UF IFAS UNIVERSITY of FLORIDA

Assessment of Non-native Plants in Florida's Natural Areas

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Assessment date 1/21/2020 Assessment completed by Petri and Lieurance

	Curcuma longa **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	n	-2
3.02	Garden/amenity/disturbance weed	unk	
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	unk	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	unk	0
4.10	Grows on infertile soils (oligotrophic, limerock, or excessively draining soils). North & Central Zones: infertile soils; South Zone: shallow limerock or Histisols.	n	0
4.11	Climbing or smothering growth habit	n	0
4.12	Forms dense thickets	unk	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	n	-1
6.03	Hybridizes naturally	unk	-1
6.04	Self-compatible or apomictic	n	-1
6.05	Requires specialist pollinators	n	0
6.06	Reproduction by vegetative propagation	y	1
6.07	Minimum generative time (years)	1	1
7.01	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	n	-1
7.02	Propagules dispersed intentionally by people	y	1
7.03	Propagules likely to disperse as a produce contaminant	n	-1
7.04	Propagules adapted to wind dispersal	n	-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)	n	-1
8.01	Prolific seed production	n	-1
8.02	Evidence that a persistent propagule bank is formed (>1 yr)	n	-1
8.03	Well controlled by herbicides	unk	1
8.04	Tolerates, or benefits from, mutilation or cultivation	y	1
8.05	Effective natural enemies present in U.S.	don't know	
	Total Score	**-7**	
	Implemented Pacific Second Screening	**No**	
	Risk Assessment Results	**Low Risk**	

section	# questions answered	satisfy minimum?
A	10	yes
B	7	yes
C	20	yes
total	37	yes

	Reference	Source data
1.01	1-2. Omosa et al. 2017, Medicinal spices and vegetables from Africa: Chapter 19 Curcurma longa; https://www.sciencedirect.com/science/article/pii/B9780128092866000194 [Accessed 2/21/20] 1-2. Kew Science; http://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:796451-1 [Accessed 2/21/20]	The wild type is unknown, therefore it can not be proved that domesticated reduced invasion risk 1. Turmeric is only known as a domesticated plant and not found in the wild, the exact origin is unknown but thought to be native to Southwest India 2. Turmeric has been widely cultivated for at least 2,5000 years throughout the tropics for medicine, food (spice), cosmetics, and dye
1.02		
1.03		
2.01	1. Missouri Botanical Garden; https://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?taxonid=287580 [Accessed 2/24/20] 1. Dave's Garden; https://davesgarden.com/guides/pf/go/60081/ [Accessed 3/4/20] 2. Kew Science; http://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:796451-1 [Accessed 2/21/20] 2. GBIF; https://www.gbif.org/species/2757624 [Accessed 2/21/20] 2. USDA, PLANTS; https://plants.sc.egov.usda.gov/core/profile?symbol=CULO [Accessed 2/21/20] 2. World Health Organization 1995, WHO monographs on selected medicinal plants Vol. 1; https://apps.who.int/medicinedocs/fr/d/Js2200e/ [Accessed 2/25/20]	No computer analysis was performed 1. Plants grown in Zones 7b-11 require a moist summer growing season followed by a dormant winter season 2. Climates of known boundaries are similar to that of Florida with suitability in tropical, wet Koppen-Geiger climate zones including Aw, Am, Af, and Cfa
2.02	1. Omosa et al. 2017, Medicinal spices and vegetables from Africa: Chapter 19 Curcurma longa; https://www.sciencedirect.com/science/article/pii/B9780128092866000194 [Accessed 2/21/20] 1-3. Kew Science; http://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:796451-1 [Accessed 2/21/20] 2-3. GBIF; https://www.gbif.org/species/2757624 [Accessed 2/21/20] 2-3. USDA, PLANTS; https://plants.sc.egov.usda.gov/core/profile?symbol=CULO [Accessed 2/21/20] 2-3. World Health Organization 1995, WHO monographs on selected medicinal plants Vol. 1; https://apps.who.int/medicinedocs/fr/d/Js2200e/ [Accessed 2/25/20]	No computer analysis was performed 1. Boundaries of the native range are not known, but turmeric is likely native to Southwest India 2. Introduced into cultivation in Bangladesh, China, Thailand, Cambodia, Malaysia, Indonesia, Philippines, Australia, Seychelles, Madagascar, Cuba, Ecuador, The Democratic Republic of the Congo, Soa Tome and Principle, Yemen, Vietnam, Jamaica and the United States (Hawaii and Puerto Rico) 3. Climates of known boundaries are similar to that of Florida with suitability in tropical, wet Koppen-Geiger climate zones including Aw, Am, Af, and Cfa
