shoot harvest under different natural and artificial conditions. Ecological Research, 23(4), 641-647	[Phyllostachys pubescens Mazel ex J. Houz. Synonym of Phyllostachys edulis (Carrière) J. Houz.] "abandoned P. pubescens plantations are quite invasive in Japan and have resulted in intense expansion of P. pubescens forests."

302	Garden/amenity/disturbance weed	
	Source(s)	**Notes**
	Missouri Botanical Garden. 2018. Phyllostachys edulis. http://www.missouribotanicalgarden.org. [Accessed 3 Apr 2018]	[Potential to become a landscaping maintenance problem] "This is not a plant for small lots. It needs to grown in areas where its often rampant growth can be effectively dealt with (underground barriers often do not effectively shield spread but annual root pruning at the edges of the planting may work)."

Qsn #	Question	Answer
303	**Agricultural/forestry/horticultural weed**	
	Source(s)	**Notes**
	Wu, C. et al. (2018). Moso bamboo (Phyllostachys edulis (Carriere) J. Houzeau) invasion affects soil phosphorus dynamics in adjacent coniferous forests in subtropical China. Annals of Forest Science, 75: 24. https://doi.org/10.1007/s13595-018-0703-0. [Accessed]	[Potentially beneficial to C. japonica stands] "C. japonica is an exotic tree species introduced to Lushan (Liang et al. 2014), where its plantations have been facing many problems, including low species diversity, simplified structure (monoculture with a poorly developed shrub and herb layer), and poor resistance to natural disturbances (Wan et al. 2008). For example, many C. japonica stands had been severely damaged during the 2008 snow storm. Therefore, the invasion of moso bamboo into C. japonica stands may have some significant ecological benefits, such as increasing species diversity, enhancing stand structure (Table 1 and Appendix Table 4), and improving soil properties (unpublished data). Even if the invasion resulted in the eventual establishment of pure moso bamboo stands, it would still support a better species biodiversity than C. japonica pure stands (Appendix Table 4). Therefore, the invasion of moso bamboo into exotic C. japonica plantation may be encouraged at Lushan, especially considering that Lushan is a mountain with both biological and cultural significance."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

304	**Environmental weed**	**y**
	Source(s)	**Notes**
	National Institute for Environmental Studies. 2018. Invasive Species of Japan - Phyllostachys edulis. http://www.nies.go.jp. [Accessed 2 Apr 2018]	"Impact: Competition with native and crop plants. Because sexual reproduction of this species is very rare, there may be small risk of hybridization with native congeners. Native organism(s) affected: Native and crop plants. "
	Xu, Q. F., Jiang, P. K., Wu, J. S., Zhou, G. M., Shen, R. F., & Fuhrmann, J. J. (2015). Bamboo invasion of native broadleaf forest modified soil microbial communities and diversity. Biological Invasions, 17(1), 433-444	"Moso bamboo (Phyllostachys edulis) invasion of native forests in Tianmushan National Nature Reserve located in southeastern China has resulted in greatly decreased biodiversity of plants and birds." ... "Moso bamboo (Phyllostachys edulis) invasion of native forests is a common and worrisome situation in southeastern China, which constitutes the major geographic range of the species (Bai et al. 2013; Peng et al. 2013; Tang et al. 2013)." ... "It has been observed that Moso bamboo invasion of adjacent forest communities is a common occurrence, although there are no data present in the literature to estimate the extent."

Qsn #	Question	Answer
	Li, Z. et al. (2017). Effects of moso bamboo (Phyllostachys edulis) invasions on soil nitrogen cycles depend on invasion stage and warming. Environmental Science and Pollution Research, 24(32), 24989-24999	"Moso bamboo invasions are threatening the biodiversity of native forests (Bai et al. 2013), potentially altering C and N balance in invaded ecosystems via differences in morphological and physiological traits between native trees and moso bamboo (Song et al. 2016; Yan et al. 2008). During the invasion stage when moso bamboo plants are still expanding into native forests, environmental impacts in these mixed forests may differ from those in moso bamboo monocultures (Cremer et al. 2016; Yan et al. 2009). Furthermore, these forests have experienced and continue to experience increased temperatures and N deposition which may influence moso bamboo invasions and their impacts. However, the impacts of moso bamboo invasions on N transformations and soil GHG emissions are not clear and the roles of warming and N deposition on these impacts are unknown, limiting our understanding of the ecological effects of bamboo invasions."
	Lieurance, D., Cooper, A., Young, A. L., Gordon, D. R., & Flory, S. L. (2018). Running bamboo species pose a greater invasion risk than clumping bamboo species in the continental United States. Journal for Nature Conservation 43: 39–45	"Phyllostachys edulis is native to China but was introduced to Japan in 1736 for building material and edible bamboo shoots. It then spread vegetatively from cultivation into native forests via its extensive rhizome system (Isaga & Torii, 1998; Isaga et al., 2016) resulting in less native plant species diversity, alteration in soil microbial communities, and changes in forest stand structure (Isaga & Torii, 1998; Fukishima et al., 2015; Xu et al., 2015; Isaga et al., 2016)." ... "Additionally, Phyllostachys edulis invasions in forest ecosystems of Japan are often attributed to the abandonment of production areas with subsequent spread via running rhizomes to adjacent natural areas (Okutomi, Shinoda, & Hiroko, 1996; Isaga et al., 2016). As a result, the installation of below-ground physical barriers, mechanical control (e.g., mowing and clipping unwanted culms), and physical removal of rhizomes (American Bamboo Society, 2016; Missouri Botanical Society, 2016) should be considered in BMP development."

