

Assessment date 22 June 2021 Prepared by McCann and Lieurance

<i>Morniga oleifera</i> (horseradish tree) ALL ZONES		Answer	Score
1.01	Is the species highly domesticated?	n	0
1.02	Has the species become naturalised where grown?		
1.03	Does the species have weedy races?		
2.01	Species suited to Florida's USDA climate zones (0-low; 1-intermediate; 2-high) North Zone: suited to Zones 8, 9 Central Zone: suited to Zones 9, 10 South Zone: suited to Zone 10	2	
2.02	Quality of climate match data (0-low; 1-intermediate; 2-high)	2	
2.03	Broad climate suitability (environmental versatility)	y	1
2.04	Native or naturalized in habitats with periodic inundation North Zone: mean annual precipitation 50-70 inches Central Zone: mean annual precipitation 40-60 inches South Zone: mean annual precipitation 40-60 inches	y	1
2.05	Does the species have a history of repeated introductions outside its natural range?	y	
3.01	Naturalized beyond native range	y	2
3.02	Garden/amenity/disturbance weed	y	2
3.03	Weed of agriculture	n	0
3.04	Environmental weed	n	0
3.05	Congeneric weed	n	0
4.01	Produces spines, thorns or burrs	n	0
4.02	Allelopathic	unk	0
4.03	Parasitic	n	0
4.04	Unpalatable to grazing animals	n	-1
4.05	Toxic to animals	n	0
4.06	Host for recognised pests and pathogens	y	1
4.07	Causes allergies or is otherwise toxic to humans	n	0
4.08	Creates a fire hazard in natural ecosystems	unk	0
4.09	Is a shade tolerant plant at some stage of its life cycle	n	0
4.10	Grows on infertile soils (oligotrophic, limerock, or excessively draining soils). North & Central Zones: infertile soils; South Zone: shallow limerock or Histisols.	y	1
4.11	Climbing or smothering growth habit	n	0
4.12	Forms dense thickets	n	0
5.01	Aquatic	n	0

5.02	Grass	n	0
5.03	Nitrogen fixing woody plant	n	0
5.04	Geophyte	n	0
6.01	Evidence of substantial reproductive failure in native habitat	n	0
6.02	Produces viable seed	y	1
6.03	Hybridizes naturally	?	
6.04	Self-compatible or apomictic	y	1
6.05	Requires specialist pollinators	n	0
6.06	Reproduction by vegetative propagation	unk	-1
6.07	Minimum generative time (years)	1	1
7.01	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y	1
7.02	Propagules dispersed intentionally by people	y	1
7.03	Propagules likely to disperse as a produce contaminant	?	
7.04	Propagules adapted to wind dispersal	y	1
7.05	Propagules water dispersed	unk	-1
7.06	Propagules bird dispersed	n	-1
7.07	Propagules dispersed by other animals (externally)	n	-1
7.08	Propagules dispersed by other animals (internally)	?	
8.01	Prolific seed production	y	1
8.02	Evidence that a persistent propagule bank is formed (>1 yr)	?	
8.03	Well controlled by herbicides	y	-1
8.04	Tolerates, or benefits from, mutilation or cultivation	y	1
8.05	Effective natural enemies present in U.S.	?	
Total Score			10
Implemented Pacific Second Screening			No
Risk Assessment Results			Reject

section	# questions answered	satisfy minimum?
A		11 yes
B		11 yes
C		17 yes
total		39 yes

	Reference	Source data
1.01	1. CABI. https://www.cabi.org/isc/datasheet/34868 (Accessed 22 June 2021)	1. <i>Moringa oleifera</i> is widely cultivated for cosmetics, human consumption, and livestock feed, but there is no evidence of reduced weediness.
