Keywords: Low Risk, Temperate bamboo, Clumping, Edible shoots, Ornamental

Family: ***Poaceae***

Taxon: ***Fargesia fungosa***

Synonym: *Borinda fungosa (T.P.Yi) Stapleton*
Yushania fungosa (T.P.Yi) Demoly

Common Name: mian hua zhu
chocolate bamboo
Himalayan chocolate

Questionaire : current 20090513 **Assessor:** HPWRA OrgData **Designation:** L
Status: Assessor Approved **Data Entry Person:** HPWRA OrgData **WRA Score -4**

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)**	**Low**
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**	**n**
204	**Native or naturalized in regions with tropical or subtropical climates**	**y=1, n=0**	**n**
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**	**n**
302	**Garden/amenity/disturbance weed**	**n=0, y = 1*multiplier (see Appendix 2)**	**n**
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)**	**n**
401	**Produces spines, thorns or burrs**	**y=1, n=0**	**n**
402	**Allelopathic**	**y=1, n=0**	
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**	
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**	
409	**Is a shade tolerant plant at some stage of its life cycle**	**y=1, n=0**	
410	**Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)**	**y=1, n=0**	

411	**Climbing or smothering growth habit**	**y=1, n=0**	**n**
412	**Forms dense thickets**	**y=1, n=0**	**n**
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**	**y=1, n=-1**	
604	**Self-compatible or apomictic**	**y=1, n=-1**	
605	**Requires specialist pollinators**	**y=-1, n=0**	**n**
606	**Reproduction by vegetative fragmentation**	**y=1, n=-1**	**n**
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**	**n**
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**	**y**
705	**Propagules water dispersed**	**y=1, n=-1**	
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**	
802	**Evidence that a persistent propagule bank is formed (>1 yr)**	**y=1, n=-1**	
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: L **WRA Score** -4

Supporting Data:

101	2006. Wu, Z.Y./Raven, P.H./Hong, D.Y. (eds.). Flora of China. Vol. 22 (Poaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Is the species highly domesticated? No] No evidence
102	2013. WRA Specialist. Personal Communication.	NA
103	2013. WRA Specialist. Personal Communication.	NA
201	2006 (onwards). Clayton, W.D./Vorontsova, M.S./Harman, K.T./Williamson, H.. GrassBase - The Online World Grass Flora. http://www.kew.org/data/grasses-db.html	[Species suited to tropical or subtropical climate(s) 0-Low] "Asia-temperate: China."
202	2006 (onwards). Clayton, W.D./Vorontsova, M.S./Harman, K.T./Williamson, H.. GrassBase - The Online World Grass Flora. http://www.kew.org/data/grasses-db.html	[Quality of climate match data 2-High]
203	2006. Wu, Z.Y./Raven, P.H./Hong, D.Y. (eds.). Flora of China. Vol. 22 (Poaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Broad climate suitability (environmental versatility)?] "1800–2700 m. W Guizhou, SW Sichuan, NE Yunnan" [High elevations]
203	2013. Backyard Gardener. Fargesia fungosa. http://www.backyardgardener.com/plantname/pda_9b39.html [Accessed 27 Mar 2013]	[Broad climate suitability (environmental versatility)? No] "USDA Hardiness Zone: 8 to 10"
204	2006 (onwards). Clayton, W.D./Vorontsova, M.S./Harman, K.T./Williamson, H.. GrassBase - The Online World Grass Flora. http://www.kew.org/data/grasses-db.html	[Native or naturalized in regions with tropical or subtropical climates? No] "Asia-temperate: China" [Although may do well at high elevation in tropical & subtropical regions]
205	1998. Stapleton, C.M.A.. New Combinations in Borinda (Gramineae-Bambusoideae). Kew Bulletin. 53(2): 453-459.	[Does the species have a history of repeated introductions outside its natural range? Yes] "Yunnan & Sichuan, 1800 - 2700 m. Seed collected by Professor J. R. Hsueh in 1992 at 2400 m and widely distributed for cultivation in Europe and USA."
301	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Naturalized beyond native range? No] No evidence
301	2012. Wagner, W.L./Herbst, D.R./Khan, N./Flynn, T.. Hawaiian Vascular Plant Updates: A Supplement to the Manual of the Flowering Plants of Hawai`i & Hawai`i's Ferns & Fern Allies. http://botany.si.edu/pacificislandbiodiversity/hawaiianflora/supplement.htm	[Naturalized beyond native range? No] No evidence
302	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Garden/amenity/disturbance weed? No] No evidence
303	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Agricultural/forestry/horticultural weed? No] No evidence
304	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Environmental weed? No] No evidence
305	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Congeneric weed? No] Two Fargesia species listed as naturalized or unconfirmed as naturalized. No evidence that these have had detrimental impacts. No Borinda species are listed as invasive.

