**Taxon:** Clinostigma samoense H. Wendl. **Family:** Arecaceae

**Common Name(s):** Samoan palm. **Synonym(s):** Clinostigma powellianum Becc.

Cyphokentia samoensis (H.Wendl.)

**Assessor:** Assessor **Status:** Assessor Approved **End Date:** 14 Apr 2020

**WRA Score:** -1.0 **Designation:** L **Rating:** Low Risk

**Keywords:** Tropical Palm, Ornamental, Unarmed, Shade Tolerant, Bird-Dispersed

| 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 | n |
| 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 | | |
| 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 | | |
| 403 | Parasitic | y=1, n=0 | n |
| 404 | Unpalatable to grazing animals | | |
| 405 | Toxic to animals | y=1, n=0 | n |
| 406 | Host for recognized pests and pathogens | | |
| 407 | Causes allergies or is otherwise toxic to humans | y=1, n=0 | n |
| 408 | Creates a fire hazard in natural ecosystems | y=1, n=0 | n |
| 409 | Is a shade tolerant plant at some stage of its life cycle | y=1, n=0 | y |

| Qsn # | Question | Answer Option | Answer |
|---|---|---|---|
| 410 | Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island) | y=1, n=0 | n |
| 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 | | |
| 604 | Self-compatible or apomictic | | |
| 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 | n |
| 705 | Propagules water dispersed | y=1, n=-1 | n |
| 706 | Propagules bird dispersed | y=1, n=-1 | y |
| 707 | Propagules dispersed by other animals (externally) | y=1, n=-1 | n |
| 708 | Propagules survive passage through the gut | y=1, n=-1 | y |
| 801 | Prolific seed production (>1000/m2) | | |
| 802 | Evidence that a persistent propagule bank is formed (>1 yr) | | |
| 803 | Well controlled by herbicides | | |
| 804 | Tolerates, or benefits from, mutilation, cultivation, or fire | | |
| 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** |
| | Riffle, R.L.& Craft, P. 2003. An Encyclopedia of Cultivated Palms. Timber Press, Portland, OR. | "These species are still rare in cultivation..." |
| | Quattrocchi, U. (2017). CRC World Dictionary of Palms: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL | [No evidence] "in low mountainous rain forest, threatened" |

| | | |
|---|---|---|
| **102** | **Has the species become naturalized where grown?** | |
| | **Source(s)** | **Notes** |
| | WRA Specialist. (2020). Personal Communication | NA |

| | | |
|---|---|---|
| **103** | **Does the species have weedy races?** | |
| | **Source(s)** | **Notes** |
| | WRA Specialist. (2020). 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** |
| | Riffle, R.L.& Craft, P. 2003. An Encyclopedia of Cultivated Palms. Timber Press, Portland, OR. | "Clinostigma samoense is endemic to Samoa, where it grows in low mountainous rain forest." |
| | Hodel, D. R. 2007. Unraveling Clinostigma in Samoa. Palms, 51(1): 11-29 | "Clinostigma samoense primarily occurs in the central highlands of ‘Upolu in the districts of East and West Faleata, West Vaimauga, Safata, and Si’umu, from 300 to 800 m elevation in moist to wet, usually disturbed, often open forest." |

| | | |
|---|---|---|
| **202** | **Quality of climate match data** | **High** |
| | **Source(s)** | **Notes** |
| | Riffle, R.L.& Craft, P. 2003. An Encyclopedia of Cultivated Palms. Timber Press, Portland, OR. | "Clinostigma samoense is endemic to Samoa, where it grows in low mountainous rain forest." |

| Qsn # | Question | Answer |
|---|---|---|
| **203** | **Broad climate suitability (environmental versatility)** | **n** |
| | **Source(s)** | **Notes** |
| | Dave's Garden. (2020). Clinostigma Species, Samoan Palm - Clinostigma samoense. https://davesgarden.com. [Accessed 14 Apr 2020] | "Hardiness:<br>USDA Zone 10b: to 1.7 °C (35 °F)<br>USDA Zone 11: above 4.5 °C (40 °F)" |
| | Riffle, R.L.& Craft, P. 2003. An Encyclopedia of Cultivated Palms. Timber Press, Portland, OR. | "None are frost tolerant and, while some can adapt to the temperatures of frostless Mediterranean climates, they need such abundant and regular moisture as well as such high humidity that they are seldom grown there." ... "Since they start out as undergrowth plants, they relish shade when young and are not adapted to hot and dry climates at any age." |