2.03	1. GBIF; https://www.gbif.org/species/2757624 [Accessed 2/21/20] 1. Kew Science; http://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:796451-1 [Accessed 2/21/20] 1. World Health Organization 1995, WHO monographs on selected medicinal plants Vol. 1; https://apps.who.int/medicinedocs/fr/d/Js2200e/ [Accessed 2/25/20]	1. Suited to Koppen-Geiger climates Aw (India, Australia, Thailand, Cambodia, Vietnam, Bangladesh, Madagascar, Cuba, The Democratic Republic of Congo), Am (India, Thailand, Vietnam, Bangladesh, The Democratic Republic of Congo), Af (Indonesia, Malaysia, Philippines, The Democratic Republic of Congo), and Cfa (India, eastern China)
2.04	1. Jansen 2005, Curcuma longa L.; https://www.prota4u.org/database/protav8.asp?g=pe&p=Curcuma+longa+L. [Accessed 2/25/20]	1. Ideal rainfall is between 1000mm to 2000mm (39in to 79in), but plants can tolerate 800mm to 3000mm (31in to 118in)

2.05	1. GBIF; https://www.gbif.org/species/2757624 [Accessed 2/21/20] 1. USDA, PLANTS; https://plants.sc.egov.usda.gov/core/profile?symbol=CULO [Accessed 2/21/20] 1. World Health Organization 1995, WHO monographs on selected medicinal plants Vol. 1; https://apps.who.int/medicinedocs/fr/d/Js2200e/ [Accessed 2/25/20] 2. Kew Science; http://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:796451-1 [Accessed 2/21/20] 3. Omosa et al. 2017, Medicinal spices and vegetables from Africa: Chapter 19 Curcurma longa; https://www.sciencedirect.com/science/article/pii/B9780128092866000194 [Accessed 2/21/20] 3. Kew Science; http://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:796451-1 [Accessed 2/21/20]	1. Introduced to Australia, Seychelles, Madagascar, Cuba, Ecuador, The Democratic Republic of the Congo, Soa Tome and Principle, Yemen, Vietnam, Jamaica and the United States (Hawaii and Puerto Rico) 2. Turmeric is extensively cultivated in Bangladesh, China, Thailand, Cambodia, Malaysia, Indonesia, and the Philippines 3. The exact origin is unknown but thought to be native to Southwest India
3.01	1-3. Kew Science; http://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:796451-1 [Accessed 2/21/20] 2. Omosa et al. 2017, Medicinal spices and vegetables from Africa: Chapter 19 Curcurma longa; https://www.sciencedirect.com/science/article/pii/B9780128092866000194 [Accessed 2/21/20] 3. GBIF; https://www.gbif.org/species/2757624 [Accessed 2/21/20] 3. USDA, PLANTS; https://plants.sc.egov.usda.gov/core/profile?symbol=CULO [Accessed 2/21/20] 3. World Health Organization 1995, WHO monographs on selected medicinal plants Vol. 1; https://apps.who.int/medicinedocs/fr/d/Js2200e/ [Accessed 2/25/20]	No evidence of populations outside of cultivation 1. Turmeric is 'only known as a domesticated plant and not found in the wild' 2. Exact origin is unknown but thought to be native to Southwest India 3. Introduced into cultivation in Bangladesh, China, Thailand, Cambodia, Malaysia, Indonesia, Philippines, Australia, Seychelles, Madagascar, Cuba, Ecuador, The Democratic Republic of the Congo, Soa Tome and Principle, Yemen, Vietnam, Jamaica and the United States (Hawaii and Puerto Rico)
3.02	1. Nick 2018, Good Housekeeping, How to grow your own turmeric indoors; https://www.goodhousekeeping.com/home/gardening/a20706465/how-to-grow-turmeric/ [Accessed 3/2/20] 2. Carey & Avent 2012, Plant Delights Nursery Inc, Growing turmeric in your garden; https://www.plantdelights.com/blogs/articles/curcuma-longa-turmeric-plant-zedoaria-ginger [Accessed 3/2/20] 3. Xie et al. 2016, Seed Set and Natural Regeneration of Dendrocalamus membranaceus Munro after Mass and Sporadic Flowering in Yunnan, China; https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4831783/ [Accessed 3/3/20]	1. "Give it [turmeric] what it likes and it will grow like a weed" 2. Potted turmeric needs to be re-potted often because the 'thick rhizomes quickly grow large enough to split open a pot' 3. Study site in a forest in China was described as being 'dominated by weeds of Zingiberaceae such as Curcuma longa'
