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| Taxon: <i>Asparagus densiflorus</i> (Kunth) Jessop | Family: Asparagaceae |
| Common Name(s): asparagus fern foxtail fern plume asparagus regal fern Sprenger's asparagus fern | Synonym(s): <i>Asparagopsis densiflora</i> Kunth <i>Asparagus myriocladus</i> Baker <i>Protasparagus densiflorus</i> (Kunth) ~ |

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|--------------------------------|----------------------------------|------------------------------|
| Assessor: Chuck Chimera | Status: Assessor Approved | End Date: 16 Feb 2021 |
| WRA Score: 15.0 | Designation: H(HPWRA) | Rating: High Risk |

Keywords: Tuberos Geophyte, Naturalized, Environmental Weed, Dense Cover, 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 | 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) | y |
| 305 | Congeneric weed | n=0, y = 1*multiplier (see Appendix 2) | y |
| 401 | Produces spines, thorns or burrs | y=1, n=0 | y |
| 402 | Allelopathic | | |
| 403 | Parasitic | y=1, n=0 | n |
| 404 | Unpalatable to grazing animals | | |
| 405 | Toxic to animals | | |
| 406 | Host for recognized pests and pathogens | | |
| 407 | Causes allergies or is otherwise toxic to humans | | |

| Qsn # | Question | Answer Option | Answer |
|-------|--|---------------|--------|
| 408 | Creates a fire hazard in natural ecosystems | | |
| 409 | Is a shade tolerant plant at some stage of its life cycle | y=1, n=0 | y |
| 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 | y |
| 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 | y |
| 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 | n |
| 607 | Minimum generative time (years) | | |
| 701 | Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas) | y=1, n=-1 | y |
| 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) | 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 |
| | Whistler, W.A. 2000. Tropical Ornamentals: A Guide. Timber Press, Portland, OR | "Several cultivars are recognized based on differences in branching and habit." [No evidence of domestication] |

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|-----|---|-------|
| 102 | Has the species become naturalized where grown? | |
| | Source(s) | Notes |
| | WRA Specialist. (2021). Personal Communication | NA |

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|-----|--|-------|
| 103 | Does the species have weedy races? | |
| | Source(s) | Notes |
| | WRA Specialist. (2021). 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 |
| | USDA, Agricultural Research Service, National Plant Germplasm System. (2021). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/ . [Accessed 11 Feb 2021] | "Native Africa SOUTHERN AFRICA: Lesotho, Eswatini, South Africa [KwaZulu-Natal, Free State, Eastern Cape, Northern Cape, Gauteng, Limpopo, Mpumalanga]" |

| | | |
|-----|--|-------|
| 202 | Quality of climate match data | High |
| | Source(s) | Notes |
| | USDA, Agricultural Research Service, National Plant Germplasm System. (2021). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/ . [Accessed 11 Feb 2021] | |

| Qsn # | Question | Answer |
|-------|--|---------------------------------------|
| 203 | Broad climate suitability (environmental versatility) | n |
| | Source(s) | Notes |
| | Gilman, E.F., Klein, R.W., and Hansen, G. Gilman, E.F. (2018). <i>Asparagus densiflorus</i> 'Myers' Myers <i>Asparagus</i> Fern. FPS-52. Revised. IFAS, University of Florida, Gainesville. https://edis.ifas.ufl.edu/ . [Accessed 12 Feb 2021] | "USDA hardiness zones: 9B through 11" |
| | Missouri Botanical Garden. (2021). <i>Asparagus densiflorus</i> 'Myersii'. http://www.missouribotanicalgarden.org . [Accessed 12 Feb 2021] | "Zone: 9 to 11" |

| 204 | Native or naturalized in regions with tropical or subtropical climates | y |
|-----|--|---|
| | Source(s) | Notes |
| | Oppenheimer, H. L. (2003). New plant records from Maui and Hawai'i Counties. <i>Bishop Museum Occasional Papers</i> . 73: 3-30 | " <i>Asparagus densiflorus</i> (Kunth) Jessop New island record Commonly cultivated, this taxon was first reported as a naturalized species in Hawai'i by Lorence & Flynn (1999: 4–5), who cited specimens collected on the island of Kaua'i. Later, it was reported from West Maui (Oppenheimer & Bartlett, 2000: 6). It has also escaped cultivation and is naturalized on the Big Island, and has been observed to be spreading from plantings at Mānele Bay, Lāna'i into irrigated, landscaped areas nearby, and will likely become established there in the near future as well. Material examined: HAWAII: S. Kohala Dist, 'Anaeho'omalu, 12 m, edge of landscaped area in <i>Prosopis</i> thicket, 11 Mar 2001, Oppenheimer & S. Holt H30119." |
| | Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall | "Preferred Climate/s: Mediterranean, Subtropical, Tropical" |

| 205 | Does the species have a history of repeated introductions outside its natural range? | y |
|-----|--|--|
| | Source(s) | Notes |
| | Weber, E. 2017. <i>Invasive Plant Species of the World</i> , 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK | "The plant is widely used in horticulture as a ground cover, and several cultivars have been developed." |

| 301 | Naturalized beyond native range | y |
|-----|--|--------------|
| | Source(s) | Notes |
| | | |

