

Family: *Solanaceae*

Taxon: *Nicotiana tabacum*

Synonym: *Nicotiana chinensis* Fisch. ex Lehm. **Common Name:** tobacco
Nicotiana tabacum var. *macrophylla* (Lehm.)

Questionnaire : Status:	current 20090513 Assessor Approved	Assessor: Data Entry Person:	Patti Clifford Patti Clifford	Designation: H(HPWRA) WRA Score 9
101	Is the species highly domesticated?	y=-3, n=0	y	
102	Has the species become naturalized where grown?	y=1, n=-1	y	
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)	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)	y	
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	y	
405	Toxic to animals	y=1, n=0	y	
406	Host for recognized pests and pathogens	y=1, n=0		
407	Causes allergies or is otherwise toxic to humans	y=1, n=0	y	
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	n	
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	n
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	y
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	1
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	n
705	Propagules water dispersed	y=1, n=-1	
706	Propagules bird dispersed	y=1, n=-1	
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/m ²)	y=1, n=-1	y
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	
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	y=-1, n=1	

Designation: H(HPWRA)

WRA Score **9**

Supporting Data:

101	2012. Lemke, C.. Cal's plant of the week - Nicotiana tabacum. University of Oklahoma Department of Botany & Microbiology, http://www.plantoftheweek.org/week131.shtml	[Is the species highly domesticated? Yes] Nicotiana tabacum has been cultivated since pre-Columbus times.
101	2012. Plants for a Future. Nicotiana tabacum L.. http://www.pfaf.org/user/Plant.aspx?LatinName=Nicotiana+tabacum	[Is the species highly domesticated? Yes] Not known in the wild state. Cultivated only.
102	2008. The Bishop Museum. Native and naturalized flowering plants of Hawaii - main Hawaiian Islands. The Bishop Museum, http://www.bishopmuseum.org/research/natsci/botany/dbandkeys/Main%20Islands%20Report.pdf	[Has the species become naturalized where grown? Yes] Naturalized in Hawaii.
103	2012. WRA Specialist. Personal Communication.	[Does the species have weedy races? NA]
201	1999. Wagner, W.L./Herbst, D.R./Sohmer, S.H.. Manual of the flowering plants of Hawaii. Revised edition.. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"? 2 - high] Native to western South America.
202	1999. Wagner, W.L./Herbst, D.R./Sohmer, S.H.. Manual of the flowering plants of Hawaii. Revised edition.. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[Quality of climate match data? 2- high] Native to western South America.
203	2012. Floridata.com. Nicotiana tabacum. http://www.floridata.com/ref/N/nico_tab.cfm	[Broad climate suitability (environmental versatility)? Yes] USDA Hardiness zones: 5-11
203	2012. Plantwire. Tobacco (Nicotiana tabacum). www.plantwire.com, http://www.plantwire.com/plants/Nicotiana/tabacum	[Broad climate suitability (environmental versatility)? Yes] USDA Hardiness zones: 5-11.
204	2008. The Bishop Museum. Native and naturalized flowering plants of Hawaii - main Hawaiian Islands. The Bishop Museum, http://www.bishopmuseum.org/research/natsci/botany/dbandkeys/Main%20Islands%20Report.pdf	[Native or naturalized in regions with tropical or subtropical climates? Yes] Naturalized on the islands of Lanai, Nihau, Kauai, Oahu, Molokai, Maui, and Hawaii.
205	1994. Zhi-yun, Z./An-ming, L./D'Arcy, W.G.. Flora of China Vol. 17 - Solanaceae. Missouri Botanical Garden and Harvard University Herbaria, Beijing & St. Louis http://flora.huh.harvard.edu/china/mss/volume17/Solanaceae.published.pdf	[Does the species have a history of repeated introductions outside its natural range? Yes] Widely cultivated in China.
205	2012. Plants for a Future. Nicotiana tabacum L.. http://www.pfaf.org/user/Plant.aspx?LatinName=Nicotiana+tabacum	[Does the species have a history of repeated introductions outside its natural range? Yes] Nicotiana tabacum is widely cultivated for its leaves.
301	2008. The Bishop Museum. Native and naturalized flowering plants of Hawaii - main Hawaiian Islands. The Bishop Museum, http://www.bishopmuseum.org/research/natsci/botany/dbandkeys/Main%20Islands%20Report.pdf	[Naturalized beyond native range? Yes] Naturalized on the islands of Lanai, Nihau, Kauai, Oahu, Molokai, Maui, and Hawaii.
302	2012. WRA Specialist. Personal Communication.	[Garden/amenity/disturbance weed? No] No evidence of impacts or control.
303	2012. WRA Specialist. Personal Communication.	[Agricultural/forestry/horticultural weed? No] No evidence of impacts or control.
304	2012. WRA Specialist. Personal Communication.	[Environmental weed? No] No evidence of impacts or control efforts.
305	2012. Texasinvasives.org. Invasive Database - Nicotiana glauca. http://www.texasinvasives.org/plant_database/detail.php?symbol=NIGL	[Congeneric weed? Yes] Nicotiana glauca is an invasive weed in Texas, USA, where it forms monospecific stands outcompeting natives. It is also toxic to livestock.