1.02		
1.03		
2.01	1. GRIN. https://npgsweb.ars-grin.gov/gringlobal/taxon/taxonomydetail?id=24597 (Accessed 22 June 2021) 2. Magarey, R. 2008. Global plant hardiness zones for phytosanitary risk analysis. http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0103-90162008000700009#fig03 (Accessed 22 June 2021) 3. Dave's Garden. https://davesgarden.com/guides/pf/go/55958/#b (Accessed 22 June 2021). Parrotta, J.A. 1993. <i>Moringa oleifera</i> Lam. Reseda, horseradish tree. Moringaceae. Horseradish tree family. USDA Forest Service, International Institute of Tropical Forestry; (SO-ITF-SM-61). 5. USDA/ARS- GRIN [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/taxgenform.pl?language=en (02 July 2012).	No computer analysis performed. 1. Native to India and possibly Pakistan, 2. with global hardiness zones ranging from 9-13. 3. USDA plant hardiness zone 10a-11 4. Indigenous to south Asia, from the Himalayan foothills to northern West Bengal (India). 5. Native distributional range: India (north) and Pakistan (perhaps only cultivated).
2.02		No computer analysis performed. Native range is well known (see Q 2.01)
2.03	1. CABI. https://www.cabi.org/isc/datasheet/34868 (Accessed 22 June 2021) 2. Köppen-Geiger climate map (http://www.hydrol-earth-syst-sci.net/11/1633/2007/hess-11-1633-2007.pdf).	1. The taxon prefers Af, As, Aw, Bsh, Cs, Cw, and Cf climate zones and tolerates BW. 2. Native distribution appears to be in at least three climatic groups (BSh, Cwa, Cwb), possibly one other climatic group (BWh).
2.04	1. CABI. https://www.cabi.org/isc/datasheet/34868 (Accessed 22 June 2021) 2. Parrotta, J.A. 1993. <i>Moringa oleifera</i> Lam. Reseda, horseradish tree. Moringaceae. Horseradish tree family. USDA Forest Service, International Institute of Tropical Forestry; (SO-ITF-SM-61). 3. Csurhes and Navie. 2016. Horseradish Tree Risk Assessment: https://www.daf.qld.gov.au/__data/assets/pdf_file/0007/69262/IPA-Horseradish-Tree-Risk-Assessment.pdf (Accessed 22 June 2021)	1. Mean annual rainfall is 19-86 inches. 2. Annual rainfall ranges from 750-2200 mm (29.5"-86.6"). 3. Drought tolerant.

2.05	<p>1. CABI. https://www.cabi.org/isc/datasheet/34868 (Accessed 22 June 2021) 2. Paliwal, R., Sharma, V., and Pracheta. 2011. A Review on Horse Radish Tree (<i>Moringa oleifera</i>): A Multipurpose Tree with High Economic and Commercial Importance. <i>Asian Journal of Biotechnology</i>, 3: 317-328.</p>	<p>1. "Godino et al. (2017) report that <i>M. oleifera</i> was introduced from India to Africa, the southeast of Asia and the Philippines in ancient times. They also report that it was introduced into the Americas and Europe with the arrival of the Spanish to the Philippines. However, current records suggest that this species does not occur in Europe. It has since been widely introduced and is probably present in most countries with a tropical climate." The taxon has been introduced to countries with tropical climates, such as the Cayman Islands in 1871, Dominican Republic in 1871, Guatemala in 1872, Puerto Rico in 1885, U.S. Virginia Islands in 1895, and Mexico in 1894. 2. "It has been introduced and become naturalized in other parts of India, Pakistan, Afghanistan, Bangladesh, Sri Lanka, Southeast Asia, West Asia, the Arabian peninsula, East and West Africa, Southern Florida, throughout the West Indies, and from Mexico to Peru, Paraguay and Brazil."</p>