Qsn #	Question	Answer
305	**Congeneric weed**	**y**
	Source(s)	**Notes**
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"P. aureosulcata is a highly invasive running bamboo native to China, mainly in Zhejiang, Jiangsu and Anhui provinces. It has been introduced outside of its native range for ornamental purposes and is now particularly problematic and invasive in Australia and North America. This woody, perennial grass grows rapidly from a dense underground rhizome system. Invasive bamboos are among the fastest growing plants on Earth the spread is rapid in all directions and increases each successive year. As a result, it is possible for P. aureosulcata to form dense monocultures, suffocating native plants, decreasing biodiversity and altering the entire ecosystem of an area. As well as having detrimental effects on the environment this species may also damage property and pose as a potential health threat from harbouring a fungus responsible for causing Histoplasmosis disease. The closely related species, Phyllostachys aurea is also invasive."
	Motooka, P., Castro, L., Nelson, D., Nagai, G. & Ching,L. 2003. Weeds of Hawaii's Pastures and Natural Areas: An Identification and Management Guide. CTAHR, UH Manoa, Honolulu, HI	"Phyllostachys nigra ... Occurs in extensive monotypic infestations in moist to wet areas on Oahu, Maui, and Molokai." ... "Environmental impact: Displaces native vegetation; virtually no other plants grow within black bamboo groves."

401	Produces spines, thorns or burrs	n
	Source(s)	**Notes**
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2006. Flora of China. Vol. 22 (Poaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[No evidence] "Culms to 20 m or more, to 20 cm in diam.; internodes to 40 cm or more, basal ones gradually shortened and thickened toward base, initially white powdery, densely puberulent; wall ca. 1 cm thick, nodal ridge inconspicuous at nodes without branches, more prominent at branching nodes and in slender culms; sheath scar setose on margin. Culm sheaths yellowbrown or purple-brown with dark brown spots, densely brown hairy; auricles relatively small; oral setae strongly developed; ligule arcuate to acutely so, long ciliate; blade initially erect, becoming reflexed, green, narrowly triangular or lanceolate to linear. Leaves 2–4 per ultimate branch; auricles inconspicuous; oral setae present; ligule prominent; blade small, thin, 4–11 × 0.5–1.2 cm, abaxially proximally pubescent along midrib, secondary veins 3–6-paired, tertiary veins ca. 9."