| Qsn # | Question | Answer |
|-------|--|--|
| | Oppenheimer, H. L. (2003). New plant records from Maui and Hawai'i Counties. Bishop Museum Occasional Papers. 73: 3-30 | "Asparagus densiflorus (Kunth) Jessop New island record Commonly cultivated, this taxon was first reported as a naturalized species in Hawai'i by Lorence & Flynn (1999: 4–5), who cited specimens collected on the island of Kaua'i. Later, it was reported from West Maui (Oppenheimer & Bartlett, 2000: 6). It has also escaped cultivation and is naturalized on the Big Island, and has been observed to be spreading from plantings at Mānele Bay, Lāna'i into irrigated, landscaped areas nearby, and will likely become established there in the near future as well. Material examined: HAWAII: S. Kohala Dist, 'Anaeho'omalu, 12 m, edge of landscaped area in Prosopis thicket, 11 Mar 2001, Oppenheimer & S. Holt H30119." |
| | Kraus, F. (2003). New records of alien plants and animals in Hawai'i. Bishop Museum Occasional Papers 74: 76-78 | "Asparagus densiflorus (Kunth) Jessop New island record Previously reported from Kaua'i (Lorence & Flynn, 1999) and Maui (Oppenheimer & Bartlett, 2000), this widely planted ornamental native to southern Africa is common at its newly reported locality on O'ahu. Material examined: O'AHU: Honolulu: Makiki, eastern slope of east side of Maunalaha Trail, 30 Mar 2001, F. Kraus, Kraus 02 (BISH)." |
| | Oppenheimer, H.L. & Bartlett, R.T. (2000). New plant records from Maui, O'ahu, and the Hawai'i Islands. Bishop Museum Occasional Papers 64: 1-10 | "Asparagus densiflorus (Kunth) Jessop New island record This South African species (Neal, 1965: 209) is widely planted in resort and home landscaping and was first reported as naturalized by Lorence & Flynn (1999: 4–5). It is naturalized on Maui as well. The voucher is referable to cultivar 'Sprenger'. Material examined: MAUI: West Maui, Lahaina District, Honokahua, near Hāwea Pt, on coastal bluffs and in clay soil in Scaevola coastal shrubland, 12 m, 12 Sep 1999, Oppenheimer H99909." |
| | Oppenheimer, H. (2007). New plant records from Moloka'i, Lāna'i, Maui, and Hawai'i for 2006. Bishop Museum Occasional Papers 96:17-34 | "Asparagus densiflorus (Kunth) Jessop New island record. Popular in cultivation and recently documented as a naturalized element of the Hawaiian flora from the islands of Kaua'i (Lorence & Flynn 1999: 4–5), O'ahu (Kraus 2003: 76), Maui (Oppenheimer & Bartlett 2000: 6), and Hawai'i (Oppenheimer 2003: 14), A. densiflorus was observed at least as early as 2000 to be escaping from cultivation on Lāna'i, and can now be considered naturalized there. The species was noted to be volunteering in the Lāna'i City area as well where it is also under cultivation Material examined. LĀNA'I: Hulopo'e, 15 m, locally common near rock walls and under hedges, 20 Oct 2006, Oppenheimer H100642." |

| Qsn # | Question | Answer |
|-------|--|--|
| | <p>Lorence, D. & Flynn, T. (1999). New naturalized plant records for the Hawaiian Islands. Bishop Museum Occasional Papers. 59: 3-6</p> | <p>"New naturalized record for state. <i>Asparagus densiflorus</i> can be distinguished from other <i>Asparagus</i> species in Hawai'i by its flattened cladodes. A common ornamental used as both a ground cover and a potted plant, it will frequently volunteer in home gardens. It forms large mounds up to 1 m across with spiny, arching branches that are festooned with bright scarlet-red, single-seeded fruits. The widespread use of this plant in ornamental settings coupled with production of large numbers of fruit that are undoubtedly attractive to birds which will continue to contribute to the plants spread. Recent observations seem to show a tolerance to herbicides used in controlling roadside vegetation. Material examined. KAUAI: Kōloa District: Hwy 50, 0.1 mi West of junction with Maluhia Road (Tunnel of Trees). Ruderal vegetation of <i>Panicum</i>, <i>Sporobolus</i>, <i>Plantago</i>, <i>Taraxacum</i>, <i>Chamaesyce</i>, and <i>Eragrostis</i>, ca. 195 m, 14 Dec 1998, T. Flynn 6494 (BISH, PTBG, US); Hwy 50, 0.5 mi West of entrance to Kāhili Mt. Park. Ruderal vegetation of <i>Panicum</i>, <i>Chamaesyce</i>, <i>Emilia</i>, <i>Sonchus</i>, and <i>Bidens</i>, ca. 195 m, 14 Dec 1998, T. Flynn 6495 (BISH, PTBG, US)."</p> |
| | <p>Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall</p> | <p>[Naturalized and/or weedy in a number of locations worldwide] "References: Global-NW-85, United States of America-CE-233, United States of America-CE-617, Caribbean-N-707, Pacific-W-3, Australia-W-269, Australia-E-289, New Zealand-E-246, United States of America-E-80, United States of America-N-101, United States of America-EI-112, Australia-CW-334, Australia-E-155, United States of America-EW-179, Australia-N-198, New Zealand-W-225, Australia-C-401, New Zealand-E-494, Pacific-E-621, Global-E-649, Australia-ENX-310, Australia-EN-7, United States of America-N-301, United States of America-E-151, United States of America-N-839, Australia-N-855, Bahamas-NI-873, Portugal-N-1006, Italy-N-1006, Portugal-N-1006, Spain-N-1006, Australia-N-1049, China-I-1055, Europe-N-819, New Zealand-E-328, Greece-U-1142, Gal pagos Islands-CN-1157, Cyprus-U-1174, United States of America-Q-1197, Caribbean-NI-1201, United States of America-N-1292, La Reunion-W-1321, Global-W-1324, Galapagos Islands-C-1481, Cuba-NI-1505, China-I-1544, Australia-I-1544, Cook Islands-I-1544, Fiji-I-1544, French Polynesia-I-1544, Guam-I-1544, India-I-1544, Japan-I-1544, Marshall Islands-I-1544, Nauru-I-1544, New Caledonia-I-1544, New Zealand-I-1544, Niue-I-1544, United States of America-I-1544, Palau-I-1544, South Korea-I-1544, Samoa-I-1544, Singapore-I-1544, Tonga-I-1544, Global-CD-1611, Eastern Caribbean-N-1742, Brazil-I-984, Chile-I-1872, United States of America-N-742, Sardinia-U-1917, -, -, Cuba-NI-2055, New Zealand-Q-2086, United States of America-N-2092, Algeria-W-1977, Anguilla-W-1977, Argentina-W-1977, Australia-W-1977, Bahamas-W-1977, Chile-W-1977, China-W-1977, Cook Islands-W-1977, Costa Rica-W-1977, Cuba-W-1977, Cyprus-W-1977, Dominican Republic-W-1977, Egypt-W-1977, El Salvador-W-1977, Fiji-W-1977, Greece-W-1977, Honduras-W-1977, India-W-1977, Marshall Islands-W-1977, Micronesia (Federated States of)-W-1977, Nauru-W-1977, Nicaragua-W-1977, Niue-W-1977, Palau-W-1977, Samoa-W-1977, Tonga-W-1977, Uruguay-W-1977, Venezuela-W-1977."</p> |
| | <p>Imada, C. (2019). Hawaiian Naturalized Vascular Plants Checklist (February 2019 update). Bishop Museum Technical Report 69. Bishop Museum, Honolulu, HI</p> | <p>Naturalized on Kauai, Oahu, Lanai, Maui and Hawaii</p> |

