Taxon: Osmanthus fragrans Lour. **Family:** Oleaceae

Common Name(s): fragrant olive
fragrant tea olive
sweet osmanthus
tea olive

Synonym(s): Osmanthus acuminatus (Wall. ex
Osmanthus asiaticus Nakai
Osmanthus aurantiacus (Makino)
Osmanthus intermedius Nakai

Assessor: Chuck Chimera **Status:** Assessor Approved **End Date:** 24 Feb 2020

WRA Score: **-2.0** **Designation:** L **Rating:** Low Risk

Keywords: Ornamental Tree, Unarmed, Fragrant, Selfing, 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	n
302	Garden/amenity/disturbance weed		
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		

Qsn #	Question	Answer Option	Answer
409	Is a shade tolerant plant at some stage of its life cycle		
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y=1, n=0	y
411	Climbing or smothering growth habit	y=1, n=0	n
412	Forms dense thickets	y=1, n=0	n
501	Aquatic	y=5, n=0	n
502	Grass	y=1, n=0	n
503	Nitrogen fixing woody plant	y=1, n=0	n
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	y=1, n=0	n
601	Evidence of substantial reproductive failure in native habitat	y=1, n=0	n
602	Produces viable seed	y=1, n=-1	y
603	Hybridizes naturally	y=1, n=-1	y
604	Self-compatible or apomictic	y=1, n=-1	y
605	Requires specialist pollinators	y=-1, n=0	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	n
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	>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)	y=1, n=-1	n
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**
	Wu, Z. Y. & P. H. Raven, eds. 1996. Flora of China. Vol. 15 (Myrsinaceae through Loganiaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[Cultivars exist. No evidence that any are highly domesticated] "Guizhou, Sichuan, Yunnan. Widely cultivated for the perfume of flowers. Varieties based on flower color are only cultivars."

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**
	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 20 Feb 2020]	"Native Asia-Temperate CHINA: China [Guizhou Sheng, Sichuan Sheng, Yunnan Sheng] EASTERN ASIA: Japan [Kyushu (s.)] Asia-Tropical INDIAN SUBCONTINENT: Bhutan, India, [Sikkim, Assam, Nagaland] Nepal INDO-CHINA: Myanmar (n.), Thailand (n.)"

202	**Quality of climate match data**	**High**
	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 20 Feb 2020]	

203	**Broad climate suitability (environmental versatility)**	**n**
	Source(s)	**Notes**
	Gilman, E.F. & Watson, D.G. (1994). Osmanthus fragrans. Sweet Osmanthus. Fact Sheet ST-425. Institute of Food and Agricultural Sciences, University of Florida, Gainesville FL. http://hort.ifas.ufl.edu/. [Accessed 21 Feb 2020]	"USDA hardiness zones: 7B through 9"

Qsn #	Question	Answer
	iplantz. (2020). Osmanthus fragrans. https://www.iplantz.com/plant/1143/osmanthus-fragrans/. [Accessed 21 Feb 2020]	[May not flower without chilling temperatures] "Grows and blooms naturally in humid subtropical and tropical mid- to high-elevation climates, generally areas with annual lows of 8 to 18 °C, annual highs of 19 to 32 °C, annual rainfall of 800 to 4500 mm and a dry season of 7 months or less. Although Sweet Osmanthus also grows well in tropical climates, and is, as a small tree, shrub or hedge, the plant usually fails to bloom because chilling temperatures are needed to trigger flowering. Generally, Sweet Osmanthus may fail to flower or do so poorly in areas where the average low of the coldest month is above 12 °C (54 °F)."

204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	**Notes**
	Green, P. (2003). Synopsis of the Oleaceae from the Indian Sub-Continent. Kew Bulletin, 58(2), 257-295	"Although this species is widely cultivated, both in Asia and the rest of the world, its native area follows the line of the Himalayas east to the mountains of Yunnan, northern Thailand and Laos."
	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 20 Feb 2020]	"Native Asia-Temperate CHINA: China [Guizhou Sheng, Sichuan Sheng, Yunnan Sheng] EASTERN ASIA: Japan [Kyushu (s.)] Asia-Tropical INDIAN SUBCONTINENT: Bhutan, India, [Sikkim, Assam, Nagaland] Nepal INDO-CHINA: Myanmar (n.), Thailand (n.)"