401	2006. Wu, Z.Y./Raven, P.H./Hong, D.Y. (eds.). Flora of China. Vol. 22 (Poaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Produces spines, thorns or burrs? No] "Rhizome neck 5–11 cm. Culms 4–6 m, 1.5–2.5 cm in diam.; internodes terete, 20–23 cm, longitudinal ribs absent, initially white powdery, glabrous; wall 3–6 mm thick, pith initially spongy; supra-nodal ridges weakly prominent; sheath scar prominent, yellow-brown setose, with persistent remains of sheath base; intranode 2–4 mm. Branches 9–25 per node. Culm sheaths persistent, yellow-brown, spotted purple-brown, narrowly triangular or narrowly rounded, proximally leathery, distally papery, brown to dark brown setulose, longitudinal ribs prominent, margins sometimes brown to dark brown setose; auricles absent; oral setae deciduous, brown; ligule yellow brown, truncate, ca. 1 mm, glabrous; blade reflexed, linear-lanceolate, glabrous. Leaves 3 or 4 per ultimate branch; sheath margins initially ciliate; auricles purple, falcate, small; oral setae erect, gray-brown; ligule arcuate, margins initially ciliate; blade lanceolate, (7–)10–16 × 1–1.7 cm, proximally white-gray pubescent, secondary veins 4-paired, transverse veins obscure, base cuneate, one margin spinescent serrulate, other margin obscurely so."
402	2013. WRA Specialist. Personal Communication.	[Allelopathic? Unknown]
403	2006. Wu, Z.Y./Raven, P.H./Hong, D.Y. (eds.). Flora of China. Vol. 22 (Poaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Parasitic? No] Poaceae
404	2003. Edwards, M.S.. Nutrition of zoo animals. Recent Advances in Animal Nutrition in Australia. 14: 1-9.	[Unpalatable to grazing animals? No] "Table 4 Bamboo species used as forage for feeding giant pandas (Ailuropoda melanoleuca) at the Zoological Society of San Diego" [List includes Fargesia fungosa]
404	2006. Wu, Z.Y./Raven, P.H./Hong, D.Y. (eds.). Flora of China. Vol. 22 (Poaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Unpalatable to grazing animals?] "The shoots are edible, and the split culms are used for weaving." [Shoots probably palatable to animals]
404	2011. Benton, A./Thomson, L./Berg, P./Ruskin, S.. Farm and Forestry Production and Marketing Profile for Bamboo (various species). In Elevitch, C.R. (ed.) Specialty Crops for Pacific Island Agroforestry. Permanent Agriculture Resources (PAR), Holualoa, HI	[Unpalatable to grazing animals?] "Bamboo leaves make excellent fodder for livestock including cows, horses, and pigs." [Probably palatable, although this generalization is not specifically applied to F. fungosa]
405	2008. Wagstaff, D.J.. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	[Toxic to animals? No] No evidence
406	2011. Benton, A./Thomson, L./Berg, P./Ruskin, S.. Farm and Forestry Production and Marketing Profile for Bamboo (various species). In Elevitch, C.R. (ed.) Specialty Crops for Pacific Island Agroforestry. Permanent Agriculture Resources (PAR), Holualoa, HI	[Host for recognized pests and pathogens? Unknown] "No significant pests or disease are reported in the Pacific, but many are found on bamboos in tropical and subtropical Asia."
407	2006. Wu, Z.Y./Raven, P.H./Hong, D.Y. (eds.). Flora of China. Vol. 22 (Poaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Causes allergies or is otherwise toxic to humans? No] "The shoots are edible, and the split culms are used for weaving." [No evidence]
408	2013. WRA Specialist. Personal Communication.	[Creates a fire hazard in natural ecosystems? Unknown] Any species of bamboo could potentially create a fire hazard after flowering and leaving dead, standing culms or other debris as a possible fuel source
409	2013. Backyard Gardener. Fargesia fungosa. http://www.backyardgardener.com/plantname/pda_9b39.html [Accessed 27 Mar 2013]	[Is a shade tolerant plant at some stage of its life cycle?] "Light Range: Part Shade to Part Sun"
409	2013. San Marcos Growers. Products - Borinda fungosa. http://www.smgrowers.com/products/plants/plantdisplay.asp?plant_id=3104 [Accessed 27 Mar 2013]	[Is a shade tolerant plant at some stage of its life cycle?] "Exposure: Cool Sun/Light Shade" [Possibly shade tolerant]
410	2013. Backyard Gardener. Fargesia fungosa. http://www.backyardgardener.com/plantname/pda_9b39.html [Accessed 27 Mar 2013]	[Tolerates a wide range of soil conditions?] "Soil Range: Sandy Loam to Clay Loam"
410	2013. WRA Specialist. Personal Communication.	[Tolerates a wide range of soil conditions? Unknown] Limited information on soil requirements found