| Qsn # | Question | Answer |
|-------|---|--|
| 302 | Garden/amenity/disturbance weed | n |
| | Source(s) | Notes |
| | Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK | [Environmental weed] "Where invasive, the plant forms extensive and dense colonies displacing native understorey and ground-cover species;" |
| 303 | Agricultural/forestry/horticultural weed | n |
| | Source(s) | Notes |
| | Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK | "Where invasive, the plant forms extensive and dense colonies displacing native understorey and ground-cover species;" [Environmental weed] |
| | 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 |
| | Gilman, E.F., Klein, R.W., and Hansen, G. Gilman, E.F. (2018). <i>Asparagus densiflorus</i> 'Myers' Myers Asparagus Fern. FPS-52. Revised. IFAS, University of Florida, Gainesville. https://edis.ifas.ufl.edu/ . [Accessed 12 Feb 2021] | "Invasive potential: The Florida Exotic Pest Plant Council has declared asparagus fern a Category I invasive exotic." |
| | Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK | "The plant is widely used in horticulture as a ground cover, and several cultivars have been developed. The plant grows in both low and high light conditions and produces a dense mass of somewhat fleshy roots, bearing numerous tubers. The plant tolerates drought and appears to be salt tolerant as well (Langeland and Craddock Burks, 1998; Parsons and Cuthbertson, 2001). Where invasive, the plant forms extensive and dense colonies displacing native understorey and ground-cover species; it overtops shrubs and young trees. In Florida, it invades tropical hammocks and outcompetes wild coffee (<i>Psychotria nervosa</i>), a typical shrub of these ecosystems (Langeland and Craddock Burks, 1998). The plant also invades coastal habitats (Bowden and Rogers, 1996)." |
| 305 | Congeneric weed | y |
| | Source(s) | Notes |

| Qsn # | Question | Answer |
|-------|---|--|
| | Vivian-Smith, G. E., & Gosper, C. R. (2010). Comparative seed and dispersal ecology of three exotic subtropical <i>Asparagus</i> species. <i>Invasive Plant Science and Management</i> , 3(1), 93-103 | "Eight exotic species of <i>Asparagus</i> are naturalized in Australia and a further nine species are recorded as present in collections in Australian herbaria or in cultivation (Batchelor and Scott 2006). Of the naturalized species, six (<i>A. aethiopicus</i> L. [basket asparagus], <i>A. africanus</i> Lam. [climbing asparagus], <i>A. asparagoides</i> L. [bridal creeper], <i>A. declinatus</i> L. [bridal veil], <i>A. plumosus</i> Baker [climbing asparagus fern], and <i>A. scandens</i> Thunb. [asparagus fern]) are recognized as invasive, with one, <i>A. asparagoides</i> , classed as a Weed of National Significance; a seventh species is a cultivated crop and widely naturalized (<i>A. officinalis</i> L. [edible asparagus]); the eighth (<i>A. virgatus</i> Baker) is considered potentially invasive, although CLIMEX models do not predict a major spread beyond the current distribution (Batchelor and Scott 2006; Scott and Batchelor 2006)." |
| | Weber, E. 2017. <i>Invasive Plant Species of the World</i> , 2nd Edition: A Reference Guide to Environmental Weeds. CAB International, Wallingford, UK | [<i>Asparagus asparagoides</i>] "Bridal creeper is invasive in Australia and New Zealand because its twining stems form a dense ground cover and smother woody plants. A mass of rhizomes and tubers form a dense layer in the top soil, impeding growth and preventing establishment of any native plants (Parsons and Cuthbertson, 2001). In invaded forests, bridal creeper becomes the dominant species in the lower layer of vegetation. This is of particular concern, because the plant spreads in undisturbed bushland in Australia, e.g. mallee vegetation and dry sclerophyll forests (State of Queensland, 2014). In some conservation areas of South Australia, bridal creeper threatens several rare and endangered native plant species with extinction (State of Queensland, 2014)," |