205	Does the species have a history of repeated introductions outside its natural range?	y
	Source(s)	**Notes**
	Green, P. (2003). Synopsis of the Oleaceae from the Indian Sub-Continent. Kew Bulletin, 58(2), 257-295	"Although this species is widely cultivated, both in Asia and the rest of the world, its native area follows the line of the Himalayas east to the mountains of Yunnan, northern Thailand and Laos."
	Wu, Z. Y. & P. H. Raven, eds. 1996. Flora of China. Vol. 15 (Myrsinaceae through Loganiaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Widely cultivated for the perfume of flowers. Varieties based on flower color are only cultivars"

301	Naturalized beyond native range	n
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	A review of citations listing this species as naturalized determined that no evidence exists for naturalization in the regions indicated.
	Imada, C. (2019). Hawaiian Naturalized Vascular Plants Checklist (February 2019 update). Bishop Museum Technical Report 69. Bishop Museum, Honolulu, HI	No evidence in the Hawaiian Islands to date

302	Garden/amenity/disturbance weed	
	Source(s)	**Notes**

Qsn #	Question	Answer
	iplantz. (2020). Osmanthus fragrans. https://www.iplantz.com/plant/1143/osmanthus-fragrans/. [Accessed 21 Feb 2020]	"Sweet Osmanthus is widely introduced and cultivated in non-native areas and is listed as a weed in at least one reference publication, but there does not appear to be any record of it anywhere as a serious weed."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	Listed as a weed in three citations. Unable to corroborate weed status or negative impacts

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**
	Mulvaney, M. J. (1991). Far from the Garden Path: An Identikit Picture of Woody Ornamanetal Plants Invading South-Eastern Australian Bushland. PhD Dissertation. Dept. Australian National University, Canberra ACT	"Appendix 7: … 0 = Non-intrusive" [Randall (2017) cites this reference as evidence that it is an environmental weed, but this report indicates that it is considered non-invasive]
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	Mulvaney (1991) cited, listing O. fragrans as an Environmental Weed. A subsequent review of Mulvaney (1991) indicates that O. fragrans is considered "non-intrusive"
	University of Florida, IFAS. (2020). Assessment of Non-Native Plantsin Florida's Natural Areas. https://assessment.ifas.ufl.edu/. [Accessed 21 Feb 2020]	Status Assessments of this species in 2005 and 2015 indicate that O. fragrans is "Not a problem species"

305	Congeneric weed	n
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	Osmanthus heterophyllus listed as an environmental weed in Mulvaney (1991). In contrast, Mulvaney (1991) designates this species as "Non-intrusive"

401	Produces spines, thorns or burrs	n
	Source(s)	**Notes**
	Wu, Z. Y. & P. H. Raven, eds. 1996. Flora of China. Vol. 15 (Myrsinaceae through Loganiaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[No evidence] "Trees or shrubs 3–5(–10) m, glabrous. Petiole 0.8–1.2 (–1.5) cm; leaf blade elliptic to elliptic lanceolate, 7–14.5 × 2.6–4.5 cm, base cuneate or broadly cuneate, margin entire or usually serrulate along distal half, apex acuminate; midrib and 6–8(–10) primary veins adaxially impressed and abaxially raised. Cymes fascicled in leaf axils, many flowered; bracts broadly ovate, 2–4 mm. Pedicel 4–10 mm. Calyx ca. 1 mm. Corolla yellowish, yellow, or orange, 3–4 mm; tube 0.5–1 mm. Stamens attached to middle of corolla tube; connective elongated into an obscure mucro. Drupe purple-black, ellipsoid, oblique,"