3.01	<p>1. Bosch, C.H., 2004. <i>Moringa oleifera</i> Lam. http://www.moringaorganicproducts.com/Protabase.pdf (Accessed 22 June 2021) 2. Csurhes and Navie, 2016. Horseradish Tree Risk Assessment. https://www.daf.qld.gov.au/__data/assets/pdf_file/0007/69262/IPA-Horseradish-Tree-Risk-Assessment.pdf (Accessed 22 June 2021) 3. CABI. https://www.cabi.org/isc/datasheet/34868 (Accessed 22 June 2021) 3. Parrotta, J.A. 1993. <i>Moringa oleifera</i> Lam. Reseda, horseradish tree. Moringaceae . Horseradish tree family. USDA Forest Service, International Institute of Tropical Forestry; (SO-ITF-SM-61).</p>	<p>1. The taxon has become naturalized in many African countries. 2. Naturalized in Australia. 3. "<i>M. oleifera</i> is a perennial tree thought to be native to India but now widely introduced and naturalized across the tropics and subtropics." 4. It has been introduced and become naturalized in other parts of India, Pakistan, Afghanistan, Bangladesh, Sri Lanka, Southeast Asia, west Asia, the Arabian peninsula, east and west Africa, southern Florida, throughout the West Indies, and from Mexico to Peru, Paraguay, and Brazil.</p>
3.02	<p>1. Randall, R.P. 2007. Global Compendium of Weeds: http://www.hear.org/gcw/species/moringa_oleifera/</p>	<p>1. Listed as a weed/casual alien/cultivation escape in central Africa, Florida, Hawaii, Puerto Rico</p>
3.03	<p>1. Csurhes and Navie, 2016. Horseradish Tree Risk Assessment. https://www.daf.qld.gov.au/__data/assets/pdf_file/0007/69262/PA-Horseradish-Tree-Risk-Assessment.pdf (Accessed 22 June 2021)</p>	<p>1. The taxon is not known to occur in agriculture areas.</p>
3.04	<p>1. CABI. https://www.cabi.org/isc/datasheet/34868 (Accessed 22 June 2021) 2. Groves, R.H., Hosking, J.R. Batianoff, G.N., Cooke, D.A., Cowie, I.D., Johnson, G.J., Keighery, Lepschi, B.J., Mitchell, A.A., Moerkerk, M., Randal, R.P., Rozefelds, A.C., Walsh, N.G., and Waterhouse, B.M. 2003. Weed Categories for Natural and Agricultural Ecosystem Management: https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.604.4166&rep=rep1&type=pdf</p>	<p>Insufficient evidence for a Yes answer. 1. The taxon is listed as a weed in many countries, but it has not been observed having impacts, such as displacing native plants or changing intact habitats. 2. <i>Moringa</i> is listed as a minor environmental weed in Australia, and "naturalized but not important enough to warrant control at any location."</p>
3.05		<p>No evidence.</p>
4.01		<p>No description of these traits.</p>

4.02	<p>1. Perveen, S., Mushtaq, M.N., Yousaf, M., Sarwar, N. 2020. Allelopathic hormesis and potent allelochemicals from multipurpose tree <i>Moringa oleifera</i> leaf extract. <i>Plant Biosystems - An International Journal Dealing with all Aspects of Plant Biology</i>, 155, 154-158. 2. Hossain, M.M., Miah, G., Ahamed, T., Sarmin, N.S. 2012. Study on allelopathic effect of <i>Moringa oleifera</i> on the growth and productivity of mungbean. <i>International Journal of Agriculture and Crop Sciences</i>, 4, 1122-1128. 3. Mona, H.S., Ahlam, H.H., Hamdah, A., Shroug, S.A. 2017. Allelopathic Effect of <i>Moringa oleifera</i> Leaves Extract on Seed Germination and Early Seedling Growth of Faba Bean (<i>Vicia faba</i> L.). <i>International Journal of Agricultural Technology</i>, 13, 105-117.</p>	<p>1. <i>Moringa oleifera</i> exhibits allelopathic hormesis. 2. <i>Moringa oleifera</i> impeded the rate of germination of mungbean in laboratory settings. 3. "Moringa leaves showed negative allelopathic effects on faba bean growth..."</p>
