

Family: *Fabaceae*

Taxon: *Sindora supa*

Synonym: NA

Common Name: supa

Questionnaire :	current 20090513	Assessor:	Patti Clifford	Designation:	EVALUATE
Status:	Assessor Approved	Data Entry Person:	Patti Clifford	WRA Score	5
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		
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		n
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)		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		
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		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	y
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	
606	Reproduction by vegetative fragmentation	y=1, n=-1	
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	
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	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	y
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	
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	y=-1, n=1	

Designation: EVALUATE

WRA Score 5

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**Supporting Data:**

101	2012. WRA Specialist. Personal Communication.	[Is the species highly domesticated? No] No evidence of domestication that reduces invasive traits.
102	2012. WRA Specialist. Personal Communication.	[Has the species become naturalized where grown? NA]
103	2012. WRA Specialist. Personal Communication.	[Does the species have weedy races? NA]
201	2012. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). <a href="http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl">http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl</a>	[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 distributions: Philippines - Luzon, Mindoro.
202	2012. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). <a href="http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl">http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl</a>	{Quality of climate match data? 2 - high] Native distributions: Philippines - Luzon, Mindoro.
203	2012. WRA Specialist. Personal Communication.	[Broad climate suitability (environmental versatility)? Unknown]
204	2012. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). <a href="http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl">http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl</a>	[Native or naturalized in regions with tropical or subtropical climates? Yes] Native distribution: Philippines - Luzon, Mindoro.
205	2012. WRA Specialist. Personal Communication.	[Does the species have a history of repeated introductions outside its natural range? No] No evidence of repeated introductions.
301	2001. Werren, G.. Environmental Weeds of the Wet Tropics Bioregion: Risk Assessment & Priority Ranking. Rainforest CRC, Cairns, Australia	[Naturalized beyond native range? Yes] <i>Sindora supa</i> is naturalized in the wet tropics bioregion, Queensland, Australia.
302	2007. Randall, R.. Global Compendium of Weeds - <i>Sindora supa</i> . <a href="http://www.hear.org/gcw/species/sindora_supa/">http://www.hear.org/gcw/species/sindora_supa/</a>	[Garden/amenity/disturbance weed? No] No evidence.
303	2007. Randall, R.. Global Compendium of Weeds - <i>Sindora supa</i> . <a href="http://www.hear.org/gcw/species/sindora_supa/">http://www.hear.org/gcw/species/sindora_supa/</a>	[Agricultural/forestry/horticultural weed? No] No evidence.
304	2001. Werren, G.. Environmental Weeds of the Wet Tropics Bioregion: Risk Assessment & Priority Ranking. Rainforest CRC, Cairns, Australia	[Environmental weed? No] Listed as naturalized, not an environmental weed.
305	2007. Randall, R.P.. Global Compendium of Weeds - Index. <a href="http://www.hear.org/gcw/">http://www.hear.org/gcw/</a>	[Congeneric weed? No] No evidence.
401	1983. Duke, J.A.. Handbook of Energy Crops - <i>Sindora supa</i> . <a href="http://www.hort.purdue.edu/newcrop/duke_energy/Sindora_supa.html">http://www.hort.purdue.edu/newcrop/duke_energy/Sindora_supa.html</a>	[Produces spines, thorns or burrs? No] "Deciduous, straight, unbuttressed, unarmed, tree to 30 m tall. Leaves paripinnate, ca 15 cm long, with three pairs of leaflets, these elliptic, glabrous, coriaceous, 3.5–9 cm long, 2.5–5 cm broad. Flowers small, pedicellate in axillary or terminal panicles 10–15 cm long. Sepals 4, valvate; petal 1; stamens 9–10; anthers dorsifixed, longitudinally dehiscent. Pods broadly ovate, ca 4 cm long, 6 cm broad, apically beaked, basally rounded, with evenly spaced spinelike thorns. Seeds 1–3, black, shiny, with a large fleshy aril."
402	2012. WRA Specialist. Personal Communication.	[Allelopathic? Unknown]
403	1983. Duke, J.A.. Handbook of Energy Crops - <i>Sindora supa</i> . <a href="http://www.hort.purdue.edu/newcrop/duke_energy/Sindora_supa.html">http://www.hort.purdue.edu/newcrop/duke_energy/Sindora_supa.html</a>	[Parasitic? No] Fabaceae.
404	2012. WRA Specialist. Personal Communication.	[Unpalatable to grazing animals? Unknown]
405	2012. National Center for Biotechnology Information. PubMed. <a href="http://www.ncbi.nlm.nih.gov/sites/entrez">http://www.ncbi.nlm.nih.gov/sites/entrez</a>	[Toxic to animals? No] No evidence.
405	2012. Specialized Information Services, U.S. National Library of Medicine. TOXNET toxicology data network [online database]. National Institutes of Health, <a href="http://toxnet.nlm.nih.gov/">http://toxnet.nlm.nih.gov/</a>	[Toxic to animals? No] No evidence.