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| 401 | Produces spines, thorns or burrs | y |
| | Source(s) | Notes |
| | Weber, E. 2017. <i>Invasive Plant Species of the World</i> , 2nd Edition: A Reference Guide to Environmental Weeds. CAB International, Wallingford, UK | "Herb or small shrub growing up to 2 m tall, sprawling. Stems ± climbing, branched, to 1 m long, with spines of 5– 10 mm in length." |

| | | |
|------------|--|----------------------------|
| 402 | Allelopathic | |
| | Source(s) | Notes |
| | WRA Specialist. (2021). Personal Communication | Unknown. No evidence found |

| | | |
|------------|--|---|
| 403 | Parasitic | n |
| | Source(s) | Notes |
| | Weber, E. 2017. <i>Invasive Plant Species of the World</i> , 2nd Edition: A Reference Guide to Environmental Weeds. CAB International, Wallingford, UK | "Herb or small shrub growing up to 2 m tall, sprawling. Stems ± climbing, branched, to 1 m long, with spines of 5– 10 mm in length. Roots rhizomatous and tuberous. Cladodes borne in axillary clusters of two to five, flattened, linear, 15– 25 mm long and 2– 3 mm wide. Inflorescences are racemes, 4– 10 cm long, with numerous flowers." [Asparagaceae. No evidence] |

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| 404 | Unpalatable to grazing animals | |
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| Qsn # | Question | Answer |
|-------|--|---|
| | Source(s) | Notes |
| | UC Marin Master Gardeners. (2021). <i>Asparagus densiflorus</i> 'Myers'. http://marinmg.ucanr.edu . [Accessed 16 Feb 2021] | "Deer Resistant - "Rarely Damaged" |
| | Milne, T. A. (2008). The effects of thicket transformation on the diet and body condition of Angora Goats. MSc. Nelson Mandela Metropolitan University, Port Elizabeth, SA | "Figure 3.4 The cumulative contribution of different plant species making up to 90% of the diet of goats in a) intact paddock and b) transformed paddock. Shaded blocks indicate Principal dietary items." [<i>Asparagus densiflorus</i> identified as one of the principal dietary items] |
| | WRA Specialist. (2021). Personal Communication | Conflicting information. Reported to be palatable to goats, but may be avoided by deer |

| 405 | Toxic to animals | |
|-----|---|---|
| | 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 | [<i>Asparagus densiflorus</i>] "Low toxicity only if eaten; eating of berries may cause gastrointestinal problems; skin irritation, redness, swelling and blisters following contact with sap." |
| | Pet Poison Helpline. (2021). <i>Asparagus Fern</i> . https://www.petpoisonhelpline.com/poison/asparagus-fern/ . [Accessed 16 Feb 2021] | [Berries may cause GI irritation if ingested] "Toxicity to pets - <i>Asparagus ferns</i> (<i>Asparagus densiflorus</i> or <i>Asparagus setaceus</i>) are common houseplants due to their fine, feathery foliage. They are also often used in floral arrangements. Ingestion of these plants, especially the berries, may cause irritation to the gastrointestinal tract. Skin irritation is also possible following dermal exposure." |

| 406 | Host for recognized pests and pathogens | |
|-----|---|--|
| | Source(s) | Notes |
| | Gilman, E.F., Klein, R.W., and Hansen, G. Gilman, E.F. (2018). <i>Asparagus densiflorus</i> 'Myers' Myers <i>Asparagus Fern</i> . FPS-52. Revised. IFAS, University of Florida, Gainesville. https://edis.ifas.ufl.edu/ . [Accessed 16 Feb 2021] | "Pest resistance: no serious pests are normally seen on the plant" |
| | Wacker, T. L., Smither, M. L., Stebbins, T. C., & Stephens, C. T. (1990). Methods used to screen for <i>Fusarium</i> resistance in asparagus plants regenerated from protoplasts. <i>Acta Horticulturae</i> (271): 331-336 | "Protoclones of <i>Asparagus officinalis</i> cv. Jersey Giant were screened for enhanced resistance to <i>Fusarium oxysporum</i> f. sp. <i>asparagi</i> and <i>Fusarium moniliforme</i> . Conidial suspensions (106 conidia/ml) were applied directly to protoclones in Hoagland's or MS media, or sprayed onto paper towels used to hold protoclone roots. Root lesions and normal disease symptoms developed on UC 157 seedlings, the susceptible control, but not on protoclones where fungal hyphae overgrew stems. A greenhouse assay was the most suitable method to screen asparagus protoclones for disease resistance. Protoclones were acclimated to the greenhouse for 2 weeks then transferred to soil infested with <i>Fusarium</i> . Symptoms of root lesions and crown rot developed on UC 157 and the protoclones after 4 weeks. Disease resistance, as measured by a visual rating scale varied but was less than somaclones of <i>A. sprengeri</i> , the resistant control." |