402	Allelopathic	y
	Source(s)	**Notes**

Qsn #	Question	Answer
	Bai, S. B., Zhou, G. M., Wang, Y. X., Liang, Q. Q., Chen, J., Cheng, Y. Y., & Shen, R. (2013). Allelopathic potential of Phyllostachys edulis on two dominant tree species of evergreen broad-leaved forest in its invasive process. Huanjing kexue, 34(10), 4066-4072	[Extracts inhibit germination speed, reduce root activity & reduce germination percentage of test species] "In order to explore the influence of Phyllostachys edulis invasion on the surrounding forest environment, the effects of aqueous extracts from P. edulis on two dominant species (Castanopsis sclerophylla and Cyclobalanopsis glauca)in southern China were assessed by germination bioassays. The results showed that seed germination effects depended on the concentration of aqueous extracts and the extract sources. The highest extract concentration showed significant inhibitory effects on seed germination percentage, which was 82. 3% -102. 2% of control for C. sclerophylla and 80% -90. 9% of control for C. glauca, while in the treatment with lowest extract concentration the values were 101.7% - 107.6% of control for C. sclerophylla and 94.9% - 109. 1% of control for C. glauca, respectively. The extracts had inhibitory effects on the germination speed of both species ($P < 0.05$) , except that no effects on C. sclerophylla were observed in the low concentration treatment. Extracts at the highest concentration reduced the root activity of C. sclerophylla by 41. 1% -62. 4% ($P <0.05$). There were obvious different effects among the treatments with different extract sources. Seed germination percentage was the lowest in root extract treatments. There was no obvious difference for shoot height of C. sclerophylla in different treatments($P >0.05$) , while there was significant difference for C. glauca, its shoot height was higher in the leaf, root, and litter extracts treatments than in the soil extracts treatments. P. edulis possesses allelopathic potential that could possibly facilitate its invasion and monoculture formation, and does harm to the surrounding forest environment. "
	Chou, C. H., & Yang, C. M. (1982). Allelopathic research of subtropical vegetation in Taiwan II. Comparative exclusion of understory by Phyllostachys edulis and Cryptomeria japonica. Journal of Chemical Ecology, 8(12), 1489-1507	[Field observations confirmed in lab. Leachate of P. edulis leaves suppressed growth of other plants, six identified phytotoxins in leaves] "On many hillsides of Taiwan there is a unique pattern of weed exclusion by Phyllostachys edulis (bamboo) and Cryptomeria japonica (conifer) in which the density, diversity, and dominance of understory species are very different. Although the physical conditions of light, soil moisture, and soil nutrients strongly favor the growth of understory in a bamboo community, the biomass of its undergrowth is significantly low, indicating that physical competition among the understory species in the bamboo and conifer communities does not cause the observed differences. However, the biochemical inhibition revealed by these two plants appeared to be an important factor. The growth of Pellionia scabra seedlings, transplanted from the study site into greenhouse pots, was evidently suppressed by the aqueous leachate of bamboo leaves but was stimulated by that of conifer leaves. The radicle growth of lettuce, rye grass, and rice plants was also clearly inhibited by the leachate and aqueous extracts of bamboo leaves but not by those of conifer leaves. Six phytotoxins,o-hydroxyphenylacetic,p-hydroxybenzoic,p-coumaric, vanillic, ferulic, and syringic acids were found in the aqueous leachate and extracts of leaves and alcoholic soil extracts of P. edulis, while the first three compounds were absent in the extracts of C. japonica. The phytotoxicities of extracts were correlated with the phytotoxins present in both leaves and soils. The understory species might be variously tolerant to the allelopathic compounds produced by the two plants, resulting in a differential selection of species underneath. Therefore, comparative allelopathic effects of Phyllostachys edulis and Cryptomeria japonica may play significant roles in regulating the populations of the understories."

Qsn #	Question	Answer
403	**Parasitic**	**n**
	Source(s)	**Notes**
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2006. Flora of China. Vol. 22 (Poaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Arborescent or shrubby bamboos. Rhizomes leptomorph, with running underground stems." [Poaceae. No evidence]
404	**Unpalatable to grazing animals**	**n**
	Source(s)	**Notes**
	Motooka, P., Castro, L., Nelson, D., Nagai, G. & Ching,L. 2003. Weeds of Hawaii's Pastures and Natural Areas: An Identification and Management Guide. CTAHR, UH Manoa, Honolulu, HI	[Congener is palatable to cattle] "Phyllostachys nigra ... Does not invade grazed land, because cattle will graze the invading bamboo shoots, but animals cannot clear established stands."
	Park, K. W. (1985). A study on the bamboo shoot's damage of Phyllostachys edulis Riv. by field mice-especially on the inhabitation environment and damaged types of field-mice. Journal of Korean Forestry Society 70: 55-62	[Damaged by three mammals] "This study was made on bamboo shoot's damage of Phyllostachys edulis by field mice in Chinju, Kyongsangnam-do, and grasped the inhabitation environment by the analysis of around and lower vegetation in damaged bamboo stands, and made clear the species of field mice in damage prevention and extermination. The damaged degree was influenced by inhabitation environment and stand density around damaged bamboo stands. The damaged degree was shown 4,359.1g with 7.1 shoots per ha and the rate 0.23%"
	Liese, W. (1987). Research on bamboo. Wood Science and Technology, 21(3), 189-209	May be used as a cattle feed source
405	**Toxic to animals**	**n**
	Source(s)	**Notes**
	Plants for a Future. 2018. Phyllostachys edulis. https://www.pfaf.org. [Accessed 3 Apr 2018]	"Known Hazards - None known"
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	No evidence in genus
406	**Host for recognized pests and pathogens**	**y**
	Source(s)	**Notes**
	Missouri Botanical Garden. 2018. Phyllostachys edulis. http://www.missouribotanicalgarden.org. [Accessed 3 Apr 2018]	"Rust and stem smut are common. Slugs and snails attack new shoots."