3.03		No evidence
3.04		No evidence
3.05		No evidence
4.01	1. eFloras; http://www.efloras.org/florataxon.aspx?flora_id=620&taxon_id=200028370 [Accessed 2/21/20]	1. These features are not in the description of the species
4.02	1. Akter et al. 2018, Plant growth inhibitors in turmeric (Curcuma longa) and their effects on Bidens pilosa: Plant growth inhibitors from turmeric; https://www.researchgate.net/publication/327291501_Plant_growth_inhibitors_in_turmeric_Curcuma_longa_and_their_effects_on_Bidens_pilosa_Plant_growth_inhibitors_from_turmeric [Accessed 3/2/20] 2. Rolli et al. 2014, Comparative phytotoxicity of 25 essential oils on pre- and post-emergence development of Solanum lycopersicum L.: A multivariate approach; https://www.sciencedirect.com/science/article/pii/S0926669014003549 [Accessed 3/2/20]	1. Methanol extracts of turmeric cultivar 'Ryudai gold' and cultivar 'Okinawa ukon' were both found to inhibit the seed germination and seedling growth of radish, cress, lettuce, and Bidens pilosa 2. Of 25 essential oils, Turmeric oil was found to have an intermediate allelopathic effect on tomato in pre- or post-emergence stages

4.03	1. Parasitic Plants Database; http://www.omnisterra.com/bot/pp_home.cgi [Accessed 3/2/20] 2. USDA, PLANTS; https://plants.sc.egov.usda.gov/core/profile?symbol=CULO [Accessed 2/21/20]	1. Not listed in the Parasitic Plants Database 2. In the family Zingiberaceae
4.04	1. Chaturvedi et al. 2015, Effect of combined herbal feed additives on methane, total gas production and rumen fermentation; https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4464543/ [Accessed 3/2/30]	1. Turmeric roots can be included as herbal feed additives for ruminants
4.05	1. Aziz et al. 2018, Traditional uses of medicinal plants used by Indigenous communities for veterinary practices at Bajaur Agency, Pakistan; https://ethnobiomed.biomedcentral.com/articles/10.1186/s13002-018-0212-0 [Accessed 3/2/30] 2. Soleimani et al. 2018, Turmeric and its major constituent as nontoxic and safe substances: Review; https://onlinelibrary.wiley.com/doi/full/10.1002/ptr.6054 [Accessed 2/25/20]	1. In Pakistan, turmeric powder has been traditionally used in ethnobotany veterinary practices for parasites and infections 2. A literature review found that turmeric is safe in animals, although some mice at certain doses of oil extracts showed changes in liver weight and liver tissues
4.06	1. Ghorpade et al. 1988, Biology of rhizome fly, Mimegralla coeruleifrons Macquart (Micropezidae: Diptera) in India, a pest of turmeric and ginger crops; https://www.tandfonline.com/doi/pdf/10.1080/09670878809371205 [Accessed 3/3/20] 2. CABI; https://www.cabi.org/isc/datasheet/17014 [Accessed 2/24/20] 3. EPPO Global Database; https://gd.eppo.int/taxon/CURLO/pests [Accessed 2/25/20]	1. In India, infestations of M. coeruleifrons (rhizome flies) are known to cause losses of 25% yield in turmeric fields, and this species is also causes yield losses of 31% in ginger 2. Major host of Aspidiella hartii (yam scale), Athelia rolfsii (sclerotium rot), Criconemella (ring nematode), Macrophomina phaseolina (charcoal rot of bean/tobacco), Pratylenchus coffeae (banana root nematode), Pythium aphanidermatum (damping-off), Radopholus similis (burrowing nematod), Stegobium paniceum (drugstore beetle), Stephanitis typica (banana lace-wing bug), Taphrina maculans (leaf spot: turmeric), Trichodorus (stubby root nematodes), Xiphinema (dagger nematode) 3. Radopholus similis (Banana root nematode) is classified as a minor pest of turmeric by EPPO