4.03	<p>1. USDA Plants Database. https://plants.usda.gov/home/plantProfile?symbol=MOOL (Accessed 22 June 2021)</p>	<p>1. Moringaceae is not a parasitic family</p>
4.04	<p>1. CABI. https://www.cabi.org/isc/datasheet/34868 (Accessed 22 June 2021) 2. Bosch, C.H., 2004. <i>Moringa oleifera</i> Lam. http://www.moringaorganicproducts.com/Protabase.pdf (Accessed 22 June 2021)</p>	<p>1. <i>Moringa</i> leaves are used as animal feed. 2. Leaves are eaten by goats, camels, donkeys, and other livestock</p>
4.05		<p>No evidence.</p>
4.06	<p>1. Parrotta, J.A. 1993. <i>Moringa oleifera</i> Lam. Reseda, horseradish tree. Moringaceae . Horseradish tree family. USDA Forest Service, International Institute of Tropical Forestry; (SO-ITF-SM-61). 2. Bosch, C.H., 2004. <i>Moringa oleifera</i> Lam. [Internet] Record from Protabase. Grubben, G.J.H. & Denton, O.A. (Editors). PROTA (Plant Resources of Tropical Africa / Ressources végétales de l'Afrique tropicale), Wageningen, Netherlands. < http://database.prota.org/search.htm>. Accessed 25 June 2012</p>	<p>1. The taxon is a host to <i>Leveillula taurica</i>, a powdery mildew which causes damage in papaya crops in south India. 2. In Niger, caterpillars are the main pest. The tree is not seriously affected by diseases in India. Root-rot, related to poor drainage and caused by <i>Diplodia</i> sp., has been observed. Other pests include aphids, a scale insect, a borer and a fruit fly.</p>
4.07		<p>No evidence.</p>
4.08		<p>No evidence.</p>
4.09	<p>1. Plants For A Future. https://pfaf.org/user/Plant.aspx?LatinName=Moringa+oleifera (Accessed 22 June 2021)</p>	<p>1. Not shade tolerant.</p>
4.10	<p>1. CABI. 2021: https://www.cabi.org/isc/datasheet/34868 2. Mashela, P.W. 2017. Growth of moringa (<i>Moringa oleifera</i>) seedlings in calcareous, clayey and sandy soils relative to loamy soil. https://academicjournals.org/journal/AJAR/article-full-text-pdf/08ADCAA66980. 2. Parrotta, J.A. 1993. <i>Moringa oleifera</i> Lam. Reseda, horseradish tree. Moringaceae . Horseradish tree family. USDA Forest Service, International Institute of Tropical Forestry; (SO-ITF-SM-61).</p>	<p>1. Grows on acidic, alkaline, and neutral soil. 2. "<i>M. oleifera</i> projects in marginal communities are being established on marginal soils such as heavy clay, infertile sandy, sodic and calcareous soils (Foidl et al., 2001)." 3. Native range on sandy or gravelly alluvium (generally well-drained and often low in organic matter).</p>
4.11	<p>1. USDA Plants Database. https://plants.usda.gov/home/plantProfile?symbol=MOOL (Accessed 22 June 2021)</p>	<p>1. Taxon is a tree/shrub</p>
4.12		<p>No evidence.</p>
5.01		<p>We found no evidence of the taxon acting as an obligate aquatic taxa.</p>

5.02	1. USDA Plants Database. https://plants.usda.gov/home/plantProfile?symbol=MOOL (Accessed 22 June 2021)	1. In the plant family Moringaceae.
5.03	1. USDA Plants Database. https://plants.usda.gov/home/plantProfile?symbol=MOOL (Accessed 22 June 2021)	1. In the plant family Moringaceae.
5.04		No evidence.
6.01	1. GBIF. https://www.gbif.org/species/3054181 (Accessed 22 June 2021).	No evidence. 1. Moringa has sustaining populations in it's native range.
6.02	1. Bosch, C.H., 2004. Morniga oleifera Lam. http://www.moringaorganicproducts.com/Protabase.pdf (Accessed 22 June 2021) 2. Csurhes and Navie, 2016. Horseradish Tree Risk Assessment: https://www.daf.qld.gov.au/__data/assets/pdf_file/0007/69262/IPA-Horseradish-Tree-Risk-Assessment.pdf (Accessed 22 June 2021).	1. Fresh seeds germinate at 80%. 2. Germination is between 60 and 90 % for fresh seeds.