Qsn #	Question	Answer
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	[One of several hosts] "Dinoderus minutus (bamboo borer) ... D. minutus is an important borer that attacks felled culms and bamboo timber products. It also damages rice, cassava and sugarcane, and occasionally dried stored products. In China and most south Asian countries, the main host plants are Bambusa bambos, Bambusa breviflora, Bambusa polymorpha, Bambusa textilis, Bambusa vulgaris, Bambusa pervariabilis, Dendrocalamus giganteus, Dendrocalamus hamiltonii, Dendrocalamus strictus, Phyllostachys pubescens [Phyllostachys edulis], Phyllostachys heterocycla, and Phyllostachys heteroclada (Wu et al., 1986; Mathew and Nair, 1990; Koehler, 2003). Moreover, D. minutus is also detected in the wood of some Pinus spp. (Gong Xiuze, 2003.). It can also feed on dry cassava (Mathew and Nair, 1984)."

407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	**Notes**
	Plants for a Future. 2018. Phyllostachys edulis. https://www.pfaf.org. [Accessed 3 Apr 2018]	"Known Hazards: None known"
	Quattrocchi, U. 2006. CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	[No evidence] "edible, young shoots acrid when raw, ornamental, wood relatively soft, leaves used in the treatment of arthritic inflammations and sheaths of the stem in the treatment of nausea and sour stomach"

408	Creates a fire hazard in natural ecosystems	
	Source(s)	**Notes**
	WRA Specialist. 2018. Personal Communication	No evidence. Fire regime from native range unknown
	Sharma, Y. M. L. (1980). Bamboos in the Asia-Pacific Region. Pp 99-120 in G. Lessard and A. Chouinard (eds.). Bamboo Research in Asia. International Development Research Centre, Ottawa, Canada	[General risk] "Fires are a menace, and the dry, dead bamboo clumps, which have produced seeds, are a serious fire hazard."

409	Is a shade tolerant plant at some stage of its life cycle	
	Source(s)	**Notes**
	Missouri Botanical Garden. 2018. Phyllostachys edulis. http://www.missouribotanicalgarden.org. [Accessed 3 Apr 2018]	"Grow in fertile, humus-rich, moist but well-drained soils in full sun to part shade. Prefers a moist sheltered site in dappled shade."
	Quattrocchi, U. 2006. CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	"hardy, aggressive spreading, can grow in semi-shade but prefers sunshine"

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	
	Source(s)	**Notes**

Qsn #	Question	Answer
	Takano, K. T. et al. (2017). Detecting latitudinal and altitudinal expansion of invasive bamboo Phyllostachys edulis and Phyllostachys bambusoides (Poaceae) in Japan to project potential habitats under 1.5 C–4.0 C global warming. Ecology and Evolution, 7(23), 9848-9859	"According to previous studies in China, the primary environmental factors that control moso bamboo distribution and growth are temperature (Xu & Qin, 2003), precipitation (annual range: 800–2,000 mm: Xu & Qin, 2003; Zhou, 1991; but see Gu et al., 2010), and soil conditions (sandy soil with pH 4.5–7.0: Fu, 2001; Jin et al., 2013)."
	Missouri Botanical Garden. 2018. Phyllostachys edulis. http://www.missouribotanicalgarden.org. [Accessed 3 Apr 2018]	"Grow in fertile, humus-rich, moist but well-drained soils in full sun to part shade."
	Plants for a Future. 2018. Phyllostachys edulis. https://www.pfaf.org. [Accessed 3 Apr 2018]	"Requires a rich damp soil in a sheltered position [200] with plenty of moisture in the growing season [162]."

411	Climbing or smothering growth habit	n
	Source(s)	**Notes**
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2006. Flora of China. Vol. 22 (Poaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Arborescent or shrubby bamboos. Rhizomes leptomorph, with running underground stems." [Generic description]

412	Forms dense thickets	y
	Source(s)	**Notes**
	Canavan, S., & Richardson, D. M. (2015). Understanding the risks of an emerging global market for cultivating bamboo: considerations for a more responsible dissemination of alien bamboos. 10th World Bamboo Congress Proceedings, 17-22 September 2015, Korea. The World Bamboo Organization, Plymouth, MA	"In southern China, the native species Phyllostachys edulis (Moso bamboo) is widely cultivated and has spread rapidly in certain areas, outcompeting with tree species. The advancement of bamboo mono forests into mixed forests has caused substantial impacts on plant diversity and community structure (Xu et al. 2015)."
	Li, Z. et al. (2017). Effects of moso bamboo (Phyllostachys edulis) invasions on soil nitrogen cycles depend on invasion stage and warming. Environmental Science and Pollution Research, 24(32), 24989-24999	"Invasions of moso bamboo result in the formation of dense monocultures with displacement of other plant species, greatly decreasing biodiversity in the invaded forests (Bai et al. 2013)."
	Missouri Botanical Garden. 2018. Phyllostachys edulis. http://www.missouribotanicalgarden.org. [Accessed 3 Apr 2018]	"Where winter hardiness is not a problem, moso bamboo can spread aggressively by rhizomes to the point of being somewhat invasive. Rhizomatous spread combined with speedy upright growth (to 3' per day at its peak) enable it to take over and dominate large areas (forms dense monocultural thickets) because it simply outpaces the growth of other plants, shrubs and trees."