4.07	1. World Health Organization 1995, WHO monographs on selected medicinal plants Vol. 1; https://apps.who.int/medicinedocs/fr/d/Js2200e/ [Accessed 2/25/20] 1-2. Kew Science; http://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:796451-1 [Accessed 2/21/20] 2. Soleimani et al. 2018, Turmeric and its major constituent as nontoxic and safe substances: Review; https://onlinelibrary.wiley.com/doi/full/10.1002/ptr.6054 [Accessed 2/25/20]	1. Skin contact with freshly cut roots 'may cause an allergic skin reaction in some people' (allergic dermatitis), but people who had not previously been exposed to dermatitis had few allergic reactions 2. Turmeric are nontoxic for humans, particularly in oral administration as it is a popular food spice and medicine
4.08		No evidence
4.09	1. Shannon et al. 2019, Shade, Establishment Method, and Varietal Effects on Rhizome Yield and Curcumin Content in Turmeric in Alabama; https://dl.sciencesocieties.org/publications/cs/abstracts/59/6/2701 [Accessed 3/2/20] 2. Missouri Botanical Garden; https://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?taxonid=287580 [Accessed 2/24/20] 3. Jansen 2005, Curcuma longa L.; https://www.prota4u.org/database/protav8.asp?g=pe&p=Curcuma+longa+L. [Accessed 2/25/20] 4. Michaels 2020, Green Harvest, Turmeric growing information; https://greenharvest.com.au/Plants/Information/Turmeric.html [Accessed 3/2/30]	1. In experimental plots, 40% shade increased plant height, leaf size, and fresh weight of rhizomes, compared to no shade 2. Easily grows in full sun to partial shade, and prefers morning sun with afternoon shade 3. 'As a shade-loving plant it does well in partial shade and can be cropped under fruit trees' 4. Heavy shade will 'reduce the yield' but light shade is beneficial

4.10	1. Mekonnen & Garedew, Growth, yield, and quality responses of turmeric (Curcuma longa L.) to nitrogen fertilizer rate and timing of its application; https://pdfs.semanticscholar.org/d774/1797431aeb3ef5069eebab375fc74de68bca.pdf [Accessed 3/3/20] 2. Kew Science; http://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:796451-1 [Accessed 2/21/20] 3. Jansen 2005, Curcuma longa L.; https://www.prota4u.org/database/protav8.asp?g=pe&p=Curcuma+longa+L. [Accessed 2/25/20] 4. Nick 2018, Good Housekeeping, How to grow your own turmeric indoors; https://www.goodhousekeeping.com/home/gardening/a20706465/how-to-grow-turmeric/ [Accessed 3/2/20]	1. 'Soil fertility decline is one of the factors that results in low productivity of turmeric in Ethiopia' 2. Growing plants require 'heavy application of manure to get the best yield' 3. Turmeric can grow in various soil types, but prefers well-drained loam and 'cannot stand waterlogging or alkaline soils' 4. Allowing the soil to dry out at any point 'will reduce your final harvest'
4.11	1. Kew Science; http://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:796451-1 [Accessed 2/21/20]	1. Upright perennial herb that grows about 1m tall, does not physically grow over other plants
4.12	1. Kew Science; http://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:796451-1 [Accessed 2/21/20]	1. Upright perennial herb that grows about 1m tall, but unknown if sprouts growing close together could impede movement since only known in cultivated areas
5.01	1. USDA, PLANTS; https://plants.sc.egov.usda.gov/core/profile?symbol=CULO [Accessed 2/21/20]	1. In the family Zingiberaceae
5.02	1. USDA, PLANTS; https://plants.sc.egov.usda.gov/core/profile?symbol=CULO [Accessed 2/21/20]	1. In the family Zingiberaceae
5.03	1. USDA, PLANTS; https://plants.sc.egov.usda.gov/core/profile?symbol=CULO [Accessed 2/21/20]	1. In the family Zingiberaceae
5.04	1. eFloras; http://www.efloras.org/florataxon.aspx?flora_id=620&taxon_id=200028370 [Accessed 2/21/20]	1. Plant has rhizomes with many branches, and roots are aromatic and tuberous at the tip
6.01	1-2. Omosa et al. 2017, Medicinal spices and vegetables from Africa: Chapter 19 Curcurma longa; https://www.sciencedirect.com/science/article/pii/B9780128092866000194 [Accessed 2/21/20] 1-2. Kew Science; http://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:796451-1 [Accessed 2/21/20]	1. Turmeric is only known as a domesticated plant and not found in the wild, the exact origin is unknown but thought to be native to Southwest India 2. Turmeric has been widely cultivated for at least 2,5000 years for medicine, food (spice), cosmetics, and dye