6.03	1. Kanthaswamy, V. 2005. Studies on pollination and breeding behaviour in moringa (<i>Moringa oleifera</i> Lam). <i>Vegetable Science</i> , 32(2): 187-188. 2. Bosch, C.H., 2004. <i>Moringa oleifera</i> Lam. [Internet] Record from Protabase. Grubben, G.J.H. & Denton, O.A. (Editors). PROTA (Plant Resources of Tropical Africa / Ressources végétales de l'Afrique tropicale), Wageningen, Netherlands. < http://database.prota.org/search.htm >. Accessed 25 June 2012.	Verification of natural conditions is needed. 1. Pollination and flowering were studied in <i>M. oleifera</i> cultivars PKM1 and PKM2 grown in India during the summer and rainy seasons. Fruit set percentage reached 32.0% in PKM1 and 36.0% in PKM2 under natural crossing. 2. No breeding work has been undertaken in Africa. In India a short-stem type of <i>Moringa oleifera</i> , released as PKM1, has also been developed for the production of immature fruits. Many farmers grow this type as an annual (two harvests per year). For Africa the most important selection criteria would be high leaf yield, whereas selection and breeding have so far concentrated on optimizing fruit yield. There is potential for hybridization with other <i>Moringa</i> species. <i>Moringa stenopetala</i> contains flocculating agents similar to those in <i>Moringa oleifera</i> and produces bigger seeds, so it may be possible to increase yields by hybridization with this species. It may be possible to increase the oil yield of <i>Moringa oleifera</i> by producing hybrids with <i>Moringa peregrina</i> (Forssk.) Fiori, which has higher oil content (c. 50%). So far, no results of hybridization trials have been published.
6.04	1. Muluvi, G.M., Sprent, J.I., Odee, D., and Powel, W. 2004. Estimates of outcrossing rates in <i>Moringa oleifera</i> using Amplified fragment length polymorphism. <i>African Journal of Biotechnology</i> , 3, 146-151. 2. Krieg, J., Goetze, D., Porembski, S., Arnold, P., Linsenmair, K.E., Stein, K. 2017. Floral and reproductive biology of <i>Moringa oleifera</i> (Moringaceae) in Burkina Faso, West Africa. <i>Acta Hort.</i> , 1158, 63-70	1. During a study, 74% of seed were produced as a result of cross-pollination and 26% of seed were produced by self-fertilization, confirming that <i>M. oleifera</i> has a mixed mating system and can reproduce from a single individual. 2. <i>Moringa</i> has a mixed mating system and can self-pollinate.
6.05	1. Csurhes and Navie, 2016. Horseradish Tree Risk Assessment. https://www.daf.qld.gov.au/__data/assets/pdf_file/0007/69262/IPA-Horseradish-Tree-Risk-Assessment.pdf (Accessed 22 June 2021). 2. Parrotta, John. 1993. <i>Moringa oleifera</i> Lam. https://www.fs.fed.us/research/publications/misc/63355_2005_%20Parrotta%20Moringa%20oleifera.pdf (Accessed 22 June 2021).	1. " <i>M. oleifera</i> does not seem to require any specific pollinators, as it readily produces viable seed in all parts of the world where it has been introduced." 2. Bees, other insects, and birds pollinate <i>M. oleifera</i> .

6.06	<p>1. Csurhes and Navie, 2016. Horseradish Tree Risk Assessment. https://www.daf.qld.gov.au/__data/assets/pdf_file/0007/69262/IPA-Horseradish-Tree-Risk-Assessment.pdf (Accessed 22 June 2021)</p>	<p>Need more evidence 1. Discarded stems remain viable and form roots.</p>
6.07	<p>1. USDA Plants Datase. https://plants.usda.gov/home/plantProfile?symbol=MOOL (Accessed 22 June 2021) 2. Csurhes and Navie, 2016. Horseradish Tree Risk Assessment. https://www.daf.qld.gov.au/__data/assets/pdf_file/0007/69262/IPA-Horseradish-Tree-Risk-Assessment.pdf 3. Bosch, C.H., 2004. Morniga oleifera Lam. http://www.moringaorganicproducts.com/Protabase.pdf (Accessed 22 June 2021) 4. Parrotta, John. 1993. Moringa oleifera Lam. https://www.fs.fed.us/research/publications/misc/63355_2005_%20Parrotta%20Moringa%20oleifera.pdf (Accessed 22 June 2021).</p>	<p>1. Perennial tree/shrub 2. Reproduces vegetatively. 3. Trees raised from seeds produce after 2 years. 4. When grown from cuttings, the taxon usually produces in 6-12 months.</p>