501	Aquatic	n
	Source(s)	**Notes**
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2006. Flora of China. Vol. 22 (Poaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[Terrestrial] "Arborescent or shrubby bamboos." ... "Mountain slopes; below 1600 m or more."

502	Grass	y
	Source(s)	**Notes**

Qsn #	Question	Answer
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 2 Apr 2018]	Family: Poaceae (alt.Gramineae) Subfamily: Bambusoideae Tribe: Arundinarieae Subtribe: Arundinariinae

503	Nitrogen fixing woody plant	n
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 2 Apr 2018]	Family: Poaceae (alt.Gramineae) Subfamily: Bambusoideae Tribe: Arundinarieae Subtribe: Arundinariinae

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	**Notes**
	Quattrocchi, U. 2006. CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	"Perennial, evergreen and very-fast-growing, running, shallow-rooted"

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	**Notes**
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2006. Flora of China. Vol. 22 (Poaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[No evidence. Widespread in native & introduced range] "Mountain slopes; below 1600 m or more. Anhui, Fujian Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang [introduced in Korea, Japan, Philippines, Vietnam, and North America." ... "This is the most economically important bamboo in China, widely cultivated for its versatile culms and delicious shoots."

Qsn #	Question	Answer
602	**Produces viable seed**	**y**
	Source(s)	**Notes**
	Missouri Botanical Garden. 2018. Phyllostachys edulis. http://www.missouribotanicalgarden.org. [Accessed 3 Apr 2018]	"Propagate by seed or division."
	Plants for a Future. 2018. Phyllostachys edulis. https://www.pfaf.org. [Accessed 3 Apr 2018]	"Seed - surface sow as soon as it is ripe in a greenhouse at about 20°c. Do not allow the compost to dry out. Germination usually takes place fairly quickly so long as the seed is of good quality, though it can take 3 - 6 months. Grow on in a lightly shaded place in the greenhouse until large enough to plant out. Seed is rarely available."
	Watanabe, M., Ueda, K., Manabe, I., & Akai, T. (1982). Flowering, seeding, germination, and flowering periodicity of Phyllostachys pubescens. Journal of the Japanese Forestry Society, 64(3), 107-111	"This flowering record of P. pubescens, cultivated experimentally from seed, is surely the first to be recognized in Japan, even though there are a few records on other species" ... "On February 2, 1980, a germination test was performed on seed taken from six bamboo culms chosen by age." ... "The germination rates were in the range of 40 to 80 percent for the seed collected in Kyoto, and there was no relationship between the rate and the age of the parent bamboo culms (Table 3). Seed collected from the two culms in Yokohama was within this range, 43 and 57 percent."

603	**Hybridizes naturally**	
	Source(s)	**Notes**
	Watanabe, M., Ueda, K., Manabe, I., & Akai, T. (1982). Flowering, seeding, germination, and flowering periodicity of Phyllostachys pubescens. Journal of the Japanese Forestry Society, 64(3), 107-111	[Unknown. Rarely flowers] "As mentioned above, it was successfully and scientifically recognized at this time that the clone seeded in 1912 flowered in 1979, and the interval was 67 years. Thus, the flowering periodicity of P. pubescens might be considered to be about 67 years."

604	**Self-compatible or apomictic**	**y**
	Source(s)	**Notes**
	Isagi, Y., Oda, T., Fukushima, K., Lian, C., Yokogawa, M., & Kaneko, S. (2016). Predominance of a single clone of the most widely distributed bamboo species Phyllostachys edulis in East Asia. Journal of Plant Research, 129(1), 21-27	[Capable of selfing, but primarily spreads vegetatively] "Sexual reproduction was conducted during infrequent flowering, but the single clonality caused the breeding system to perform selfing. The selfing bore seedlings with several different genotypes, but in the wild, we did not find any adult plants with genotypes generated by selfing of the dominant clone. Thus, sexual reproduction does not contribute to the remarkable expansive range of this species. Inbreeding depression might be one of the reasons for the low viability of P. edulis seedlings in the wild."