| Qsn # | Question | Answer |
|---|---|---|
| **204** | **Native or naturalized in regions with tropical or subtropical climates** | **y** |
| | **Source(s)** | **Notes** |
| | Palmpedia. (2020). Clinostigma samoense. http://www.palmpedia.net/wiki/Clinostigma_samoense. [Accessed 14 Apr 2020] | "C. samoense is fast growing and best suited to humid, tropical or warm subtropical climates." |
| | Riffle, R.L.& Craft, P. 2003. An Encyclopedia of Cultivated Palms. Timber Press, Portland, OR. | "Clinostigma samoense is endemic to Samoa, where it grows in low mountainous rain forest." |

| Qsn # | Question | Answer |
|---|---|---|
| **205** | **Does the species have a history of repeated introductions outside its natural range?** | **n** |
| | **Source(s)** | **Notes** |
| | Ellison, D. & Ellison, A. 2001. Cultivated Palms of the World. UNSW Press, Sydney, Australia | "...this palm is not common in cultivation." |
| | Riffle, R.L.& Craft, P. 2003. An Encyclopedia of Cultivated Palms. Timber Press, Portland, OR. | "Clinostigma is a genus of 13 pinnate-leaved, monoecious palms in the South Pacific Islands." ... "These species are still rare in cultivation, especially in the Western Hemisphere, but are among the most beautiful things the natural world has to offer, and all are more than worthy of cultivation in tropical climates." |

| Qsn # | Question | Answer |
|---|---|---|
| **301** | **Naturalized beyond native range** | |
| | **Source(s)** | **Notes** |
| | Chong, K.Y., Tan, H.T.W. & Corlett, R.T. 2009. A Checklist of the Total Vascular Plant Flora of Singapore: Native, Naturalized and Cultivated Species. Raffles Museum of Biodiversity Research, National University of Singapore, Singapore | "Clinostigma samoense H. Wendl.; Arecaceae; cultivated only" |

| Qsn # | Question | Answer |
|---|---|---|
| | Ragone, D. and Lorence, D.H. 2006. Botanical and ethnobotanical inventories of the National Park of American Samoa. Technical Report 170. University of Hawaii Pacific Cooperative Studies Unit, Honolulu, HI | [Native to Upolu, but may be showing signs of naturalizing on American Samoa] "A Clinostigma samoense palm tree was observed at the cliff base outside of the boundaries of plot 4 at 981m. This species is endemic to the Samoan archipelago and occurs wild on the islands of Upolu. Two trees were also seen growing along the abandoned access road above Fiti uta village that led to agricultural areas near Luatele Crater. Those trees were obviously planted because this species is not known to occur naturally in American Samoa. The tree at Saua may have been planted, but because of its location in a rocky outcropping, it probably grew from a seed dispersed by a flying fox or native bird." |
| | Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall | No evidence |
| | Imada, C. (2019). Hawaiian Naturalized Vascular Plants Checklist (February 2019 update). Bishop Museum Technical Report 69. Bishop Museum, Honolulu, HI | No evidence to date |

| 302 | Garden/amenity/disturbance weed | n |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall | No evidence |

| 303 | Agricultural/forestry/horticultural weed | n |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall | No evidence |

| 304 | Environmental weed | n |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Meyer, J. Y., Lavergne, C., & Hodel, D. R. 2008. Time bombs in gardens: invasive ornamental palms in tropical islands, with emphasis on French Polynesia (Pacific Ocean) and the Mascarenes (Indian Ocean). Palms, 52(2): 71-83 | No evidence |
| | Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall | No evidence |