402	Allelopathic	

Qsn #	Question	Answer
	Source(s)	**Notes**
	Li, F., He, G., Zhou, Q., & Liang, S. (2013). Compare the allelopathic potential of Osmanthus fragrans in different habitats. Journal of Guangxi Normal University-Natural Science Edition, 3(1), 88-93	[Potentially Yes. Demonstrated in laboratory experiments in differing degrees] "Abstract : To compare the allelopathy of Osmanthus fragrans in four different habitats, the allelopathic potential of aqueous extracts of the fresh and fallen leaves of O. fragrans to radish was studied by using indoor Petri dish bioassay method. The results showed that aqueous extracts from both the fresh and fallen leaves in the four habitats all had allelopathic effects. However, the differences of allelopathic potential existed under different situations. In the same habitat, the allelopathy inhibition of fresh leaves was usually stronger than that of fallen leaves, which may be relative to the contents and kinds of different allelochemicals. Except the fallen leaves in Qixing Park and Guilin Landscape Botanical Garden, the aqueous extracts of the other leaves significantly inhibited the seed germination of radish. In more cases, the allelopathy inhibition of the aqueous extracts of O. fragrans leaves on root growth was stronger than that on the stem length of radish seedlings. The allelopathy inhibition was beneficial to improve O. fragrans grow better in the competition with other plants. This study provided some theory basis to guide the widely cultivation and rationally arrangement of O. fragrans."

403	Parasitic	n
	Source(s)	**Notes**
	Wu, Z. Y. & P. H. Raven, eds. 1996. Flora of China. Vol. 15 (Myrsinaceae through Loganiaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Trees or shrubs 3–5(–10) m, glabrous." [Oleaceae. No evidence]

404	Unpalatable to grazing animals	
	Source(s)	**Notes**
	NC State Extension. (2020). Osmanthus fragrans. https://plants.ces.ncsu.edu/plants/osmanthus-fragrans/. [Accessed 21 Feb 2020]	"Deer resistant" [Possibly unpalatable]

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

406	Host for recognized pests and pathogens	
	Source(s)	**Notes**
	Gilman, E.F. & Watson, D.G. (1994). Osmanthus fragrans. Sweet Osmanthus. Fact Sheet ST-425. Institute of Food and Agricultural Sciences, University of Florida, Gainesville FL. http://hort.ifas.ufl.edu/. [Accessed 21 Feb 2020]	"No pests or diseases are of major concern. Scales and nematodes may present a problem, and mushroom root rot is troublesome when the soil is kept too wet."

Qsn #	Question	Answer
	Missouri Botanical Garden. (2020). Osmanthus fragrans. http://www.missouribotanicalgarden.org. [Accessed 23 Feb 2020]	"No serious insect or disease problems. Watch for scale and aphids."

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] "At one time united with Olea which differs chiefly in its valvate corolla lobes. Osmanthus fragrans is a well-known spice plant. Widely cultivated for the perfume of flowers. Fruit is rarely formed"

408	Creates a fire hazard in natural ecosystems	
	Source(s)	**Notes**
	Fire Performance Plant Selector. (2020). Osmanthus fragrans. http://www.fire.sref.info/plants/osmanthus-fragrans. [Accessed 23 Feb 2020]	"Firewise Rating: NOT Firewise (4)" [Suggests plants may increase fire risk]
	Anaheim Fire & Rescue. (2018). Recommended Acceptable Fire Resistive Plant Species. https://www.anaheim.net/. [Accessed 23 Feb 2020]	"PLANT SPECIES RECOMMENDED FOR WILDFIRE IN HIGH FIRE POTENTIAL AREAS" [Includes Osmanthus fragrans, in contrast to Fire Performance Plant Selector (2020)]

409	Is a shade tolerant plant at some stage of its life cycle	
	Source(s)	**Notes**
	Gilman, E.F. & Watson, D.G. (1994). Osmanthus fragrans. Sweet Osmanthus. Fact Sheet ST-425. Institute of Food and Agricultural Sciences, University of Florida, Gainesville FL. http://hort.ifas.ufl.edu/. [Accessed 21 Feb 2020]	"Light requirement: tree grows in part shade/part sun; tree grows in full sun"
	Missouri Botanical Garden. (2020). Osmanthus fragrans. http://www.missouribotanicalgarden.org. [Accessed 23 Feb 2020]	"Sun: Full sun to part shade"