Qsn #	Question	Answer
605	**Requires specialist pollinators**	**n**
	Source(s)	**Notes**
	Plants for a Future. 2018. Phyllostachys edulis. https://www.pfaf.org. [Accessed 3 Apr 2018]	"The flowers are hermaphrodite (have both male and female organs) and are pollinated by Wind."
	Zomlefer, W.B. 1994. Guide to Flowering Plant Families. The University of North Carolina Press, Chapel Hill & London	"The reduced flowers are anemophilous" [Family description]

606	**Reproduction by vegetative fragmentation**	**y**
	Source(s)	**Notes**
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2006. Flora of China. Vol. 22 (Poaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Arborescent or shrubby bamboos. Rhizomes leptomorph, with running underground stems."
	Quattrocchi, U. 2006. CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	"perennial, evergreen and very-fast-growing, running, shallow-rooted"

607	**Minimum generative time (years)**	**>3**
	Source(s)	**Notes**
	Takano, K. T. et al. (2017). Detecting latitudinal and altitudinal expansion of invasive bamboo Phyllostachys edulis and Phyllostachys bambusoides (Poaceae) in Japan to project potential habitats under 1.5 C–4.0 C global warming. Ecology and Evolution, 7(23), 9848-9859	"A flowering interval of moso is 67 years (Watanabe, Ueda, Manabe, & Akai, 1982)."
	Watanabe, M., Ueda, K., Manabe, I., & Akai, T. (1982). Flowering, seeding, germination, and flowering periodicity of Phyllostachys pubescens. Journal of the Japanese Forestry Society, 64(3), 107-111	"As mentioned above, it was successfully and scientifically recognized at this time that the clone seeded in 1912 flowered in 1979, and the interval was 67 years. Thus, the flowering periodicity of P. pubescens might be considered to be about 67 years. However, there is an unforeseen report of two- to three-year-old seedlings of Dendrocalamus strictus (ROXB.) NEES that flowered(1). That is to say, it may be hard to decide that the flowering period of P. pubescens is 67 years by this record alone. The progress of the following generation of progenitive seedlings cultivated at Kyoto and Yokohama should be followed. Through a long term of observations on this progeny, the real flowering period will be made clear."
	Missouri Botanical Garden. 2018. Phyllostachys edulis. http://www.missouribotanicalgarden.org. [Accessed 3 Apr 2018]	"Bloom Time: Rarely flowers"

701	**Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)**	
	Source(s)	**Notes**

Qsn #	Question	Answer
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	[Congeneric species spread accidentally along roadsides & in garden waste] "The spread of P. aurea along roadsides by plows moving rhizomes has been documented. Observation has shown loose rhizome fragments and rhizomes growing up along roadsides where plows could potentially transport the rhizome spreading the bamboo (USDA-APHIS, 2012). Improper disposal of the rhizomes is common, causing new bamboo infestations to start. Spread can occur from improper dumping of yard waste into natural areas (USDA-APHIS, 2012)."
	WRA Specialist. 2018. Personal Communication	Unknown. Discarding garden waste or rhizome fragments could result in inadvertent spread, as documented in congeneric species

702	Propagules dispersed intentionally by people	y
	Source(s)	**Notes**
	Lieurance, D., Cooper, A., Young, A. L., Gordon, D. R., & Flory, S. L. (2018). Running bamboo species pose a greater invasion risk than clumping bamboo species in the continental United States. Journal for Nature Conservation 43: 39–45	"...running species such as Phyllostachys edulis and Phyllostachys nigra are currently being proposed for commercial applications in Georgia, Alabama, and Florida, and substantial acreages of Phyllostachys edulis are currently in production in North Carolina and Mississippi (FDACS Division of Plant Industry, 2016, pers. comm.)."
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2006. Flora of China. Vol. 22 (Poaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"introduced in Korea, Japan, Philippines, Vietnam, and North America"

703	Propagules likely to disperse as a produce contaminant	n
	Source(s)	**Notes**
	WRA Specialist. 2018. Personal Communication	No evidence. Long time to reproductive maturity (ca. 67 years) practically eliminates risk of seed dispersal & contamination of adjacent crops

704	Propagules adapted to wind dispersal	
	Source(s)	**Notes**
	Watanabe, M., Ueda, K., Manabe, I., & Akai, T. (1982). Flowering, seeding, germination, and flowering periodicity of Phyllostachys pubescens. Journal of the Japanese Forestry Society, 64(3), 107-111	[Unknown. Seeds relatively small, but do not possess any obvious adaptations for wind dispersal] "The seeds, covered with chaff, were 21 to 27 mm in length, 1. 2 to 1. 8 mm in diameter, and 11. 5 to 27 mg in air-dry weight. The seed proper was seven to ten millimeters in length, 1 to 1. 6 mm in diameter, 7. 5 to 16. 5 mg in air-dry weight, and with 11 to 13. 5 mm style lengths."