| Qsn # | Question | Answer |
|-------|---|--|
| 407 | Causes allergies or is otherwise toxic to humans | |
| | 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 | [<i>Asparagus densiflorus</i>] "Low toxicity only if eaten; eating of berries may cause gastrointestinal problems; skin irritation, redness, swelling and blisters following contact with sap." |
| | Burrows, G. E., & Tyrl, R. J. (2013). Toxic Plants of North America. Second Edition. Wiley-Blackwell, Hoboken, NJ | [Mild risk] "Because of their popularity as houseplants, <i>A. setaceus</i> and <i>A. densiflorus</i> when in fruit prompt numerous telephone calls to poison control centers when children and pets swallow the berries (Spoerke and Smolinske 1990). There is little risk of intoxication, although various toxic properties, including irritant, cardiac, sedative, and diuretic effects, have been attributed to the genus." |

| 408 | Creates a fire hazard in natural ecosystems | |
|-----|---|---|
| | Source(s) | Notes |
| | Gilman, E.F., Klein, R.W., and Hansen, G. Gilman, E.F. (2018). <i>Asparagus densiflorus</i> 'Myers' Myers Asparagus Fern. FPS-52. Revised. IFAS, University of Florida, Gainesville. https://edis.ifas.ufl.edu/ . [Accessed 16 Feb 2021] | "It is very drought tolerant and will survive in hot, dry locations, although it will grow slower in dry locations." [Unknown. Could contribute to fuel load and fire risk in dry, fire prone regions] |
| | Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK | "Where invasive, the plant forms extensive and dense colonies displacing native understorey and ground-cover species; it overtops shrubs and young trees." [Unknown. Fire risk not listed among negative impacts] |

| 409 | Is a shade tolerant plant at some stage of its life cycle | y |
|-----|---|--|
| | Source(s) | Notes |
| | Missouri Botanical Garden. (2021). <i>Asparagus densiflorus</i> 'Myersii'. http://www.missouribotanicalgarden.org . [Accessed 12 Feb 2021] | "Plants perform best in organically rich, consistently moist but well drained soils in part shade (bright indirect light or filtered sun). Avoid direct hot afternoon sun which may cause the leaves to yellow. Tolerates full shade, but foliage may turn a lighter green." |
| | Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK | "The plant grows in both low and high light conditions and produces a dense mass of somewhat fleshy roots, bearing numerous tubers." |

| Qsn # | Question | Answer |
|-------|---|--|
| 410 | Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island) | y |
| | Source(s) | Notes |
| | Gilman, E.F., Klein, R.W., and Hansen, G. Gilman, E.F. (2018). <i>Asparagus densiflorus</i> 'Myers' Myers Asparagus Fern. FPS-52. Revised. IFAS, University of Florida, Gainesville. https://edis.ifas.ufl.edu/ . [Accessed 16 Feb 2021] | "Soil tolerances: occasionally wet; slightly alkaline; clay; sand; acidic; loam" ... "This plant is adaptable to various well-drained soils and will flourish in full sun or partial shade." |
| | GardenersHQ. (2021). How to Grow <i>Asparagus densiflorus</i> Plants in your Garden. https://www.gardenershq.com/Asparagus-densiflorus.php . [Accessed 16 Feb 2021] | "Suitable Soil Types: Acidic, Adaptable, Clay, Loamy, Neutral, Sandy, Slightly alkaline, Well drained Soil Moisture: Dry to Moist (Medium Moisture is likely gives best results)" |

| | | |
|-----|--|---|
| 411 | Climbing or smothering growth habit | n |
| | Source(s) | Notes |
| | Weber, E. 2017. <i>Invasive Plant Species of the World</i> , 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK | [Sprawling. Forms dense cover that excludes other vegetation] "Herb or small shrub growing up to 2 m tall, sprawling. ... Where invasive, the plant forms extensive and dense colonies displacing native understorey and ground-cover species; it overtops shrubs and young trees." |

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|-----|--|--|
| 412 | Forms dense thickets | y |
| | Source(s) | Notes |
| | Weber, E. 2017. <i>Invasive Plant Species of the World</i> , 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK | "Where invasive, the plant forms extensive and dense colonies displacing native understorey and ground-cover species; it overtops shrubs and young trees." |

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|-----|--|---|
| 501 | Aquatic | n |
| | Source(s) | Notes |
| | Weber, E. 2017. <i>Invasive Plant Species of the World</i> , 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK | [Terrestrial] "Invaded Habitats Coastal beaches, coastal scrub, tropical hammocks, woodland." |

| | | |
|-----|--|---|
| 502 | Grass | n |
| | Source(s) | Notes |
| | USDA, Agricultural Research Service, National Plant Germplasm System. (2021). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/ . [Accessed 12 Feb 2021] | Genus: <i>Asparagus</i> Family: Asparagaceae Subfamily: Asparagoideae |

| | | |
|-----|-----------------------------|--------------|
| 503 | Nitrogen fixing woody plant | n |
| | Source(s) | Notes |

| Qsn # | Question | Answer |
|-------|--|---|
| | USDA, Agricultural Research Service, National Plant Germplasm System. (2021). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/ . [Accessed 12 Feb 2021] | Genus: <i>Asparagus</i> Family: Asparagaceae Subfamily: Asparagoideae |