406	2012. WRA Specialist. Personal Communication.	[Host for recognized pests and pathogens? Unknown]
407	2012. National Center for Biotechnology Information. PubMed. <a href="http://www.ncbi.nlm.nih.gov/sites/entrez">http://www.ncbi.nlm.nih.gov/sites/entrez</a>	[Causes allergies or is otherwise toxic to humans? No] No evidence.
407	2012. Specialized Information Services, U.S. National Library of Medicine. TOXNET toxicology data network [online database]. National Institutes of Health, <a href="http://toxnet.nlm.nih.gov/">http://toxnet.nlm.nih.gov/</a>	[Causes allergies or is otherwise toxic to humans? No] No evidence.
408	2012. WRA Specialist. Personal Communication.	[Creates a fire hazard in natural ecosystems? Unknown]
409	2012. WRA Specialist. Personal Communication.	[Is a shade tolerant plant at some stage of its life cycle? Unknown]
410	2006. Gascon, C.N./Gascon, A.F./Takahashi, K.. Growth performance of reforestation species in a grassland area of Mt. Banahaw, Lucba, Quezon In: Agroforestry systems in the Philippines: experiences and lessons learned in Mt. Banahaw, Hanunuo Mangyan and S	[Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)? Yes] There are no records of extensive planting of supa in the Philippines but there are natural standing trees in limestone or molave forests.
411	1983. Duke, J.A.. Handbook of Energy Crops - <i>Sindora supa</i> . <a href="http://www.hort.purdue.edu/newcrop/duke_energy/Sindora_supa.html">http://www.hort.purdue.edu/newcrop/duke_energy/Sindora_supa.html</a>	[Climbing or smothering growth habit? No] "Deciduous, straight, unbuttressed, unarmed, tree to 30 m tall. Leaves paripinnate, ca 15 cm long, with three pairs of leaflets, these elliptic, glabrous, coriaceous, 3.5–9 cm long, 2.5–5 cm broad. Flowers small, pedicellate in axillary or terminal panicles 10–15 cm long. Sepals 4, valvate; petal 1; stamens 9–10; anthers dorsifixed, longitudinally dehiscent. Pods broadly ovate, ca 4 cm long, 6 cm broad, opically beaked, basally rounded, with evenly spaced spinelike thorns. Seeds 1–3, black, shiny, with a large fleshy aril."
412	2012. WRA Specialist. Personal Communication.	[Forms dense thickets? Unknown]
501	1983. Duke, J.A.. Handbook of Energy Crops - <i>Sindora supa</i> . <a href="http://www.hort.purdue.edu/newcrop/duke_energy/Sindora_supa.html">http://www.hort.purdue.edu/newcrop/duke_energy/Sindora_supa.html</a>	[Aquatic? No] Terrestrial; tree.
502	1983. Duke, J.A.. Handbook of Energy Crops - <i>Sindora supa</i> . <a href="http://www.hort.purdue.edu/newcrop/duke_energy/Sindora_supa.html">http://www.hort.purdue.edu/newcrop/duke_energy/Sindora_supa.html</a>	[Grass? No] Tree; Fabaceae.
503	2010. Winrock International. Nitrogen fixing trees and shrubs. Winrock International, <a href="http://www.winrock.org/">http://www.winrock.org/</a>	[Nitrogen fixing woody plant? Yes] <i>Sindora supa</i> is a nitrogen-fixing tree.
504	1983. Duke, J.A.. Handbook of Energy Crops - <i>Sindora supa</i> . <a href="http://www.hort.purdue.edu/newcrop/duke_energy/Sindora_supa.html">http://www.hort.purdue.edu/newcrop/duke_energy/Sindora_supa.html</a>	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] "Deciduous, straight, unbuttressed, unarmed, tree to 30 m tall. Leaves paripinnate, ca 15 cm long, with three pairs of leaflets, these elliptic, glabrous, coriaceous, 3.5–9 cm long, 2.5–5 cm broad. Flowers small, pedicellate in axillary or terminal panicles 10–15 cm long. Sepals 4, valvate; petal 1; stamens 9–10; anthers dorsifixed, longitudinally dehiscent. Pods broadly ovate, ca 4 cm long, 6 cm broad, opically beaked, basally rounded, with evenly spaced spinelike thorns. Seeds 1–3, black, shiny, with a large fleshy aril."
601	2012. WRA Specialist. Personal Communication.	[Evidence of substantial reproductive failure in native habitat? No] No evidence.
602	1954. Mejia, A.S.. Sclerotium wilt of Supa ( <i>Sindora supa</i> Merr.). Philippin Journal of Forestry. 9: 119-129.	[Produces viable seed ? Yes] "During July and August, 1951, in unusually warm, wet weather, supa seedlings ( <i>Sindora supa</i> ) in seed beds in the Makiling National Park, College, Laguna, Philippines, were suddenly and severely attacked by a wilt attributed to <i>Sclerotium rolfsii</i> [ <i>Athelia rolfsii</i> ], a new host record. "
602	1998. Gibas, M.M.. Influence of seed size variation on germination and early seedling growth of amugis ( <i>Koordersiodendron pinnatum</i> [Blanco] Merrill) and supa ( <i>Sindora supa</i> Merrill).	[Produces viable seed ? Yes] "Germination energy, germination value and seed size of supa appeared to have significant effect. Large seeds size class performed better than other seed sizes."
603	2012. WRA Specialist. Personal Communication.	[Hybridizes naturally? Unknown]
604	2012. WRA Specialist. Personal Communication.	[Self-compatible or apomictic? Unknown]
605	2012. WRA Specialist. Personal Communication.	[Requires specialist pollinators? Unknown]