| 305 | Congeneric weed | n |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Meyer, J. Y., Lavergne, C., & Hodel, D. R. 2008. Time bombs in gardens: invasive ornamental palms in tropical islands, with emphasis on French Polynesia (Pacific Ocean) and the Mascarenes (Indian Ocean). Palms, 52(2): 71-83 | No evidence |
| | Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall | No evidence |

| Qsn # | Question | Answer |
|---|---|---|
| 401 | **Produces spines, thorns or burrs** | **n** |
| | **Source(s)** | **Notes** |
| | Hodel, D. R. 2007. Unraveling Clinostigma in Samoa. Palms, 51(1): 11-29 | "Solitary, unarmed, pleonanthic, monoecious, forest palm 15–20 m tall (Fig. 7). Trunk erect, green with white waxy glaucous indument, aging to grayish white or brownish, ringed, 25–30 cm diam., internodes 2.5–7.5 cm. Leaves 15, ascending to spreading; sheath 1.5 m long, lime green with slight glaucous bloom, forming a conspicuous and prominent crownshaft; petiole 30 cm long, concave adaxially, rounded abaxially; rachis 2.6–2.8 m long, flat adaxially, rounded abaxially; pinnae up to 75 per side, elegantly and pendulous, regularly arranged, lower middle the largest, to 65–85 × 3–4 cm, proximal pinnae to 30 × 1 cm, distal pinnae to 20 × 1.5 cm, prominently 3- nerved adaxially, tan medifixed ramentae to 1 cm long on prominent midrib abaxially near rachis, otherwise glabrous." |

| 402 | **Allelopathic** | |
|---|---|---|
| | **Source(s)** | **Notes** |
| | WRA Specialist. (2020). Personal Communication | Unknown |

| 403 | **Parasitic** | **n** |
|---|---|---|
| | **Source(s)** | **Notes** |
| | USDA, Agricultural Research Service, National Plant Germplasm System. (2020). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 14 Apr 2020] | amily: Arecaceae (alt.Palmae)<br>Subfamily: Arecoideae<br>Tribe: Areceae |

| 404 | **Unpalatable to grazing animals** | |
|---|---|---|
| | **Source(s)** | **Notes** |
| | WRA Specialist. (2020). Personal Communication | Unknown |

| 405 | **Toxic to animals** | **n** |
|---|---|---|
| | **Source(s)** | **Notes** |
| | 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 |
| | Riffle, R.L.& Craft, P. 2003. An Encyclopedia of Cultivated Palms. Timber Press, Portland, OR. | No evidence |
| | Wagstaff, D.J. 2008. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL | No evidence |

| 406 | **Host for recognized pests and pathogens** | |
|---|---|---|

| Qsn # | Question | Answer |
|---|---|---|
| | **Source(s)** | **Notes** |
| | WRA Specialist. (2020). Personal Communication | Unknown |

| 407 | **Causes allergies or is otherwise toxic to humans** | **n** |
|---|---|---|
| | **Source(s)** | **Notes** |
| | 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 |
| | Riffle, R.L.& Craft, P. 2003. An Encyclopedia of Cultivated Palms. Timber Press, Portland, OR. | No evidence |
| | Wagstaff, D.J. 2008. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL | No evidence |

| 408 | **Creates a fire hazard in natural ecosystems** | **n** |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Ellison, D. & Ellison, A. 2001. Cultivated Palms of the World. UNSW Press, Sydney, Australia | [No evidence, and unlikely given habitat] "Indigenous to the wet forests of the Pacific Island of Samoa..." |

| 409 | **Is a shade tolerant plant at some stage of its life cycle** | **y** |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Riffle, R.L.& Craft, P. 2003. An Encyclopedia of Cultivated Palms. Timber Press, Portland, OR. | "Since they start out as undergrowth plants, they relish shade when young and are not adapted to hot and dry climates at any age." |
| | Dave's Garden. (2020). Clinostigma Species, Samoan Palm - Clinostigma samoense. https://davesgarden.com. [Accessed 14 Apr 2020] | "Sun Exposure:<br>Full Sun<br>Sun to Partial Shade" |