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|-----|--|-----------------------------------|
| 504 | Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers) | y |
| | Source(s) | Notes |
| | Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK | "Roots rhizomatous and tuberous." |

| | | |
|-----|---|--|
| 601 | Evidence of substantial reproductive failure in native habitat | n |
| | Source(s) | Notes |
| | WRA Specialist. (2021). Personal Communication | No evidence from native range, and widely cultivated |

| | | |
|-----|--|---|
| 602 | Produces viable seed | y |
| | Source(s) | Notes |
| | Whistler, W.A. 2000. Tropical Ornamentals: A Guide. Timber Press, Portland, OR | "Propagate by seeds or division" |
| | Gilman, E.F., Klein, R.W., and Hansen, G. Gilman, E.F. (2018). <i>Asparagus densiflorus</i> 'Myers' Myers <i>Asparagus</i> Fern. FPS-52. Revised. IFAS, University of Florida, Gainesville. https://edis.ifas.ufl.edu/ . [Accessed 16 Feb 2021] | "The berries of <i>Asparagus densiflorus</i> contain 1 or 2 black, hard seeds that can be used for propagation; the seeds germinate in 4 to 6 weeks. This plant may also be propagated by cuttings and division." |

| | | |
|-----|---|--|
| 603 | Hybridizes naturally | |
| | Source(s) | Notes |
| | McCollum, G. D. (1988). <i>Asparagus densiflorus</i> cultivars Sprengeri and Myers cross-pollinations with <i>A. officinalis</i> and other species. <i>Asparagus Research Newsletter</i> 6(1): 1-10 | "No hybrids were produced from the cross <i>A. densiflorus</i> x <i>A. officinalis</i> in either direction. No other species hybridized successfully with <i>A. densiflorus</i> ." |

| Qsn # | Question | Answer |
|-------|---|--|
| | Ito, T., Ochiai, T., Fukuda, T., Ashizawa, H., Kanno, A., Kameya, T. and Sonoda, T. (2008). Potential of interspecific hybrids in the genus <i>Asparagus</i> . <i>Acta Horticulturae</i> 776: 279-284 | [Possibly No] "Interspecific hybridization is a very important tool to introduce new characters into a crop. The genus <i>Asparagus</i> contains more than one hundred hermaphrodite and dioecious species. Previous reports indicated that <i>Asparagus officinalis</i> (garden asparagus) and <i>A. densiflorus</i> crosses did not give interspecific hybrid plants. In contrast, we successfully obtained interspecific hybrids between <i>A. officinalis</i> and <i>A. schoberioides</i> and presented the results at Xth International <i>Asparagus</i> Symposium. Phylogenetic relationships among <i>Asparagus</i> species may be useful for choosing the most appropriate wild relatives. To construct the phylogenetic tree of <i>Asparagus</i> species, we used eighteen species including three subgenera, <i>Asparagus</i> , <i>Myrsiphyllum</i> and <i>Protasparagus</i> , and sequenced approximately 250 bp of internal transcribed spacer 1 (ITS1). Phylogenetic analysis indicated that the species of subgenus <i>Asparagus</i> consists of a monophyletic group and the species of subgenus <i>Protasparagus</i> comprises a potentially paraphyletic assemblage. The results also showed that garden asparagus and <i>A. schoberioides</i> were closely related in the subgenus <i>Asparagus</i> , and <i>A. densiflorus</i> was placed at the most basal position in the genus <i>Asparagus</i> . Genetic distances of these species are probably correlated with the possibility to generate interspecific hybrids. We have crossed <i>A. officinalis</i> , <i>A. asparagoides</i> , <i>A. cochinchinensis</i> , <i>A. densiflorus</i> , <i>A. kiusianus</i> , <i>A. schoberioides</i> , <i>A. virgatus</i> , and <i>A. verticillatus</i> , but only crossings between <i>A. officinalis</i> and <i>A. schoberioides</i> and <i>A. officinalis</i> and <i>A. kiusianus</i> gave interspecific hybrid plants. The correlation between the phylogenetic relationship of <i>Asparagus</i> and the potential of interspecific hybridization with garden asparagus is reported." |

| 604 | Self-compatible or apomictic | y |
|-----|---|--|
| | Source(s) | Notes |
| | Camadro, E. L. (1994). Genetic basis of low seed production in garden and ornamental asparagus. <i>Asparagus Research Newsletter</i> , 11(1/2), 16-18 | "Abstract : This brief review discusses the possible genetic causes of low seed production in the obligate outcrosser garden asparagus (<i>Asparagus officinalis</i>), a diploid ($2n = 2x = 20$) dioecious species, and the related ornamental species <i>A. densiflorus</i> (cv. Sprengeri), a hexaploid ($2n = 6x = 60$), monoecious species with hermaphroditic flowers that can be self- and cross-fertilized. The focus is on unreduced ($2n$) gamete production, and pollen-pistil and post-fertilization incompatibilities. It is concluded that low seed production in commercial lots of <i>A. officinalis</i> or failure of given crosses in both <i>A. officinalis</i> and <i>A. densiflorus</i> result from the following: pollen sterility due to spontaneous polyploidization and the production of genetically unbalanced (and inviable) gametes, and the action of nuclear or cytoplasmic genes or their interaction; and pre- or post-fertilization barriers (pollen-pistil incompatibility, embryo abortion and endosperm abortion)." |

| 605 | Requires specialist pollinators | n |
|-----|---------------------------------|-------|
| | Source(s) | Notes |