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y
	Source(s)	**Notes**
	Durham City-County Planning Department. (2013). Landscape Manual for Durham, North Carolina. https://durhamnc.gov/. [Accessed 23 Feb 2020]	"moist, acid, well-drained soils best, but is adaptable"
	Gilman, E.F. & Watson, D.G. (1994). Osmanthus fragrans. Sweet Osmanthus. Fact Sheet ST-425. Institute of Food and Agricultural Sciences, University of Florida, Gainesville FL. http://hort.ifas.ufl.edu/. [Accessed 21 Feb 2020]	"Soil tolerances: clay; loam; sand; acidic; well-drained"
	Shoot Gardening. (2020). Osmanthus fragrans (Fragrant olive). https://www.shootgardening.co.uk/plant/osmanthus-fragrans. [Accessed 23 Feb 2020]	"Soil type: Chalky, Clay, Loamy, Sandy (will tolerate most soil types)"

Qsn #	Question	Answer
411	**Climbing or smothering growth habit**	**n**
	Source(s)	**Notes**
	Wu, Z. Y. & P. H. Raven, eds. 1996. Flora of China. Vol. 15 (Myrsinaceae through Loganiaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Trees or shrubs 3–5(–10) m, glabrous."

412	Forms dense thickets	n
	Source(s)	**Notes**
	Wu, Z. Y. & P. H. Raven, eds. 1996. Flora of China. Vol. 15 (Myrsinaceae through Loganiaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Guizhou, Sichuan, Yunnan. Widely cultivated for the perfume of flowers." [No evidence]
	Tang, A., Zhao, Z., & Luo, A. (2013). Deep physiological dormancy in desiccation-sensitive seeds of Osmanthus fragrans (Oleaceae). Seed Science and Technology, 41(3), 336-344	[No evidence] "In China, wild populations are found only in Liuyang of Hunan Province, Changding of Fujian Province and Longquan of Zhejiang Province (Hao et al., 2011). During our field investigation, seedlings were seldom found in these habitats, implying that recruitment from seeds is not common."
	WRA Specialist. (2020). Personal Communication	No evidence found

501	Aquatic	n
	Source(s)	**Notes**
	Wu, Z. Y. & P. H. Raven, eds. 1996. Flora of China. Vol. 15 (Myrsinaceae through Loganiaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[Terrestrial] "Trees or shrubs 3–5(–10) m,"

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 20 Feb 2020]	Family: Oleaceae Tribe: Oleeae

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 20 Feb 2020]	Family: Oleaceae Tribe: Oleeae

Qsn #	Question	Answer
504	**Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)**	**n**
	Source(s)	**Notes**
	Wu, Z. Y. & P. H. Raven, eds. 1996. Flora of China. Vol. 15 (Myrsinaceae through Loganiaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Trees or shrubs 3–5(–10) m, glabrous."

601	**Evidence of substantial reproductive failure in native habitat**	**n**
	Source(s)	**Notes**
	Wu, Z. Y. & P. H. Raven, eds. 1996. Flora of China. Vol. 15 (Myrsinaceae through Loganiaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[No evidence. Wide distribution] "Native Asia-Temperate CHINA: China [Guizhou Sheng, Sichuan Sheng, Yunnan Sheng] EASTERN ASIA: Japan [Kyushu (s.)] Asia-Tropical INDIAN SUBCONTINENT: Bhutan, India, [Sikkim, Assam, Nagaland] Nepal INDO-CHINA: Myanmar (n.), Thailand (n.) Cultivated (widely cult.)"