| 410 | **Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)** | **n** |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Riffle, R.L.& Craft, P. 2003. An Encyclopedia of Cultivated Palms. Timber Press, Portland, OR. | "They do not like alkaline soils, which limits their use in southern Florida, unless the soil is amended with humus or the trees are mulched with organic material." |

| 411 | **Climbing or smothering growth habit** | **n** |
|---|---|---|
| | **Source(s)** | **Notes** |

| Qsn # | Question | Answer |
|---|---|---|
| | Quattrocchi, U. (2017). CRC World Dictionary of Palms: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL | [No evidence] "Solitary, pleonanthic, unarmed, monoecious, erect, slender heavily-prominently ringed grey trunk, lack of prominent stilt roots at the base of the trunk, pale-green conspicuous crownshaft, hemispherical crown of very finely divided fronds, ascending to spreading pinnately compound leaves with linear-lanceolate leaflets, regularly arranged pendulous long-pointed pinnae, diffuse to broomlike infrafoliar inflorescences branched to two-three orders, widely branching panicles, thick coarse narrowly diverging rachillae or slender widely spreading rachillae, large rounded-oblong shiny black fruits with stigmatic remains near the apex" |

| 412 | Forms dense thickets | n |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Oldfield, S., Lusty, C. & MacKinven, A. 1998. The World List of Threatened Trees. World Conservation Press, Cambridge, UK | [No evidence from native range. Not widely cultivated outside native range] "A palm confined to Upolu Island, Western Samoa. The major part of the broadleaved lowland forest habitat is now destroyed. Remaining populations appear to be healthy and stable, the species occasionally being quite common. " |
| | Hodel, D. R. 2007. Unraveling Clinostigma in Samoa. Palms, 51(1): 11-29 | [No evidence from native range] "Typically, C. samoense occurs as scattered, emergent individuals on steep slopes or in more level areas." |

| 501 | Aquatic | n |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Ellison, D. & Ellison, A. 2001. Cultivated Palms of the World. UNSW Press, Sydney, Australia | [Terrestrial palm] "Indigenous to the wet forests of the Pacific Island of Samoa..." |

| 502 | Grass | n |
|---|---|---|
| | **Source(s)** | **Notes** |
| | USDA, Agricultural Research Service, National Plant Germplasm System. (2020). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 14 Apr 2020] | Family: Arecaceae (alt.Palmae)<br>Subfamily: Arecoideae<br>Tribe: Areceae |

| 503 | Nitrogen fixing woody plant | n |
|---|---|---|
| | **Source(s)** | **Notes** |
| | USDA, Agricultural Research Service, National Plant Germplasm System. (2020). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 14 Apr 2020] | Family: Arecaceae (alt.Palmae)<br>Subfamily: Arecoideae<br>Tribe: Areceae |

| 504 | Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers) | n |
|---|---|---|

| Qsn # | Question | Answer |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Palmpedia. (2020). Clinostigma samoense. http://www.palmpedia.net/wiki/Clinostigma_samoense. [Accessed 14 Apr 2020] | "Trunk type: Solitary. Hight: To 25 meters, (82'), with a powdery blue to lime green crownshaft, a tall, slender, ringed trunk, the trunk when young appears whitish, but turns a glaucous green with age, and maintains a 'chalky' appearance even when mature, when mature they develop a mass of stilt roots. The leaves are pendulant, giving the crown a wonderful appearance. The immature leaves are bifid, and go pinnate after a year or two in the ground. Leaf detail: Pinnately compound, fine leaflets, heavily drooping, with arching fronds, fronds to 6 meters, (20')." |

| 601 | Evidence of substantial reproductive failure in native habitat | n |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Oldfield, S., Lusty, C. & MacKinven, A. 1998. The World List of Threatened Trees. World Conservation Press, Cambridge, UK | "Western Samoa. A palm confined to Upolu Island, Western Samoa. The major part of the broadleaved lowland forest habitat is now destroyed. Remaining populations appear to be healthy and stable, the species occasionally being quite common." |
| | Conservation International Pacific Islands Program, 2011. Biodiversity Conservation Lessons Learned Technical Series 2: The Rare Plants of Samoa. Conservation International, Apia, Samoa | [No evidence] "Not Threatened Species that have been evaluated but have been determined to not be endangered or threatened in the country." ... "The IUCN included five plants on its Red List (IUCN 2008) in Samoa. These are Solfia samoensis (listed there as Drymophloeus samoensis), Clinostigma samoense, Aglaia elaegnoidea, Aglaia samoensis, and Calophyllum neo-ebudicum. However, it is not clear why these plants were selected, since none of them were on Whistler's 1992 list. Drymophloeus occurs at high elevations and is apparently not uncommon; Clinostigma samoense has been collected over 20 times in Samoa, nine times by Whistler alone" |