411	2006. Wu, Z.Y./Raven, P.H./Hong, D.Y. (eds.). Flora of China. Vol. 22 (Poaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Climbing or smothering growth habit? No] "Rhizome neck 4–7 cm, 2.2–4 cm in diam. Culms to 5 m, 2–3.6 cm in diam.;"
412	2006. Wu, Z.Y./Raven, P.H./Hong, D.Y. (eds.). Flora of China. Vol. 22 (Poaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Forms dense thickets? No] "As their flowers have become known, several have been moved into a genus established specifically to accommodate such clump-forming species, Borinda." [No evidence]
412	2013. Bamboo Headquarters. Borinda fungosa - Fungosa Bamboo. http://www.bamboohq.com/borinda-fungosa.html [Accessed 27 Mar 2013]	[Forms dense thickets? No] "Clumping / Non-Invasive"
412	2013. Tropical Britain. Borinda fungosa. http://www.tropicalbritain.co.uk/bamboos/borinda/borinda-fungosa.html [Accessed 27 Mar 2013]	[Forms dense thickets? No] "Eventual Spread - Clumping habit, 2 m-4 m"
501	2013. WRA Specialist. Personal Communication.	[Aquatic? No] Terrestrial bamboo
502	2006. Wu, Z.Y./Raven, P.H./Hong, D.Y. (eds.). Flora of China. Vol. 22 (Poaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Grass? Yes] Poaceae
503	2006. Wu, Z.Y./Raven, P.H./Hong, D.Y. (eds.). Flora of China. Vol. 22 (Poaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Nitrogen fixing woody plant? No] Poaceae
504	2010. Gordon, D.R./Mitterdorfer, B./Pheloung, P.C. et al.. Guidance for addressing the Australian Weed Risk Assessment questions. Plant Protection Quarterly. 25(2): 56-74.	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] "This question relates to perennial plants with tubers, corms or bulbs. This question is specifically to deal with plants that have specialized organs and should not include plants merely with rhizomes/ stolons"
601	2006. Wu, Z.Y./Raven, P.H./Hong, D.Y. (eds.). Flora of China. Vol. 22 (Poaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Evidence of substantial reproductive failure in native habitat? No] No evidence
602	1999. Ohrnberger, D.. The Bamboos of the World: Annotated Nomenclature and Literature of the Species and the Higher and Lower Taxa. Elsevier, Amsterdam	[Produces viable seed? Yes] "A large quantity of seed was introduced into the USA in 1992, of which over 400 seedlings were raised and distributed to the USA and abroad in 1993 and 1994. Outside the USA, seedlings have been in cultivation in several European countries."
603	2008. Yang, Q./Duan, Z.B./Wang, Z.L./He, K.H./Sun, Q.X./Peng, Z.H.. Bamboo resources, utilization and ex-situ conservation in Xishuangbanna, South-eastern China. Journal of Forestry Research. 19(1): 79-83.	[Hybridizes naturally? Unknown] "Bamboo is difficult to hybridize since its flowers are monocarp and most species flower gregariously at long periodic intervals (60−120a)."
604	2013. WRA Specialist. Personal Communication.	[Self-compatible or apomictic? Unknown]
605	1994. Zomlefer, W.B.. Guide to Flowering Plant Families. The University of North Carolina Press, Chapel Hill & London	[Requires specialist pollinators? No] Poaceae [anemophilous. Wind-pollinated]
605	2006. Wu, Z.Y./Raven, P.H./Hong, D.Y. (eds.). Flora of China. Vol. 22 (Poaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Requires specialist pollinators? No] "Inflorescence a racemose panicle, initially terminal to leafy shoot; spikelets 3–7, 2.5–4.3 cm, rachilla internodes 3– 4 mm, white-gray setose, apex densely white gray ciliate; florets 3–7, terminal one sterile. Glumes 1 or 2, papery; lemma densely white-gray setose abaxially, margins ciliate; palea keels setose; lodicules ciliate. Anthers yellow. Ovary ovoid, glabrous; styles 2; stigma white."
606	1999. Ohrnberger, D.. The Bamboos of the World: Annotated Nomenclature and Literature of the Species and the Higher and Lower Taxa. Elsevier, Amsterdam	[Reproduction by vegetative fragmentation? No] "A large quantity of seed was introduced into the USA in 1992, of which over 400 seedlings were raised and distributed to the USA and abroad in 1993 and 1994." [Not explicitly stated, but presumably no]
607	1999. Ohrnberger, D.. The Bamboos of the World: Annotated Nomenclature and Literature of the Species and the Higher and Lower Taxa. Elsevier, Amsterdam	[Minimum generative time (years)? >4] "Phenology: This species flowered in 1936 and 1992." [Exact age to maturity unknown, but long interval recorded between flowering suggests reproductive maturity is reached after several decades of growth]