7.01	<p>1. Csurhes and Navie, 2016. Horseradish Tree Risk Assessment. https://www.daf.qld.gov.au/__data/assets/pdf_file/0007/69262/IPA-Horseradish-Tree-Risk-Assessment.pdf (Accessed 22 June 2021)</p>	<p>1. Dispersed through garden waste</p>
7.02	<p>1. USDA/ARS-GRIN [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/taxgenform.pl?language=en (02 July 2012).</p>	<p>Species is being considered for introduction as a biomass crop. 1. Environmental (boundary/barrier/support, ornamental, shade/shelter); Human food (beverage base, fruit, oil/fat, seeds, vegetable); Fuels (potential as petroleum substitute/alcohol); Materials (fiber, gum/resin, lipids, folklore).</p>
7.03	<p>1. Bosch, C.H., 2004. Moringa oleifera Lam. [Internet] Record from Protabase. Grubben, G.J.H. & Denton, O.A. (Editors). PROTA (Plant Resources of Tropical Africa / Ressources végétales de l'Afrique tropicale), Wageningen, Netherlands. < http://database.prota.org/search.htm>. Accessed 25 June 2012.</p>	<p>1. Alley cropping in the wet season cereals are grown, in the dry season vegetables.</p>
7.04	<p>1. Bosch, C.H., 2004. Moringa oleifera Lam. [Internet] Record from Protabase. Grubben, G.J.H. & Denton, O.A. (Editors). PROTA (Plant Resources of Tropical Africa / Ressources végétales de l'Afrique tropicale), Wageningen, Netherlands. < http://database.prota.org/search.htm>. Accessed 25 June 2012. 2. Parrotta, J.A. 1993. Moringa oleifera Lam. Reseda, horseradish tree. Moringaceae . Horseradish tree family. USDA Forest Service, International Institute of Tropical Forestry; (SO-ITF-SM-61). 3. Csurhes and Navie, 2016. Horseradish Tree Risk Assessment. https://www.daf.qld.gov.au/__data/assets/pdf_file/0007/69262/IPA-Horseradish-Tree-Risk-Assessment.pdf (Accessed 22 June 2021).</p>	<p>1. Fruit an elongate 3-valved capsule 10-50 cm (4"-20") long, 9-ribbed, brown when ripe, many seeded. Seeds globose, 1-1.5 cm (0.4"-0.6") in diameter, with 3 thin wings 0.5-2.5 cm (0.2"-1.0") long. 2. Mature seed pods remain on the tree for several months before splitting open and releasing the seeds, which are dispersed by wind, water, and probably by animals. 3. Seeds are winged and disperse through wind</p>

7.05	1. Csurhes and Navie, 2016. Horseradish Tree Risk Assessment. https://www.daf.qld.gov.au/__data/assets/pdf_file/0007/69262/IPA-Horseradish-Tree-Risk-Assessment.pdf (Accessed 22 June 2021). 2. Parrotta, J.A. 1993. Moringa oleifera Lam. Reseda, horseradish tree. Moringaceae . Horseradish tree family. USDA Forest Service, International Institute of Tropical Forestry; (SO-ITF-SM-61).	1. Pods float and seeds are often found near waterways and may be dispersed downstream during floods. 2. Mature seed pods remain on the tree for several months before splitting open and releasing the seeds, which are dispersed by wind, water, and probably by animals.
7.06	1. Francis, E.O., Odunayo, O.O., Orimaye, O.J. 2019. Foraging Strategies of Some Bird Species Feeding on Moringa oleifera Leaves in Covenant University Farm Ota, South Western Nigeria. Academia Journal of Agricultural Research, 3, 337-441.	1. Birds feed on the leaves of M. oleifera, but we found no evidence of dispersal.
7.07		No evidence. The taxon does not possess any attachment mechanisms.
7.08	1. Parrotta, John. 1993. Moringa oleifera Lam. https://www.fs.fed.us/research/publications/misc/63355_2005_%20Parrotta%20Moringa%20oleifera.pdf (Accessed 22 June 2021). 2. Csurhes and Navie, 2016. Horseradish Tree Risk Assessment. https://www.daf.qld.gov.au/__data/assets/pdf_file/0007/69262/IPA-Horseradish-Tree-Risk-Assessment.pdf (Accessed 22 June 2021)	1. Seeds are probably eaten by seed-eating animals. We found no other evidence to support this.