| 602 | Produces viable seed | y |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Ellison, D. & Ellison, A. 2001. Cultivated Palms of the World. UNSW Press, Sydney, Australia | "Although rare, fresh seed should germinate in 2 to 4 months with bottom heat." |
| | Dave's Garden. (2020). Clinostigma Species, Samoan Palm - Clinostigma samoense. https://davesgarden.com. [Accessed 14 Apr 2020] | "Propagation Methods: From seed; germinate in vitro in gelatin, agar or other medium" |

| 603 | Hybridizes naturally | |
|---|---|---|
| | **Source(s)** | **Notes** |

| Qsn # | Question | Answer |
|---|---|---|
| | Hodel, D. R. 2007. Unraveling Clinostigma in Samoa. Palms, 51(1): 11-29 | [Possibly Yes] "A possible hybrid of Clinostigma samoense and C. warburgii, which might be C. powellianum, is this plant at Ho'omaluhia Botanical Garden (HBG 78.0891). It has more spreading inflorescences branched to three orders but with thick, coarse, moderately diverging rachillae." ... "That their ranges briefly overlap raises the possibility of hybrids. Indeed, I suspect that Clinostigma powellianum might actually be a hybrid, and its placement with C. samoense is somewhat problematic." ... "Some might contend that this hybrid is actually an intermediate form that ties the two species, Clinostigma samoense and C. warburgii, together, making a case for just one highly variable species. However, there does not appear to be a continuum of variation with a multitude of intermediate forms from one species to another, which one would expect if there were just one highly variable species. Rather, there are the two distinct species with one additional taxon more or less exactly intermediate between the two with no other variation present. Perhaps future study employing DNA will be able to sort these taxa out more satisfactorily." |

| 604 | Self-compatible or apomictic | |
|---|---|---|
| | **Source(s)** | **Notes** |
| | WRA Specialist. (2020). Personal Communication | Unknown |

| 605 | Requires specialist pollinators | n |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Kato, M., Shibata, A., Yasui, T., & Nagamasu, H. 1999. Impact of introduced honeybees, Apis mellifera, upon native bee communities in the Bonin (Ogasawara) Islands. Researches on Population Ecology, 41(2): 217-228 | "Table 4. Plant species observed to be visited by honeybees in the Bonin Islands, with the months when flowering and honeybee visits were observed" [Related species, Clinostigma savoryana, visited, and presumably pollinated by honeybees] |
| | Kubitzki, K. (ed.). 1998. The Families and genera of vascular plants. Volume IV. Flowering plants, Monocotyledons: Alismatanae and Commelinanae (except Gramineae). Springer-Verlag, Berlin, Heidelberg, New York | [No evidence from flora morphology] "Inflorescences infrafoliar, branched to 3 orders; prophyll and peduncular bract enclosing inflorescence in bud, caducous; rachillae bearing superficial spiral triads throughout, or proximally only with staminate flowers distally. Staminate flowers asymmetrical; sepals and petals distinct; stamens 6, filaments inflexed, anthers versatile, latrorse; pistillode conical. Staminodes (5-)6. Stigmatic remains eccentrically apical, lateral, or basal; epicarp smooth, mesocarp fibrous, endocarp smooth, operculum elliptic." |

| 606 | Reproduction by vegetative fragmentation | n |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Kubitzki, K. (ed.). 1998. The Families and genera of vascular plants. Volume IV. Flowering plants, Monocotyledons: Alismatanae and Commelinanae (except Gramineae). Springer-Verlag, Berlin, Heidelberg, New York | [Solitary. No evidence of suckering or clustering habit or vegetative spread] "Solitary, erect. Crownshaft present. Leaflets single-fold, acute." |