606	2012. WRA Specialist. Personal Communication.	[Reproduction by vegetative fragmentation? Unknown]
607	2006. Gascon, C.N./Gascon, A.F./Takahashi, K.. Growth performance of reforestation species in a grassland area of Mt. Banahaw, Lucba, Quezon In: Agroforestry systems in the Philippines: experiences and lessons learned in Mt. Banahaw, Hanunuo Mangyan and S	[Minimum generative time (years)?] Supa performs poorly to fairly in the grassland of Mt. Banahaw. It has very low survival and establishes slowly but the surviving seedlings pick up in vigor after 2 years.
701	2012. WRA Specialist. Personal Communication.	[Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? No] No evidence of unintentional dispersal.
702	1983. Duke, J.A.. Handbook of Energy Crops - <i>Sindora supa</i> . <a href="http://www.hort.purdue.edu/newcrop/duke_energy/Sindora_supa.html">http://www.hort.purdue.edu/newcrop/duke_energy/Sindora_supa.html</a>	[Propagules dispersed intentionally by people? Yes] "Freshly cut trees are said to yield ca 10 liters of a nondrying, limpid, light yellow, homogeneous, aromatic, slightly fluorescent oil, probably a mixture of sesquiterpenes. The oil is valued for illumination, for making varnishes, paints, and transparent paper, and for the adulteration of other oils. The oil is also used for caulking boats. Supa, the wood of this species, is prized for interior house trim, naval construction, furniture, and cabinetmaking. Supa oil is a popular folk remedy for eczema, herpes, ulcers, and other skin diseases in the Philippines."
703	2012. WRA Specialist. Personal Communication.	[Propagules likely to disperse as a produce contaminant? No] No evidence.
704	1983. Duke, J.A.. Handbook of Energy Crops - <i>Sindora supa</i> . <a href="http://www.hort.purdue.edu/newcrop/duke_energy/Sindora_supa.html">http://www.hort.purdue.edu/newcrop/duke_energy/Sindora_supa.html</a>	[Propagules adapted to wind dispersal? No] Pods broadly ovate, ca 4 cm long, 6 cm broad, opically beaked, basally rounded, with evenly spaced spinelike thorns. Seeds 1–3, black, shiny, with a large fleshy aril."
705	2012. WRA Specialist. Personal Communication.	[Propagules water dispersed? Unknown]
706	2012. WRA Specialist. Personal Communication.	[Propagules bird dispersed ? Unknown]
707	1983. Duke, J.A.. Handbook of Energy Crops - <i>Sindora supa</i> . <a href="http://www.hort.purdue.edu/newcrop/duke_energy/Sindora_supa.html">http://www.hort.purdue.edu/newcrop/duke_energy/Sindora_supa.html</a>	[Propagules dispersed by other animals (externally)? Yes] Pods broadly ovate, ca 4 cm long, 6 cm broad, opically beaked, basally rounded, with evenly spaced spinelike thorns. Seeds 1–3, black, shiny, with a large fleshy aril." [aril promotes dispersal by animals, ants]
708	2012. WRA Specialist. Personal Communication.	[Propagules survive passage through the gut? Unknown]
801	2012. WRA Specialist. Personal Communication.	[Prolific seed production (>1000/m2)? Unknown]
802	2006. Gascon, C.N./Gascon, A.F./Takahashi, K.. Growth performance of reforestation species in a grassland area of Mt. Banahaw, Lucba, Quezon In: Agroforestry systems in the Philippines: experiences and lessons learned in Mt. Banahaw, Hanunuo Mangyan and S	[Evidence that a persistent propagule bank is formed (>1 yr)?] "The seeds are manually extracted from dehiscent pods upon sun-drying for 2 to 3 days. These can be sun-dried for one day and stored in dry, sealed bottles. Supa seeds have good keeping quality. They are still viable 1 to 2 years after collection. Supa seeds have fairly good germination values of 60 to 80% and they have good seedling survival."
802	2012. WRA Specialist. Personal Communication.	[Evidence that a persistent propagule bank is formed (>1 yr)? Unknown]
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 tropical region
- Naturalized in the wet tropics bioregion, Queensland, Australia
- Fixes nitrogen (changes soil nutrients)
- Dispersed by animals (fleshy aril aids dispersal)

### Low Risk

- Not invasive elsewhere (but naturalized)
- Non-toxic