Qsn #	Question	Answer
602	**Produces viable seed**	**y**
	Source(s)	**Notes**
	Yang, X., & Hao, Q. (2010). Dormancy and germination of Osmanthus fragrans seeds. Journal of Zhejiang Forestry College, 27(2), 272-276	"Abstract : To detect reasons for dormancy and methods of breaking dormancy, a bioassay of a methanol extract from Osmanthus fragrans 'Zigeng Ziyin' seed coats and endosperm as well as germination of seeds treated with Gibberellic acid (GA3) were studied. The cabbage seeds were germinated with methanol extract solution (0.10, 0.06, and 0.03 g.L-1), by three replications each treatment. And the osmanthus seeds were soaked in different concentrations (500, 1 000, and 1 500 mg.L-1) GA3 for 48 hours, then stratified with low temperature, and every 15 days, taken out 30 seeds each treatment with four replications for germination. Results showed that the restraining substances were contained in the seed coat and endosperm, and the inhibitory effects became stronger as the extraction solution concentration increased. Integrating results from the prophase, we think that seed dormancy belongs to physiological dormancy. Soaking with 1 000 mg.L-1 GA3 followed by cold stratification with sand for 75 d could raise the germination percentage and could be an effective method to overcome dormancy. "
	Sheffield's Seed Company. (2020). Fragrant Olive, Sweet Osmanthus Osmanthus fragrans. https://sheffields.com/seeds/Osmanthus/fragrans. [Accessed 23 Feb 2020]	"Scarification: Soak in water, let stand in water for 24 hours. Stratification: warm stratify for 90 days, cold stratify for 90 days. Germination: sow seed 3/8" deep, tamp the soil, mulch the seed bed. Other: Germination tends to be slow, Germinates faster in warmer temperatures. "
	Rarexoticseeds. (2020). Sweet Olive Seeds (Osmanthus fragrans). https://www.rarexoticseeds.com/en/sweet-olive-seeds-osmanthus-fragrans.html. [Accessed 23 Feb 2020]	Seeds sold commercially for cultivation

603	Hybridizes naturally	y
	Source(s)	**Notes**
	Lu, Z., Duan, H., Lu, L., & Sun, X. (2010). Genetic relationships of Osmanthus based on ISSR-PCR. Biologia, 65(3), 459-464	"O. ×fortunei is a natural hybrid of O. fragrans and O. heterophyllus"

604	Self-compatible or apomictic	y
	Source(s)	**Notes**
	He, Y., Yuan, W., Dong, M., Han, Y., & Shang, F. (2017). The first genetic map in sweet osmanthus (Osmanthus fragrans Lour.) using specific locus amplified fragment sequencing. Frontiers in Plant Science, 8, doi.org/10.3389/fpls.2017.01621	"Genetic study in O. fragrans achieved great progress. As an androdioecious species (Hao et al., 2011; Xu et al., 2014), the pollination and breeding systems of O. fragrans cultivars is complex, with selfing and crossing coexisting in the populations (Li, 2014). "

605	Requires specialist pollinators	n
	Source(s)	**Notes**

Qsn #	Question	Answer
	Li, Z., Yang, G. D., Duan, Y. F., Fan, Y., Zhao, Y. P., Cheng, J. R., & Wang, X. R. (2014). Study on major pollinators and their flower-visiting behavior of Osmanthus fragrans. J. Nanjing For. Univ.(Nat. Sci. Ed.), s1	[Main pollinators are bees and flies] "The Osmanthus fragrans (Thunb.) Lour. (Oleaceae) flower visiting insect species and foraging behavior have important significance on the study of the pollination biology and breeding system evolution. Their visiting frequency,visiting duration and behavior were observed and recorded. The results are as follows: the flowers are visited by 18 species of insects which belong to Hymenoptera, Lepidoptera, Diptera, Coleoptera and Hemiptera. And there are 7 kinds of insects belonging to Lepidoptera,6 kinds of insects belonging to Hymenoptera,3 kinds of insects belonging to Diptera,1kind of insects belonging to Coleoptera and 1 kind of insects belonging to Hemiptera. The main pollinators are bees and flies, because they have high visiting frequency and large number. The peak visiting frequency appeared in full bloom. The daily activities of the main pollinators appear single-peak type and double-peak type, which indicating a complementary relationship among the pollinators. The visiting frequency and landing time of main pollinating insects showed negative correlation."

606	Reproduction by vegetative fragmentation	n
	Source(s)	**Notes**
	Gilman, E.F. & Watson, D.G. (1994). Osmanthus fragrans. Sweet Osmanthus. Fact Sheet ST-425. Institute of Food and Agricultural Sciences, University of Florida, Gainesville FL. http://hort.ifas.ufl.edu/. [Accessed 23 Feb 2020]	"Roots: surface roots are usually not a problem" … "Propagation is by cuttings." [No reports of natural vegetative spread]
	Plants for a Future. (2020). Osmanthus fragrans. https://pfaf.org/user/Plant.aspx?LatinName=Osmanthus+fragrans. [Accessed 23 Feb 2020]	"Seed - best sown as soon as it is ripe in a coldframe[200]. Stored seed probably germinates best if it is given 3 months warm then 3 months cold stratification before sowing[113]. The seed usually takes 6 - 18 months to germinate, it should be pricked out into individual pots when it is large enough to handle. Grow the plants on for their first winter in the greenhouse and plant them out in early summer. Cuttings of half-ripe wood taken at the end of July, in a frame with bottom heat[11]. Cuttings of almost ripe wood, 7 - 12cm with a heel, September/October in a cold frame. A good percentage. Plant out in the spring 18 months later[78]. Layering in sprin [200] or autumn [78]. Partially sever the layer leads in the following late summer and plant out in the autumn. High percentage[78]."