| 607 | Minimum generative time (years) | >3 |
|---|---|---|

| Qsn # | Question | Answer |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Riffle, R.L.& Craft, P. 2003. An Encyclopedia of Cultivated Palms. Timber Press, Portland, OR. | "None of these species are fast growing but neither are they terribly slow." |
| | Hodel, D.R. 1993. The Growth of Some Palms in Tahiti. Principes 37(3): 124-138 | "Table 1. Palrns in Papeari, August, 1990. I : years in ground, 2 : years in ground to flowering" ... [Clinostigma samoense - years in ground to flowering = 7 years] |

| 701 | **Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)** | **n** |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Hodel, D. R. 2007. Unraveling Clinostigma in Samoa. Palms, 51(1): 11-29 | [Possible but unlikely. Fruits & seed lack means of external attachment] "Fruits 10–20 × 7–13 mm, typically oblong, less frequently somewhat rounded, black or purplish black with glaucous bloom" |

| 702 | **Propagules dispersed intentionally by people** | **y** |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Imada, C.T., Staples, G.W. & Herbst, D.R. 2005. Annotated Checklist of Cultivated Plants of Hawai'i. http://www2.bishopmuseum.org/HBS/botany/cultivatedplants/. [Accessed 14 Apr 2020] | "Locations:<br>Foster Botanical Garden<br>Harold L. Lyon Arboretum<br>Ho'omaluhia Botanical Garden<br>Pacific Tropical Botanical Garden (now National Tropical Botanical Garden)<br>Waimea Arboretum & Botanical Garden" |
| | Riffle, R.L.& Craft, P. 2003. An Encyclopedia of Cultivated Palms. Timber Press, Portland, OR. | [Ornamental & landscaping uses] "There is no more beautiful plant species." |

| 703 | **Propagules likely to disperse as a produce contaminant** | **n** |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Hodel, D. R. 2007. Unraveling Clinostigma in Samoa. Palms, 51(1): 11-29 | [Unlikely. Fruits & seed large enough to prevent inadvertent contamination of other produce, potting soil etc.] "Fruits 10–20 × 7–13 mm, typically oblong, less frequently somewhat rounded, black or purplish black with glaucous bloom" |

| 704 | **Propagules adapted to wind dispersal** | **n** |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Hodel, D. R. 2007. Unraveling Clinostigma in Samoa. Palms, 51(1): 11-29 | "Fruits 10–20 × 7–13 mm, typically oblong, less frequently somewhat rounded, black or purplish black with glaucous bloom" |

| Qsn # | Question | Answer |
|---|---|---|
| **705** | **Propagules water dispersed** | **n** |
| | **Source(s)** | **Notes** |
| | Hodel, D. R. 2007. Unraveling Clinostigma in Samoa. Palms, 51(1): 11-29 | [May be moved by water if growing near streams, but distribution and fruit morphology suggest frugivore-mediated dispersal] "Typically, C. samoense occurs as scattered, emergent individuals on steep slopes or in more level areas." |

| 706 | Propagules bird dispersed | y |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Ragone, D. and Lorence, D.H. 2006. Botanical and ethnobotanical inventories of the National Park of American Samoa. Technical Report 170. University of Hawaii Pacific Cooperative Studies Unit, Honolulu, HI | [Bird and bat dispersed] "A Clinostigma samoense palm tree was observed at the cliff base outside of the boundaries of plot 4 at 981m. This species is endemic to the Samoan archipelago and occurs wild on the islands of Upolu. Two trees were also seen growing along the abandoned access road above Fiti uta village that led to agricultural areas near Luatele Crater. Those trees were obviously planted because this species is not known to occur naturally in American Samoa. The tree at Saua may have been planted, but because of its location in a rocky outcropping, it probably grew from a seed dispersed by a flying fox or native bird." |
| | Hodel, D. R. 2007. Unraveling Clinostigma in Samoa. Palms, 51(1): 11-29 | [Presumably Yes. Fleshy-fruited] "Fruits 10–20 × 7–13 mm, typically oblong, less frequently somewhat rounded, black or purplish black with glaucous bloom, stigmatic remains near apex, beak-like; perianth 5 × 10 mm, cupular; sepals 5 mm high, imbricate nearly to acute apex, broadly rounded, petals 5 mm high, imbricate nearly to apex, broadly rounded; staminodes 6, 1 mm long, tooth-like, acute, 4–6 toward side of fruit with stigmatic beak." |