401	1994. Zhi-yun, Z./An-ming, L./D'Arcy, W.G.. Flora of China Vol. 17 - Solanaceae. Missouri Botanical Garden and Harvard University Herbaria, Beijing & St. Louis http://flora.huh.harvard.edu/china/mss/volume17/Solanaceae.published.pdf	[Produces spines, thorns or burrs? No] "Herbs viscid, annual or short-lived perennial, 0.7–2 m tall, glandular hairy overall. Leaves decurrent, winging stems; leaf blade ovate to elliptic or lanceolate, 30(–70) × 8–15(–30) cm, membranous, glandular hairy, base narrowed, nearly half clasping, apex acuminate."
402	2012. WRA Specialist. Personal Communication.	[Allelopathic? Unknown]
403	1994. Zhi-yun, Z./An-ming, L./D'Arcy, W.G.. Flora of China Vol. 17 - Solanaceae. Missouri Botanical Garden and Harvard University Herbaria, Beijing & St. Louis http://flora.huh.harvard.edu/china/mss/volume17/Solanaceae.published.pdf	[Parasitic? No] Solanaceae.
404	2011. Thameur, B.H./Aida, B.M.. Case report: fatal poisoning of cattle by <i>Nicotiana tabacum</i> in Tunisia. Online Journal of Veterinary Research. 15: 438-445.	[Unpalatable to grazing animals? Yes] "Nicotiana species are unpalatable and ingestion of this plant by ruminants is observed only if animals are not well fed."
405	2011. Thameur, B.H./Aida, B.M.. Case report: fatal poisoning of cattle by <i>Nicotiana tabacum</i> in Tunisia. Online Journal of Veterinary Research. 15: 438-445.	[Toxic to animals? Yes] Nicotiana plants are highly toxic plants due to their nicotine alkaloid content. Nicotiana species are unpalatable and ingestion of this plant by ruminants is observed only if animals are not well fed.
406	2012. WRA Specialist. Personal Communication.	[Host for recognized pests and pathogens? Unknown]
407	1994. Zhi-yun, Z./An-ming, L./D'Arcy, W.G.. Flora of China Vol. 17 - Solanaceae. Missouri Botanical Garden and Harvard University Herbaria, Beijing & St. Louis http://flora.huh.harvard.edu/china/mss/volume17/Solanaceae.published.pdf	[Causes allergies or is otherwise toxic to humans?] Used for tobacco and as an insecticide, also medicinally for anaesthetic, inducing sweat, or vomiting.
407	2012. Dave's Garden. PlantFiles: Tobacco - <i>Nicotiana tabacum</i> . http://davesgarden.com/guides/pf/go/112106/	[Causes allergies or is otherwise toxic to humans? Yes] All parts of plant are poisonous if ingested.
407	2012. Floridata.com. <i>Nicotiana tabacum</i> . http://www.floridata.com/ref/N/nico_tab.cfm	[Causes allergies or is otherwise toxic to humans? Yes] All parts of the plant are poisonous if ingested.
407	2012. Plants for a Future. <i>Nicotiana tabacum</i> L.. http://www.pfaf.org/user/Plant.aspx?LatinName=Nicotiana+tabacum	[Causes allergies or is otherwise toxic to humans?] "Tobacco has a long history of use by medical herbalists as a relaxant, though since it is a highly addictive drug it is seldom employed internally or externally at present. The leaves are antispasmodic, discutient, diuretic, emetic, expectorant, irritant, narcotic, sedative and sialagogue. They are used externally in the treatment of rheumatic swelling, skin diseases and scorpion stings. The plant should be used with great caution, when taken internally it is an addictive narcotic. The active ingredients can also be absorbed through the skin. Wet tobacco leaves can be applied to stings in order to relieve the pain. They are also a certain cure for painful piles. A homeopathic remedy is made from the dried leaves. It is used in the treatment of nausea and travel sickness."
408	2012. WRA Specialist. Personal Communication.	[Creates a fire hazard in natural ecosystems? No] No evidence.
409	2012. Dave's Garden. PlantFiles: Tobacco - <i>Nicotiana tabacum</i> . http://davesgarden.com/guides/pf/go/112106/	[Is a shade tolerant plant at some stage of its life cycle? No] Full sun.
409	2012. Plants for a Future. <i>Nicotiana tabacum</i> L.. http://www.pfaf.org/user/Plant.aspx?LatinName=Nicotiana+tabacum	[Is a shade tolerant plant at some stage of its life cycle? No] Can not grow in the shade.
410	2012. Dave's Garden. PlantFiles: Tobacco - <i>Nicotiana tabacum</i> . http://davesgarden.com/guides/pf/go/112106/	[Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)?] Soil pH requirements: 6.1 to 6.5 (mildly acidic) 7.6 to 7.8 (mildly alkaline)
410	2012. Plants for a Future. <i>Nicotiana tabacum</i> L.. http://www.pfaf.org/user/Plant.aspx?LatinName=Nicotiana+tabacum	[Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)? Yes] "The plant prefers light (sandy), medium (loamy) and heavy (clay) soils and requires well-drained soil. The plant prefers acid, neutral and basic (alkaline) soils."