Qsn #	Question	Answer
607	**Minimum generative time (years)**	**>3**
	Source(s)	**Notes**
	Gilman, E.F. & Watson, D.G. (1994). Osmanthus fragrans. Sweet Osmanthus. Fact Sheet ST-425. Institute of Food and Agricultural Sciences, University of Florida, Gainesville FL. http://hort.ifas.ufl.edu/. [Accessed 21 Feb 2020]	"Growth rate: slow"
	Zhang, Z. R., Fan, D. M., Guo, S. Q., Li, D. Z., & Zhang, Z. Y. (2011). Development of 29 microsatellite markers for Osmanthus fragrans (Oleaceae), a traditional fragrant flowering tree of China. American Journal of Botany, 98 (12), e356-e359	"Traditionally, morphological and agronomic traits (e.g., fl ower color) have been used to identify O. fragrans cultivars. However, these traits are limited in number, modifi ed by the environment, and may be controlled by epistatic and pleiotropic gene effects (Yang and Quiros, 1993 ; Fufa et al., 2005). Moreover, traditional identifi cation of O. fragrans is a slow process due to its long juvenile period." [Unspecified, but likely >4 years]

701	**Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)**	**n**
	Source(s)	**Notes**
	Wu, Z. Y. & P. H. Raven, eds. 1996. Flora of China. Vol. 15 (Myrsinaceae through Loganiaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Drupe purple-black, ellipsoid, oblique, 1–1.5 cm." [No means of external attachment]
	Li, X., Yin, X., Xia, B., Li, W., & Li, Y. (2006). Effects of bird seed dispersal on diversity of the invaded plants in several hedge types. Acta Ecologica Sinica, 26(6), 1657-1666	"Table 2 Survey of the invaded plants that occurred in different hedge types" [Osmanthus fragrans - Dispersal agent = B: Bird]

702	**Propagules dispersed intentionally by people**	**y**
	Source(s)	**Notes**
	Green, P. (2003). Synopsis of the Oleaceae from the Indian Sub-Continent. Kew Bulletin, 58(2), 257-295	"Although this species is widely cultivated, both in Asia and the rest of the world, its native area follows the line of the Himalayas east to the mountains of Yunnan, northern Thailand and Laos."
	Wu, Z. Y. & P. H. Raven, eds. 1996. Flora of China. Vol. 15 (Myrsinaceae through Loganiaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Widely cultivated for the perfume of flowers. Varieties based on flower color are only cultivars"

703	**Propagules likely to disperse as a produce contaminant**	**n**
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Major Pathway/s: Crop, Herbal, Ornamental Dispersed by: Humans"
	Li, X., Yin, X., Xia, B., Li, W., & Li, Y. (2006). Effects of bird seed dispersal on diversity of the invaded plants in several hedge types. Acta Ecologica Sinica, 26(6), 1657-1666	"Table 2 Survey of the invaded plants that occurred in different hedge types" [Osmanthus fragrans - Dispersal agent = B: Bird]

Qsn #	Question	Answer
704	**Propagules adapted to wind dispersal**	**n**
	Source(s)	**Notes**
	Wu, Z. Y. & P. H. Raven, eds. 1996. Flora of China. Vol. 15 (Myrsinaceae through Loganiaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Drupe purple-black, ellipsoid, oblique, 1–1.5 cm." [Fleshy-fruited]