| 707 | Propagules dispersed by other animals (externally) | n |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Hodel, D. R. 2007. Unraveling Clinostigma in Samoa. Palms, 51(1): 11-29 | [Presumably adapted for consumption by frugivores and internal dispersal. Lack means of external attachment] "Fruits 10–20 × 7–13 mm, typically oblong, less frequently somewhat rounded, black or purplish black with glaucous bloom, stigmatic remains near apex..." |

| 708 | Propagules survive passage through the gut | y |
|---|---|---|
| | **Source(s)** | **Notes** |
| | Ragone, D. and Lorence, D.H. 2006. Botanical and ethnobotanical inventories of the National Park of American Samoa. Technical Report 170. University of Hawaii Pacific Cooperative Studies Unit, Honolulu, HI | [Presumably Yes. Bird and bat dispersed] "The tree at Saua may have been planted, but because of its location in a rocky outcropping, it probably grew from a seed dispersed by a flying fox or native bird." |

| Qsn # | Question | Answer |
|---|---|---|
| **801** | **Prolific seed production (>1000/m2)** | |
| | **Source(s)** | **Notes** |
| | Hodel, D. R. 2007. Unraveling Clinostigma in Samoa. Palms, 51(1): 11-29 | [Unknown. Probably does not produce such high seed levels] "Solitary, unarmed, pleonanthic, monoecious, forest palm 15–20 m tall" ... "Fruits 10–20 × 7–13 mm, typically oblong, less frequently somewhat rounded, black or purplish black with glaucous bloom, stigmatic remains near apex" |

| | | |
|---|---|---|
| **802** | **Evidence that a persistent propagule bank is formed (>1 yr)** | |
| | **Source(s)** | **Notes** |
| | Royal Botanic Gardens Kew. (2020) Seed Information Database (SID). Version 7.1. Available from: http://data.kew.org/sid/. [Accessed 14 Apr 2020] | "Storage Behaviour: No data available for species or genus. Of 107 known taxa of family ARECACEAE, 28.97% Orthodox(p/?), 27.10% Recalcitrant(?), 11.21% Intermediate(?), 32.71% Uncertain" |
| | WRA Specialist. (2020). Personal Communication | Unknown from field or storage conditions |

| | | |
|---|---|---|
| **803** | **Well controlled by herbicides** | |
| | **Source(s)** | **Notes** |
| | WRA Specialist. (2020). Personal Communication | Unknown. No information on herbicide efficacy or chemical control of this species |

| | | |
|---|---|---|
| **804** | **Tolerates, or benefits from, mutilation, cultivation, or fire** | |
| | **Source(s)** | **Notes** |
| | WRA Specialist. (2020). Personal Communication | Unknown |

| | | |
|---|---|---|
| **805** | **Effective natural enemies present locally (e.g. introduced biocontrol agents)** | |
| | **Source(s)** | **Notes** |
| | WRA Specialist. (2020). Personal Communication | Unknown |

**Summary of Risk Traits:**

High Risk / Undesirable Traits
• Thrives in tropical climates
• Possibly naturalizing on American Samoa
• Shade tolerant (may be able to spread into intact forests)
• May be able to hybridize with other Clinostigma species
• Seeds dispersed by birds, flying foxes & intentionally by people
• Limited ecological information makes accurate risk prediction difficult

Low Risk Traits
• No reports of invasiveness or naturalization (with the possible exception of American Samoa), but no evidence of widespread introduction outside native range
• Unarmed (no spines, thorns or burrs)
• Ornamental
• Not reported to spread vegetatively
• Reaches maturity in 7+ years