| Qsn # | Question | Answer |
|-------|---|---|
| | Kubitzki, K. (ed.). 1998. The Families and genera of vascular plants. Volume III. Flowering plants, Monocotyledons: Liliaceae (except Orchidaceae). Springer-Verlag, Berlin, Heidelberg, New York | "Pollination. Nectar secretion, which has been observed to occur even in the pistillodes of staminate flowers (in <i>A. acutifolius</i>), points to insect pollination, and although Hymenopterae and Dipterae have been observed visiting the flowers, the pollination process has not yet been documented." [Asparagaceae] |

| 606 | Reproduction by vegetative fragmentation | n |
|-----|--|--|
| | Source(s) | Notes |
| | Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK | "Once established, asparagus fern grows vigorously and forms a dense crown of 2– 3 m in diameter, shading out other species with its dense foliage. It fruits profusely and seeds are dispersed by birds." |

| 607 | Minimum generative time (years) | |
|-----|---|---|
| | Source(s) | Notes |
| | Gilman, E.F., Klein, R.W., and Hansen, G. Gilman, E.F. (2018). <i>Asparagus densiflorus</i> 'Myers' Myers Asparagus Fern. FPS-52. Revised. IFAS, University of Florida, Gainesville. https://edis.ifas.ufl.edu/ . [Accessed 16 Feb 2021] | "Growth rate: fast" |
| | Vivian-Smith, G. E., & Gosper, C. R. (2010). Comparative seed and dispersal ecology of three exotic subtropical <i>Asparagus</i> species. <i>Invasive Plant Science and Management</i> , 3(1), 93-103 | [Related species may reach maturity rapidly] "Time to First Reproduction. <i>Asparagus aethiopicus</i> reached maturity earlier than <i>A. virgatus</i> (P, 0.001; <i>A. aethiopicus</i> , mean 5 565 d after sowing; <i>A. virgatus</i> , mean 5 643.3 d) and produced more flowering stems per plant (P, 0.05; <i>A. aethiopicus</i> , mean 5 9.0 stems/plant; <i>A. virgatus</i> , mean 5 2.18 stems/plant). <i>Asparagus africanus</i> plants did not reach reproductive maturity during the monitoring period (4 yr 295 d). Reaching reproductive maturity more rapidly is a trait associated with greater invasive success (Rejmanek and Richardson 1996), with <i>A. aethiopicus</i> able to reach maturity faster and potentially have a greater early reproductive output than the other species." |

| 701 | Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas) | y |
|-----|--|---|
| | Source(s) | Notes |
| | CABI. (2021). <i>Asparagus densiflorus</i> . In: <i>Invasive Species Compendium</i> . Wallingford, UK: CAB International. www.cabi.org/isc | "Spread occurs partly from careless disposal of rhizomes in garden waste" |

| 702 | Propagules dispersed intentionally by people | y |
|-----|--|--|
| | Source(s) | Notes |
| | Whistler, W.A. 2000. <i>Tropical Ornamentals: A Guide</i> . Timber Press, Portland, OR | " <i>Asparagus densiflorus</i> , sometimes called coarse asparagus fern, is native to southern Africa but is widely cultivated for its fern-like foliage." |

| 703 | Propagules likely to disperse as a produce contaminant | n |
|-----|--|---|
|-----|--|---|

| Qsn # | Question | Answer |
|-------|--|---|
| | Source(s) | Notes |
| | Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK | "Once established, asparagus fern grows vigorously and forms a dense crown of 2– 3 m in diameter, shading out other species with its dense foliage. It fruits profusely and seeds are dispersed by birds. Seeds are short-lived and viability drops to less than 10% after 12 months" [No evidence] |

| 704 | Propagules adapted to wind dispersal | n |
|-----|--|---|
| | Source(s) | Notes |
| | Whistler, W.A. 2000. Tropical Ornamentals: A Guide. Timber Press, Portland, OR | "Fruit a small, red, one- to three-seeded, globose berry 6-12 mm in diameter" |
| | Csurhes, S. & Edwards, R. 1998. Potential environmental weeds in Australia: Candidate species for preventative control. Biodiversity Group, Environment Australia, Canberra, Australia | "The plant produces large numbers of fleshy, red berries which usually each contain a single seed. The fruit is probably dispersed by birds." |

| 705 | Propagules water dispersed | n |
|-----|--|--|
| | Source(s) | Notes |
| | Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK | "Once established, asparagus fern grows vigorously and forms a dense crown of 2– 3 m in diameter, shading out other species with its dense foliage. It fruits profusely and seeds are dispersed by birds." |
| | Csurhes, S. & Edwards, R. 1998. Potential environmental weeds in Australia: Candidate species for preventative control. Biodiversity Group, Environment Australia, Canberra, Australia | "The plant produces large numbers of fleshy, red berries which usually each contain a single seed. The fruit is probably dispersed by birds." |

| 706 | Propagules bird dispersed | y |
|-----|--|--|
| | Source(s) | Notes |
| | Jamieson, H.G. (2002). <i>Asparagus densiflorus</i> . PlantZAfrica. SANBI. http://www.plantzafrica.com/plantab/asparagdens.html . [Accessed] | |
| | Williams, P.A. & Hayes, L.M. (2007). Emerging weed issues for the West Coast Regional Council and their prospects for biocontrol. Landcare Research Contract Report: LC0607/109. Landcare Research, Lincoln, NZ | "Dispersal and establishment Seeds are spread by birds, particularly silvereyes" |
| | Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK | "Once established, asparagus fern grows vigorously and forms a dense crown of 2– 3 m in diameter, shading out other species with its dense foliage. It fruits profusely and seeds are dispersed by birds." |