Qsn #	Question	Answer
705	**Propagules water dispersed**	
	Source(s)	**Notes**
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	[Unknown for P. edulis, but possibly. Rhizome fragments of congener may be moved by water] "Phyllostachys aurea ... Cases of spread by water have been documented in Connecticut (Bugwood Presentations, 2014) and there is the potential for rhizome fragments to be washed downstream along riparian corridors (USDA-APHIS, 2012)."

706	**Propagules bird dispersed**	**n**
	Source(s)	**Notes**
	Watanabe, M., Ueda, K., Manabe, I., & Akai, T. (1982). Flowering, seeding, germination, and flowering periodicity of Phyllostachys pubescens. Journal of the Japanese Forestry Society, 64(3), 107-111	[No evidence & unlikely. Only flowers after decades of growth, & seeds possess no adaptations for bird dispersal] "the flowering periodicity of P. pubescens might be considered to be about 67 years." ... "The seeds, covered with chaff, were 21 to 27 mm in length, 1. 2 to 1. 8 mm in diameter, and 11. 5 to 27 mg in air-dry weight. The seed proper was seven to ten millimeters in length, 1 to 1. 6 mm in diameter, 7. 5 to 16. 5 mg in air-dry weight, and with 11 to 13. 5 mm style lengths."

707	**Propagules dispersed by other animals (externally)**	**n**
	Source(s)	**Notes**
	Watanabe, M., Ueda, K., Manabe, I., & Akai, T. (1982). Flowering, seeding, germination, and flowering periodicity of Phyllostachys pubescens. Journal of the Japanese Forestry Society, 64(3), 107-111	[No evidence & unlikely. Only flowers after decades of growth, & seeds lack means of external attachment] "the flowering periodicity of P. pubescens might be considered to be about 67 years." ... "The seeds, covered with chaff, were 21 to 27 mm in length, 1. 2 to 1. 8 mm in diameter, and 11. 5 to 27 mg in air-dry weight. The seed proper was seven to ten millimeters in length, 1 to 1. 6 mm in diameter, 7. 5 to 16. 5 mg in air-dry weight, and with 11 to 13. 5 mm style lengths."

708	**Propagules survive passage through the gut**	**n**
	Source(s)	**Notes**
	Gordon, D. R., Mitterdorfer, B., Pheloung, P. C., Ansari, S., Buddenhagen, C., Chimera, C., ... & Williams, P. A. 2010). Guidance for addressing the Australian Weed Risk Assessment questions. Plant Protection Quarterly, 25(2): 56-74	"Answer 'no' where the taxon is unlikely to be eaten by animals or if seeds are not viable following passage through the gut."
	WRA Specialist. 2018. Personal Communication	Seeds unlikely to be consumed, or internally dispersed. Only flowers after decades of growth

801	**Prolific seed production (>1000/m2)**	
	Source(s)	**Notes**

Qsn #	Question	Answer
	Watanabe, M., Ueda, K., Manabe, I., & Akai, T. (1982). Flowering, seeding, germination, and flowering periodicity of Phyllostachys pubescens. Journal of the Japanese Forestry Society, 64(3), 107-111	[Potentially capable of prolific seed production, but only after several decades of growth] "As mentioned above, it was successfully and scientifically recognized at this time that the clone seeded in 1912 flowered in 1979, and the interval was 67 years." ... "the amount of seed collected from bamboo over five years of age generally decreased because of their older age. A total of 4,840 seeds weighing about 73 g was obtained from the nine seed producing bamboo culms."

802	Evidence that a persistent propagule bank is formed (>1 yr)	n
	Source(s)	**Notes**
	Watanabe, M., Ueda, K., Manabe, I., & Akai, T. (1982). Flowering, seeding, germination, and flowering periodicity of Phyllostachys pubescens. Journal of the Japanese Forestry Society, 64(3), 107-111	[Flowers after several decades of growth. For all intents & purposes, does not produce a persistent seed bank, although underground rhizomes may serve as a persistent propagule] "As mentioned above, it was successfully and scientifically recognized at this time that the clone seeded in 1912 flowered in 1979, and the interval was 67 years. Thus, the flowering periodicity of P. pubescens might be considered to be about 67 years."
	Baskin, C.C. & Baskin, J.M. 2014. Seeds Ecology, Biogeography, and Evolution of Dormancy and Germination. Second Edition. Academic Press, San Francisco, CA	[Unknown. Seeds may be non-dormant, or possess physiological dormancy] "Seeds collected from 2-, 3-, 4-, 5- and 6-yr old culms of the bamboo Phyllostachys pubescens in early February in Japan germinated to 40-□80% at 18□C with no correlation with respect to culm age (Watanabe et al., 1982). Freshly matured seeds were not tested for germination; therefore, it is not known if seeds were ND at maturity or if cold stratification received in the field broke PD."