411	1994. Zhi-yun, Z./An-ming, L./D'Arcy, W.G.. Flora of China Vol. 17 - Solanaceae. Missouri Botanical Garden and Harvard University Herbaria, Beijing & St. Louis http://flora.huh.harvard.edu/china/mss/volume17/Solanaceae.published.pdf	[Climbing or smothering growth habit? No] Herbs, 0.7-2 m tall.
412	1994. Zhi-yun, Z./An-ming, L./D'Arcy, W.G.. Flora of China Vol. 17 - Solanaceae. Missouri Botanical Garden and Harvard University Herbaria, Beijing & St. Louis http://flora.huh.harvard.edu/china/mss/volume17/Solanaceae.published.pdf	[Forms dense thickets? No] Herbs, 0.7-2 m tall.
501	1994. Zhi-yun, Z./An-ming, L./D'Arcy, W.G.. Flora of China Vol. 17 - Solanaceae. Missouri Botanical Garden and Harvard University Herbaria, Beijing & St. Louis http://flora.huh.harvard.edu/china/mss/volume17/Solanaceae.published.pdf	[Aquatic? No] Terrestrial, herb.
502	1994. Zhi-yun, Z./An-ming, L./D'Arcy, W.G.. Flora of China Vol. 17 - Solanaceae. Missouri Botanical Garden and Harvard University Herbaria, Beijing & St. Louis http://flora.huh.harvard.edu/china/mss/volume17/Solanaceae.published.pdf	[Grass? No] Solanaceae.
503	1994. Zhi-yun, Z./An-ming, L./D'Arcy, W.G.. Flora of China Vol. 17 - Solanaceae. Missouri Botanical Garden and Harvard University Herbaria, Beijing & St. Louis http://flora.huh.harvard.edu/china/mss/volume17/Solanaceae.published.pdf	[Nitrogen fixing woody plant? No] Herbaceous.
504	1994. Zhi-yun, Z./An-ming, L./D'Arcy, W.G.. Flora of China Vol. 17 - Solanaceae. Missouri Botanical Garden and Harvard University Herbaria, Beijing & St. Louis http://flora.huh.harvard.edu/china/mss/volume17/Solanaceae.published.pdf	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] No underground storage organs.
601	2012. WRA Specialist. Personal Communication.	[Evidence of substantial reproductive failure in native habitat? No] No evidence. [known from cultivation]
602	2012. Dave's Garden. PlantFiles: Tobacco - <i>Nicotiana tabacum</i> . http://davesgarden.com/guides/pf/go/112106/	[Produces viable seed? Yes] Propagate by seed.
602	2012. Plants for a Future. <i>Nicotiana tabacum</i> L.. http://www.pfaf.org/user/Plant.aspx?LatinName=Nicotiana+tabacum	[Produces viable seed? Yes] Propagate by seed.
603	2012. WRA Specialist. Personal Communication.	[Hybridizes naturally? Unknown]
604	1999. Wagner, W.L./Herbst, D.R./Sohmer, S.H.. Manual of the flowering plants of Hawaii. Revised edition.. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[Self-compatible or apomictic? Yes] Self-compatible.
605	2012. Plants for a Future. <i>Nicotiana tabacum</i> L.. http://www.pfaf.org/user/Plant.aspx?LatinName=Nicotiana+tabacum	[Requires specialist pollinators? No] Pollinated by bees and Lepidoptera.
606	2012. Dave's Garden. PlantFiles: Tobacco - <i>Nicotiana tabacum</i> . http://davesgarden.com/guides/pf/go/112106/	[Reproduction by vegetative fragmentation? No] Propagate by seed.
606	2012. Plants for a Future. <i>Nicotiana tabacum</i> L.. http://www.pfaf.org/user/Plant.aspx?LatinName=Nicotiana+tabacum	[Reproduction by vegetative fragmentation? No] Propagate by seed.
607	1994. Zhi-yun, Z./An-ming, L./D'Arcy, W.G.. Flora of China Vol. 17 - Solanaceae. Missouri Botanical Garden and Harvard University Herbaria, Beijing & St. Louis http://flora.huh.harvard.edu/china/mss/volume17/Solanaceae.published.pdf	[Minimum generative time (years)? 1] Annual or perennial.