6.02	1. Kew Science; http://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:796451-1 [Accessed 2/21/20] 1. Plant Resources of Tropical Africa; https://uses.plantnet-project.org/en/Curcuma_longa_(PROTA) [Accessed 2/25/20] 2. Carey & Avent 2012, Plant Delights Nursery Inc, Growing turmeric in your garden; https://www.plantdelights.com/blogs/articles/curcuma-longa-turmeric-plant-zedoaria-ginger [Accessed 3/2/20]	1. Turmeric flowers are sterile and do not produce viable seed 2. Turmeric will not set seed unless you hand pollinate them during the summer, but if you actually get seed they are relatively easy to germinate
6.03	1. Carey & Avent 2012, Plant Delights Nursery Inc, Growing turmeric in your garden; https://www.plantdelights.com/blogs/articles/curcuma-longa-turmeric-plant-zedoaria-ginger [Accessed 3/2/20] 2. Hayakawa et al. 2011, Difference of Curcumin Content in Curcuma longa L. (Zingiberaceae) Caused by Hybridization with Other Curcuma Species; https://www.scirp.org/html/5709.html [Accessed 3/3/20]	No direct evidence, only found evidence of horticultural hybrids 1. There are multiple horticultural hybrids including 'Pink Plush', 'Sulee Sunshine', 'Summer Snow' 2. Experiment investigated 'the outcomes of cultivation experiments with the hybridization or introgression between C. longa and other Curcuma species'
6.04	1. Kew Science; http://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:796451-1 [Accessed 2/21/20] 1. Plant Resources of Tropical Africa; https://uses.plantnet-project.org/en/Curcuma_longa_(PROTA) [Accessed 2/25/20]	1. Turmeric flowers are sterile and do not produce viable seed

6.05	1. Eden Project; https://www.edenproject.com/learn/for-everyone/plant-profiles/turmeric [Accessed 2/25/20] 2. Kew Science; http://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:796451-1 [Accessed 2/21/20] 2. Plant Resources of Tropical Africa; https://uses.plantnet-project.org/en/Curcuma_longa_(PROTA) [Accessed 2/25/20]	1. Flowers are pollinated by insects 2. Turmeric flowers are sterile and do not produce viable seed
6.06	1. Kew Science; http://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:796451-1 [Accessed 2/21/20] 2. eFloras; http://www.efloras.org/florataxon.aspx?flora_id=620&taxon_id=200028370 [Accessed 2/21/20]	1. Turmeric 'grows vigorously from the rhizomes' 2. Plant has rhizomes with many branches, and roots are aromatic and tuberous at the tip
6.07	1. Kew Science; http://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:796451-1 [Accessed 2/21/20] 1. Jansen 2005, Curcuma longa L.; https://www.prota4u.org/database/protav8.asp?g=pe&p=Curcuma+longa+L. [Accessed 2/25/20] 1. Nick 2018, Good Housekeeping, How to grow your own turmeric indoors; https://www.goodhousekeeping.com/home/gardening/a20706465/how-to-grow-turmeric/ [Accessed 3/2/20]	1. Turmeric is ready for harvesting 7-10 months after planting, when the lower leaves turn yellow
7.01	1. Plant Resources of Tropical Africa; https://uses.plantnet-project.org/en/Curcuma_longa_(PROTA) [Accessed 2/25/20] 1-2. Kew Science; http://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:796451-1 [Accessed 2/21/20]	No direct evidence, and no seed adaptations or ruderal habitats potentially to facilitate unintentional dispersal 1. Turmeric flowers are sterile and doe not produce viable seed 2. This plant is not known in the wild, it is only known as a cultivated plant
7.02	1. Amazon; https://www.amazon.com/Turmeric-Roots-Curcuma-longa-Organic/dp/B00I333QA2 [Accessed 2/24/20] 1. Etsy; https://www.etsy.com/listing/677186638/curcuma-longa-rhizomes-turmeric-rhizomes?ga_order=most_relevant&ga_search_type=all&ga_view_type=gallery&ga_search_query=curcuma+longa&ref=sr_gallery-1-2&frs=1 [Accessed 2/25/20] 1. Easy to Grow Bulbs; https://www.easytogrowbulbs.com/products/ginger-curcuma-longa-turmeric?variant=31581624012 [Accessed 2/25/20]	1. Live rhizomes are available for purchase online