8.01	1. Parrotta, John. 1993. Moringa oleifera Lam. https://www.fs.fed.us/research/publications/misc/63355_2005_%20Parrotta%20Moringa%20oleifera.pdf (Accessed 22 June 2021) 2. Csurhes and Navie, 2016. Horseradish Tree Risk Assessment. https://www.daf.qld.gov.au/__data/assets/pdf_file/0007/69262/IPA-Horseradish-Tree-Risk-Assessment.pdf (Accessed 22 June 2021)	1. By the third year a single tree can yield 600-1600 or more fruits per year. 2. "A single tree can produce 300–400 fruit per year within 3 years of planting, while a mature tree can produce up to 1000 fruit per year (HDRA 2002). As each fruit contains approximately 20 seeds, a mature tree can therefore produce about 20 000 seeds per year."
8.02	1. Fotouo-M, H., du Toit, E., Robbertse, P. 2015. Germination and ultrastructural studies of seeds produced by a fast-growing, drought-resistant tree: implications for its domestication and seed storage. AoB Plants, 7. 2. Csurhes and Navie, 2016. Horseradish Tree Risk Assessment. https://www.daf.qld.gov.au/__data/assets/pdf_file/0007/69262/IPA-Horseradish-Tree-Risk-Assessment.pdf (Accessed 22 June 2021). 3. Parrotta, John. 1993. Moringa oleifera Lam. https://www.fs.fed.us/research/publications/misc/63355_2005_%20Parrotta%20Moringa%20oleifera.pdf (Accessed 22 June 2021). 4. Bosch, C.H., 2004. Morniga oleifera Lam. http://www.moringaorganicproducts.com/Protabase.pdf (Accessed 22 June 2021).	1. Seeds lose their viability within 6-12 months depending on the conditions stored. 2. The seeds lose viability relatively fast and are usually not viable after 2 years. 3. "Seeds do not retain their viability in storage at ambient temperatures for longer than 2 months; germination percentages of 60, 48 and 7.5 % were reported for seeds after 1, 2, and 3 months, respectively, in India. In test conducted in Brazil, however, seeds retained their viability for several years in cold storage." 4. "Germination rates for fresh seeds are around 80%, going down to about 50% after 12 months storage, but no seeds survive 2 years of storage." Due to conflicting information, we answered "?".
8.03	1. Shulner, I., Asaf, E., Ben-Simhon, Z., Cohen-Zinder, M., Shabtay, A., Peleg, Z., Lati, R.N. 2021. Optimizing Weed Management for the New Super-Forage Moringa oleifera. Agronomy, 11, 1055.	1. Herbicides are effective at controlling M. oleifera.
8.04	1. Bosch, C.H., 2004. Morniga oleifera Lam. http://www.moringaorganicproducts.com/Protabase.pdf (Accessed 22 June 2021). 2. CABI. https://www.cabi.org/isc/datasheet/34868 (Accessed 22 June 2021)	1. Pollarding, coppicing, and lopping or pruning promote branching and increase production. 2. "Tolerates, or benefits from, cultivation, browsing pressure, mutilation, fire etc."

8.05	1. CABI. https://www.cabi.org/isc/datasheet/34868 (Accessed 22 June 2021)	No evidence of natural enemies in US 1. "A range of natural enemies of <i>M. oleifera</i> are reported by Mridha and Barakan (2017) including the pathogens <i>Fusarium pallidoroseum</i> , <i>Cochliobolus hawaiiensis</i> , <i>Leveillula taurica</i> and species in the genus <i>Diplodia</i> as well as a range of pests including <i>Gitona distigma</i> , <i>Noorda blitealis</i> , <i>Eupterote mollifera</i> , <i>Aphis gossypii</i> , <i>Ceroplastodes cajani</i> , <i>Mylocerus</i> spp., <i>Tetranychus urticae</i> , <i>Leptoglossus phyllopus</i> , <i>Bemisia</i> spp., <i>Ulopeza phaeothoracica</i> , <i>Zonocerus variegatus</i> and <i>Formica rufa</i> ."
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