705	Propagules water dispersed	n
	Source(s)	**Notes**
	Li, X., Yin, X., Xia, B., Li, W., & Li, Y. (2006). Effects of bird seed dispersal on diversity of the invaded plants in several hedge types. Acta Ecologica Sinica, 26(6), 1657-1666	"Table 2 … Osmanthus fragrans - Dispersal agent = B: Bird" [No evidence that tree is common in riparian areas where secondary dispersal by water may occur]

706	Propagules bird dispersed	y
	Source(s)	**Notes**
	Wu, Z. Y. & P. H. Raven, eds. 1996. Flora of China. Vol. 15 (Myrsinaceae through Loganiaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Drupe purple-black, ellipsoid, oblique, 1–1.5 cm."
	Li, X., Yin, X., Xia, B., Li, W., & Li, Y. (2006). Effects of bird seed dispersal on diversity of the invaded plants in several hedge types. Acta Ecologica Sinica, 26(6), 1657-1666	"some seeds of Melia azedarach and Osmanthus fragrans regurgitated by birds were also observed under the hedges."

707	Propagules dispersed by other animals (externally)	n
	Source(s)	**Notes**
	Li, X., Yin, X., Xia, B., Li, W., & Li, Y. (2006). Effects of bird seed dispersal on diversity of the invaded plants in several hedge types. Acta Ecologica Sinica, 26(6), 1657-1666	"Table 2 … Osmanthus fragrans - Dispersal agent = B: Bird" [No evidence, and no means of external attachment]

708	Propagules survive passage through the gut	y
	Source(s)	**Notes**
	Li, X., Yin, X., Xia, B., Li, W., & Li, Y. (2006). Effects of bird seed dispersal on diversity of the invaded plants in several hedge types. Acta Ecologica Sinica, 26(6), 1657-1666	"Table 2 … Osmanthus fragrans - Dispersal agent = B: Bird" [Presumably Yes]

Qsn #	Question	Answer
801	**Prolific seed production (>1000/m2)**	**n**
	Source(s)	**Notes**
	Tang, A., Zhao, Z., & Luo, A. (2013). Deep physiological dormancy in desiccation-sensitive seeds of Osmanthus fragrans (Oleaceae). Seed Science and Technology, 41(3), 336-344	"In China, wild populations are found only in Liuyang of Hunan Province, Changding of Fujian Province and Longquan of Zhejiang Province (Hao et al., 2011). During our field investigation, seedlings were seldom found in these habitats, implying that recruitment from seeds is not common." … "After shedding, sweet osmanthus seeds will rapidly lose viability (unless covered by soil and fallen leaves) because they are both highly sensitivity to desiccation and have a deep physiological dormancy, thus partially explaining the phenomenon that the seedlings are rare in the wild."

802	**Evidence that a persistent propagule bank is formed (>1 yr)**	**n**
	Source(s)	**Notes**
	Tang, A., Zhao, Z., & Luo, A. (2013). Deep physiological dormancy in desiccation-sensitive seeds of Osmanthus fragrans (Oleaceae). Seed Science and Technology, 41(3), 336-344	"After shedding, sweet osmanthus seeds will rapidly lose viability (unless covered by soil and fallen leaves) because they are both highly sensitivity to desiccation and have a deep physiological dormancy, thus partially explaining the phenomenon that the seedlings are rare in the wild."

803	**Well controlled by herbicides**	
	Source(s)	**Notes**
	WRA Specialist. (2020). Personal Communication	Unknown. No evidence that this tree has been targeted for chemical control

804	**Tolerates, or benefits from, mutilation, cultivation, or fire**	**y**
	Source(s)	**Notes**
	Shoot Gardening. (2020). Osmanthus fragrans (Fragrant olive). https://www.shootgardening.co.uk/plant/osmanthus-fragrans. [Accessed 23 Feb 2020]	"Tolerates hard pruning"

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
• Potentially allelopathic
• Tolerates many soil types
• Reproduces by seeds
• Hybridizes naturally with other Osmanthus species
• Selfing possible in some populations
• Seeds dispersed by birds and intentionally by people
• Tolerates hard pruning (grows back after cutting)

Low Risk Traits
• No confirmed reports of naturalization or invasiveness
• Unarmed (no spines, thorns, or burrs)
• Non-toxic
• Not reported to spread vegetatively
• Slow growth rate and long time to maturity