607	2012. Dave's Garden. PlantFiles: Tobacco - <i>Nicotiana tabacum</i> . http://davesgarden.com/guides/pf/go/112106/	[Minimum generative time (years)? 1] Annual.
701	2012. WRA Specialist. Personal Communication.	[Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? Unknown]
702	1994. Zhi-yun, Z./An-ming, L./D'Arcy, W.G.. Flora of China Vol. 17 - Solanaceae. Missouri Botanical Garden and Harvard University Herbaria, Beijing & St. Louis http://flora.huh.harvard.edu/china/mss/volume17/Solanaceae.published.pdf	[Propagules dispersed intentionally by people? Yes] Widely cultivated in China.
702	2012. Plants for a Future. <i>Nicotiana tabacum</i> L.. http://www.pfaf.org/user/Plant.aspx?LatinName=Nicotiana+tabacum	[Propagules dispersed intentionally by people? Yes] <i>Nicotiana tabacum</i> is widely cultivated for its leaves.
702	2012. Tobacconist University. <i>Nicotiana tabacum</i> . http://www.tobacconistuniversity.org/tobacco-college/apm-seeds1.asp	[Propagules dispersed intentionally by people? Yes] <i>Nicotiana tabacum</i> is the most widely-grown non-food crop on Earth.
703	2012. WRA Specialist. Personal Communication.	[Propagules likely to disperse as a produce contaminant? No] No evidence.
704	1999. Wagner, W.L./Herbst, D.R./Sohmer, S.H.. Manual of the flowering plants of Hawaii. Revised edition.. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[Propagules adapted to wind dispersal? No] Fruit a capsule.
705	2012. WRA Specialist. Personal Communication.	[Propagules water dispersed? Unknown]
706	2012. WRA Specialist. Personal Communication.	[Propagules bird dispersed? Unknown]
707	1999. Wagner, W.L./Herbst, D.R./Sohmer, S.H.. Manual of the flowering plants of Hawaii. Revised edition.. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[Propagules dispersed by other animals (externally)? No] Capsules ellipsoid to ovoid, equaling or exceeding calyx, 1.5-2.5 cm long. [no means of external attachment]
708	2012. WRA Specialist. Personal Communication.	[Propagules survive passage through the gut? Unknown]
801	1999. Wagner, W.L./Herbst, D.R./Sohmer, S.H.. Manual of the flowering plants of Hawaii. Revised edition.. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[Prolific seed production (>1000/m ²)? Yes] Seeds numerous.
801	2012. Tobacconist University. <i>Nicotiana tabacum</i> . http://www.tobacconistuniversity.org/tobacco-college/apm-seeds1.asp	[Prolific seed production (>1000/m ²)? Yes] Tobacco seeds are tiny, almost grain-like: one ounce = 300,000 seeds.
802	2012. Leubner, G.. The seed biology place - seed dormancy. Gerhard Leubner Lab, Royal Holloway http://www.seedbiology.de/dormancy.asp	[Evidence that a persistent propagule bank is formed (>1 yr)?] <i>Nicotonia tabacum</i> has a low-level of seed dormancy.
803	2012. WRA Specialist. Personal Communication.	[Well controlled by herbicides? Unknown]
804	2012. WRA Specialist. Personal Communication.	[Tolerates, or benefits from, mutilation, cultivation, or fire? Unknown]
805	2012. WRA Specialist. Personal Communication.	[Effective natural enemies present locally (e.g. introduced biocontrol agents)? Unknown]

Summary of Risk Traits

High Risk:

- Native to subtropical zone
- Broad environmental tolerance
- Naturalized in Hawaii
- Congeneric weed
- Unpalatable to animals
- Toxic to animals
- Toxic to humans
- Tolerates wide range of soil types
- Self-compatible
- Short generative time
- Numerous tiny seeds

Low Risk:

- Not a weed elsewhere
- No spines, thorns, burrs
- Not shade tolerant
- Limited dispersal mechanisms