803	Well controlled by herbicides	
	Source(s)	**Notes**
	Motooka, P., Castro, L., Nelson, D., Nagai, G. & Ching,L. 2003. Weeds of Hawaii's Pastures and Natural Areas: An Identification and Management Guide. CTAHR, UH Manoa, Honolulu, HI	[Congener may be effectively controlled. More information needed] "Phyllostachys nigra ... Plant is sensitive to hexazinone and imazapyr and moderately sensitive to glyphosate. Foliar application difficult on tall plants. Most effective treatment requires mechanical clearing followed by herbicide treatment of re-sprouts. J. De Frank (Univ. Hawai'i) recommended glyphosate plus fluazifop or imazapyr. Basal stem application of imazapyr looks promising."

Qsn #	Question	Answer
	Czarnota, M. A., & Derr, J. (2007). Controlling bamboo (Phyllostachys spp.) with herbicides. Weed Technology, 21 (1), 80-83	[Probably Yes. Congeners effectively controlled] "Bamboos are grass species that can escape cultivation and invade lawns, landscapes, and other areas. Limited information is available on ways to control invasive bamboo species. Greenhouse and field studies were initiated to determine the level of bamboo control provided by a single application of selected PRE and POST herbicides. Bamboo species included in the study were golden bamboo in greenhouse experiments and red-margined bamboo in field experiments. In greenhouse trials, MSMA, quinclorac, dithiopyr, clethodim, fenoxaprop, and sethoxydim did not control either species. Glyphosate, glufosinate, and fluazifop significantly reduced bamboo-shoot fresh weight, although regrowth occurred after a single application. In field trials, bamboo control with dichlobenil in the 2002 and 2004 experiments was less than 23%. For the study initiated in 2002, glyphosate and imazapyr provided 76% and 98% bamboo control, respectively, at 58 wk after treatment (WAT). By 161 WAT (approximately 3 yr after treatment), bamboo-control ratings were 40% with glyphosate and 85% with imazapyr. For the study initiated in 2004, at 61 WAT, glyphosate and imazapyr provided 46 and 88% control of bamboo, respectively."

804	**Tolerates, or benefits from, mutilation, cultivation, or fire**	**y**
	Source(s)	**Notes**
	Plants for a Future. 2018. Phyllostachys edulis. https://www.pfaf.org. [Accessed]	[Can regenerate from rhizomes after repeated cutting] "The shoots are harvested in the spring when they are about 8cm above the ground, cutting them about 5cm below soil level."
	Missouri Botanical Garden. 2018. Phyllostachys edulis. http://www.missouribotanicalgarden.org. [Accessed 3 Apr 2018]	[Tolerates regular pruning] "It needs to grown in areas where its often rampant growth can be effectively dealt with (underground barriers often do not effectively shield spread but annual root pruning at the edges of the planting may work)."
	Li, Z. et al. (2017). Effects of moso bamboo (Phyllostachys edulis) invasions on soil nitrogen cycles depend on invasion stage and warming. Environmental Science and Pollution Research, 24(32), 24989-24999	[Tolerates repeated harvesting] Moso bamboo plants are able to grow in mountain areas and have rapid regrowth after harvesting (Song et al. 2014a). Because the culms can be over 25 m tall with a 20-cm basal diameter, they are valuable materials for building, and the newly sprouted shoots are widely used as vegetables."

805	**Effective natural enemies present locally (e.g. introduced biocontrol agents)**	
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[Unknown, but congener, Phyllostachys nigra, presumably not limited by natural enemies] "in Hawai'i spreading by rhizomes and forming extensive, dense stands on moist, shaded slopes and stream banks, 0--400 m, on O'ahu, Moloka'i, and Maui."

Summary of Risk Traits:

High Risk / Undesirable Traits
• Elevation range exceeds 1000 m, demonstrating environmental versatility
• Thrives in subtropical climates
• Naturalized (persisting & spreading after cultivation) in Japan, Taiwan & potentially elsewhere
• A potential landscaping weed
• An environmental weed in Japan & China (impacts diversity & ecosystem processes)
• Other Phyllostachys species are invasive
• Allelopathic
• Host of bamboo borer
• Forms dense monocultures, excluding other vegetation
• Reproduces by seeds (rarely) & vegetatively by rhizomes
• Self-compatible (but rarely flowers)
• May be dispersed by rhizome fragments, & intentionally by people
• Able to resprout after repeated cutting & pruning

Low Risk Traits
• Unarmed (no spines, thorns, or burrs)
• Provides fodder for livestock
• Valued for food, as an ornamental & for construction material
• Reaches maturity after several decades of growth (67 years documented)
• Lack of flowering for much of life cycle limits potential for long distance dispersal
• Herbicides provide effective control on congeneric taxa