7.03		No evidence
7.04	1. Prasad et al. 2006, Study on performance evaluation of hybrid drier for turmeric (Curcuma longa L.) drying at village scale; https://www.sciencedirect.com/science/article/pii/S0260877405002955 [Accessed 3/3/20] 2. Plant Resources of Tropical Africa; https://uses.plantnet-project.org/en/Curcuma_longa_(PROTA) [Accessed 2/25/20] 2. Kew Science; http://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:796451-1 [Accessed 2/21/20]	No direct evidence, and propagules do not have traits for wind dispersal 1. Rhizome propagules are commonly left in the sun to dry, and have not been recorded being blow away by the wind in speeds of 0.2-2.5m/s 2. Turmeric flowers are sterile and do not produce viable seed
7.05		No evidence
7.06	1. Kew Science; http://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:796451-1 [Accessed 2/21/20] 1. Plant Resources of Tropical Africa; https://uses.plantnet-project.org/en/Curcuma_longa_(PROTA) [Accessed 2/25/20]	No direct evidence, and rhizome propagules likely to be too large 1. Turmeric flowers are sterile and do not produce viable seed
7.07	1. Kew Science; http://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:796451-1 [Accessed 2/21/20] 1. Plant Resources of Tropical Africa; https://uses.plantnet-project.org/en/Curcuma_longa_(PROTA) [Accessed 2/25/20]	No direct evidence, no mechanism for attachment of propagules 1. Turmeric flowers are sterile and do not produce viable seed

7.08	1. Kew Science; http://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:796451-1 [Accessed 2/21/20] 1. Plant Resources of Tropical Africa; https://uses.plantnet-project.org/en/Curcuma_longa_(PROTA) [Accessed 2/25/20]	No direct evidence, internal dispersal of vegetative propagules unlikely 1. Turmeric flowers are sterile and do not produce viable seed
8.01	1. Kew Science; http://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:796451-1 [Accessed 2/21/20] 1. Plant Resources of Tropical Africa; https://uses.plantnet-project.org/en/Curcuma_longa_(PROTA) [Accessed 2/25/20]	1. Turmeric flowers are sterile and doe not produce viable seed
8.02	1. Missouri Botanical Garden; https://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?taxonid=287580 [Accessed 2/24/20] 1. Kew Science; http://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:796451-1 [Accessed 2/21/20] 2. Jansen 2005, Curcuma longa L.; https://www.prota4u.org/database/protav8.asp?g=pe&p=Curcuma+longa+L. [Accessed 2/25/20] 3. Carey & Avent 2012, Plant Delights Nursery Inc, Growing turmeric in your garden; https://www.plantdelights.com/blogs/articles/curcuma-longa-turmeric-plant-zedoaria-ginger [Accessed 3/2/20]	No direct evidence, propagules seem to require months (not 1 yr+) of dormancy 1. Rhizomes require a period of dormancy annually, in native range this occurs after monsoon season when the drier soils prevail 2. It is necessary to store rhizomes for 2 - 3 months from harvesting to planting 3. Seeds (from hand pollination) may take several months of warm temperatures to germinate
8.03	1. Heap 2020, International survey of herbicide resistant weeds; http://weedscience.com/Summary/Species.aspx [Accessed 2/17/20]	No direct evidence 1. Not listed as resistant to herbicides
8.04	1-2. Kew Science; http://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:796451-1 [Accessed 2/21/20] 1-2. Omosa et al. 2017, Medicinal spices and vegetables from Africa: Chapter 19 Curcurma longa; https://www.sciencedirect.com/science/article/pii/B9780128092866000194 [Accessed 2/21/20]	1. Turmeric has been cultivated for thousands of years, and no wild populations are known 2. Turmeric resprouts from rhizomes and thus it's likely that if connected plants are broken up there would be a benefit to this treatment
8.05	1. Missouri Botanical Garden; https://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?taxonid=287580 [Accessed 2/24/20]	1. 'No serious insects or disease problems'; though spider mites may appear if the soil becomes dry, and snails and slugs may attack young leaves