701	2006 (onwards). Clayton, W.D./Vorontsova, M.S./Harman, K.T./Williamson, H.. GrassBase - The Online World Grass Flora. http://www.kew.org/data/grasses-db.html	[Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? No] "FRUIT Caryopsis with adherent pericarp." [Unlikely, as seeds are infrequently produced and lack means of external attachment]
702	1999. Ohrnberger, D.. The Bamboos of the World: Annotated Nomenclature and Literature of the Species and the Higher and Lower Taxa. Elsevier, Amsterdam	[Propagules dispersed intentionally by people? Yes] A large quantity of seed was introduced into the USA in 1992, of which over 400 seedlings were raised and distributed to the USA and abroad in 1993 and 1994. Outside the USA, seedlings have been in cultivation in several European countries."
703	2013. WRA Specialist. Personal Communication.	[Propagules likely to disperse as a produce contaminant? No] No evidence. Unlikely, as seeds are infrequently produced
704	2006 (onwards). Clayton, W.D./Vorontsova, M.S./Harman, K.T./Williamson, H.. GrassBase - The Online World Grass Flora. http://www.kew.org/data/grasses-db.html	[Propagules adapted to wind dispersal? Yes] "FRUIT Caryopsis with adherent pericarp." [Presumably dispersed by gravity or wind for short distances]
705	2006 (onwards). Clayton, W.D./Vorontsova, M.S./Harman, K.T./Williamson, H.. GrassBase - The Online World Grass Flora. http://www.kew.org/data/grasses-db.html	[Propagules water dispersed? Unknown] "FRUIT Caryopsis with adherent pericarp." {possibly, if plant sets seed near a river or riparian area]
706	2006 (onwards). Clayton, W.D./Vorontsova, M.S./Harman, K.T./Williamson, H.. GrassBase - The Online World Grass Flora. http://www.kew.org/data/grasses-db.html	[Propagules bird dispersed? No] "FRUIT Caryopsis with adherent pericarp." [Not fleshy-fruited]
707	1999. Ohrnberger, D.. The Bamboos of the World: Annotated Nomenclature and Literature of the Species and the Higher and Lower Taxa. Elsevier, Amsterdam	[Propagules dispersed by other animals (externally)? No] "Phenology: This species flowered in 1936 and 1992." [Unlikely. Fruits infrequently & seeds lack means of external attachment]
708	2013. WRA Specialist. Personal Communication.	[Propagules survive passage through the gut? Unknown]
801	1999. Ohrnberger, D.. The Bamboos of the World: Annotated Nomenclature and Literature of the Species and the Higher and Lower Taxa. Elsevier, Amsterdam	[Prolific seed production (>1000/m2)? Unknown] "Phenology: This species flowered in 1936 and 1992." [Possibly when flowering occurs]
802	2013. WRA Specialist. Personal Communication.	[Evidence that a persistent propagule bank is formed (>1 yr)? Unknown]
803	2013. WRA Specialist. Personal Communication.	[Well controlled by herbicides? Unknown] No information on herbicide efficacy or chemical control of this species
804	2006. Wu, Z.Y./Raven, P.H./Hong, D.Y. (eds.). Flora of China. Vol. 22 (Poaceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Tolerates, or benefits from, mutilation, cultivation, or fire? Yes] "The culms are used for weaving and for making farm tools, furniture, and paper" [Not explicitly state, but presumably yes, as culms are used for food & can be repeatedly harvested]
805	2013. WRA Specialist. Personal Communication.	[Effective natural enemies present locally (e.g. introduced biocontrol agents)? Unknown]

Summary of Risk Traits

High Risk / Undesirable Traits

- Produces viable seeds that may be dispersed by gravity, wind or people
- Will resprout after repeated cutting or harvesting of shoots & culms (may be difficult to remove from unwanted areas)
- Limited biological and ecological information makes accurate risk predictions difficult

Low Risk / Desirable Traits

- No negative impacts have been documented
- Non-toxic
- Edible shoots
- Landscaping and ornamental value
- A sympodial, or clumping bamboo