| Qsn # | Question | Answer |
|-------|---|---|
| 707 | Propagules dispersed by other animals (externally) | n |
| | Source(s) | Notes |
| | Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK | "It fruits profusely and seeds are dispersed by birds." [Dispersed internally] |
| 708 | Propagules survive passage through the gut | y |
| | Source(s) | Notes |
| | Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK | "It fruits profusely and seeds are dispersed by birds." [Presumably yes] |
| 801 | Prolific seed production (>1000/m2) | |
| | Source(s) | Notes |
| | Whistler, W.A. 2000. Tropical Ornamentals: A Guide. Timber Press, Portland, OR | "Fruit a small, red, one to three-seeded, globose berry 6-12mm in diameter." [Relatively large sized seed; few seeds per fruit] |
| | Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK | "It fruits profusely and seeds are dispersed by birds." 'Densities unknown] |
| 802 | Evidence that a persistent propagule bank is formed (>1 yr) | n |
| | Source(s) | Notes |
| | Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK | "Seeds are short-lived and viability drops to less than 10% after 12 months (Vivian-Smith and Gosper, 2010), but seeds may germinate any time of the year if sufficient moisture is present." |
| 803 | Well controlled by herbicides | |
| | Source(s) | Notes |
| | NSW WeedWise. (2021). Foxtail fern (<i>Asparagus densiflorus</i>). https://weeds.dpi.nsw.gov.au/Weeds/foxtailfern . [Accessed 16 Feb 2021] | "Herbicide options" [The following herbicides have been recommended for control: Fluroxypyr 333 g/L (Starane™ Advanced) Rate: 300 to 600 mL in 100 L of water; Glyphosate 360 g/L (Various products) Rate: 1 part glyphosate to 50 parts water; Glyphosate 360 g/L (Various products) Rate: 1 part glyphosate to 1.5 parts water; Glyphosate 360 g/L with Metsulfuron methyl 600 g/kg (Various products) Rate: Tank mix of up to 2 L glyphosate + 15 g metsulfuron methyl per 100 L water; Metsulfuron-methyl 600 g/kg (Various products) Rate: 1–2 g/10 L water plus non-ionic surfactant (0.1 % or 1 mL/L); Picloram 44.7 g/kg + Aminopyralid 4.47 g/L (Vigilant II ®) Rate: Undiluted" |
| | Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK | "Regrowth and seedlings are best treated with herbicide such as dicamba. Seedlings can also be hand-pulled." |
| 804 | Tolerates, or benefits from, mutilation, cultivation, or fire | y |

| Qsn # | Question | Answer |
|-------|---|---|
| | Source(s) | Notes |
| | Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK | "Control should aim at preventing seed formation to slow the spread of asparagus fern. Single plants are best dug out, rhizomes and tubers should be removed as far as possible. Regrowth and seedlings are best treated with herbicide such as dicamba. Seedlings can also be hand-pulled. In larger established colonies, stems are best slashed and crowns dug out, with chemical control of subsequent regrowth." [Resprouts without herbicide treatment] |
| | Jamieson, H.G. (2002). <i>Asparagus densiflorus</i> . PlantZAfrica. SANBI. http://www.plantzafrica.com/plantab/asparagdens.html . [Accessed 16 Feb 2021] | "The plants have extensive root systems with fairly large tubers, which are used in nature to provide food during long periods of drought in summer. They can be readily propagated by separating the tubers in fairly large clumps" [Can regenerate from roots] |

| | | |
|------------|---|--|
| 805 | Effective natural enemies present locally (e.g. introduced biocontrol agents) | |
| | Source(s) | Notes |
| | Oppenheimer, H. (2007). New plant records from Moloka'i, Lāna'i, Maui, and Hawai'i for 2006. Bishop Museum Occasional Papers 96:17-34 | [Unknown, but naturalized on several Hawaiian Islands] "Popular in cultivation and recently documented as a naturalized element of the Hawaiian flora from the islands of Kaua'i (Lorence & Flynn 1999: 4–5), O'ahu (Kraus 2003: 76), Maui (Oppenheimer & Bartlett 2000: 6), and Hawai'i (Oppenheimer 2003: 14), <i>A. densiflorus</i> was observed at least as early as 2000 to be escaping from cultivation on Lāna'i, and can now be considered naturalized there. The species was noted to be volunteering in the Lāna'i City area as well where it is also under cultivation" |

Summary of Risk Traits:

High Risk / Undesirable Traits

- Grows and naturalized in regions with tropical climates.
- Naturalized on Kauai, Oahu, Lanai, Maui and Hawaii and elsewhere in the world.
- An environmental weed that forms extensive and dense colonies displacing native understory and ground-cover species; Overtops shrubs and young trees.
- Other *Asparagus* species are invasive.
- Spiny stems.
- Low toxicity if eaten; sap may cause skin irritation, redness, swelling and blisters.
- Shade tolerant.
- Tolerates many soil types.
- Forms dense colonies and can overtop and smother other species.
- A geophyte capable of regenerating from tuberous roots.
- Reproduces by bird-dispersed seeds.
- May be spread in dumped garden waste.
- Reported to be self-compatible.
- Able to resprout from tuberous roots after cutting.

Low Risk Traits

- Unarmed (no spines, thorns, or burrs)
- Palatable to goats (but may be deer resistant)