

Family: *Apocynaceae*

Taxon: *Pachypodium lamerei*

Synonym: *Pachypodium champenoisianum* Boiteau
Pachypodium ramosum Costantin & Bois

Common Name: Madagascar palm
palmeira de Madagascar

Questionnaire :	current 20090513	Assessor:	Chuck Chimera	Designation: L
Status:	Assessor Approved	Data Entry Person:	Chuck Chimera	WRA Score 1
101	Is the species highly domesticated?		y=-3, n=0	n
102	Has the species become naturalized where grown?		y=1, n=-1	
103	Does the species have weedy races?		y=1, n=-1	
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	?
301	Naturalized beyond native range		y = 1*multiplier (see Appendix 2), n= question 205	n
302	Garden/amenity/disturbance weed		n=0, y = 1*multiplier (see Appendix 2)	n
303	Agricultural/forestry/horticultural weed		n=0, y = 2*multiplier (see Appendix 2)	n
304	Environmental weed		n=0, y = 2*multiplier (see Appendix 2)	n
305	Congeneric weed		n=0, y = 1*multiplier (see Appendix 2)	n
401	Produces spines, thorns or burrs		y=1, n=0	y
402	Allelopathic		y=1, n=0	
403	Parasitic		y=1, n=0	n
404	Unpalatable to grazing animals		y=1, n=-1	
405	Toxic to animals		y=1, n=0	
406	Host for recognized pests and pathogens		y=1, n=0	
407	Causes allergies or is otherwise toxic to humans		y=1, n=0	y
408	Creates a fire hazard in natural ecosystems		y=1, n=0	n
409	Is a shade tolerant plant at some stage of its life cycle		y=1, n=0	n
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	
604	Self-compatible or apomictic	y=1, n=-1	
605	Requires specialist pollinators	y=-1, n=0	y
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	y
705	Propagules water dispersed	y=1, n=-1	
706	Propagules bird dispersed	y=1, n=-1	
707	Propagules dispersed by other animals (externally)	y=1, n=-1	
708	Propagules survive passage through the gut	y=1, n=-1	
801	Prolific seed production (>1000/m2)	y=1, n=-1	
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	n
803	Well controlled by herbicides	y=-1, n=1	
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)	y=-1, n=1	

Designation: L

WRA Score 1

Supporting Data:

101	1999. Rapanarivo, S.H.J.V.. Pachypodium (Apocynaceae): Taxonomy, Ecology & Cultivation. CRC Press, Boca Raton, FL	[Is the species highly domesticated? No evidence]
102	2012. WRA Specialist. Personal Communication.	NA
103	2012. WRA Specialist. Personal Communication.	NA
201	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Species suited to tropical or subtropical climate(s) 2-High] "A native of Madagascar often cultivated as a container plant in temperate regions."
202	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Quality of climate match data 2-High]
203	2012. Dave's Gardern. PlantFiles: Madagascar Palm - Pachypodium lamerei. http://davesgarden.com/guides/pf/go/509/ [Accessed 14 Nov 2012]	[Broad climate suitability (environmental versatility)? No] "Hardiness: USDA Zone 9a: to -6.6 °C (20 °F) USDA Zone 9b: to -3.8 °C (25 °F) USDA Zone 10a: to -1.1 °C (30 °F) USDA Zone 10b: to 1.7 °C (35 °F) USDA Zone 11: above 4.5 °C (40 °F)"
203	2012. South African National Biodiversity Institute. PlantzAfrica.com - Pachypodium. http://www.plantzafrika.com/plantnop/pachypodium.htm [Accessed 14 Nov 2012]	[Broad climate suitability (environmental versatility)? No] "P. lamerei is a succulent, arborescent species but is very variable. Plants are 1.5-8.0 m high, with a sturdy, branched stem. The tips are clogged in a dense mass of branches with dark olive-green leaves that are glossy above and paler below. The flowers are large and white. This species is found in southern and southwestern Madagascar. It commemorates Lamère, whose collections included the type specimen. It grows on limestone or gneiss rocks in dry forest or in full sun up to 750 m above sea level. "
204	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Native or naturalized in regions with tropical or subtropical climates? Yes] "A native of Madagascar often cultivated as a container plant in temperate regions."
205	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Does the species have a history of repeated introductions outside its natural range? Hawaiian Islands] "A native of Madagascar often cultivated as a container plant in temperate regions, P. lamerei is the most commonly cultivated pachypodium in the Hawaiian Islands."
205	2012. Dave's Gardern. PlantFiles: Madagascar Palm - Pachypodium lamerei. http://davesgarden.com/guides/pf/go/509/ [Accessed 14 Nov 2012]	[Does the species have a history of repeated introductions outside its natural range? Widely cultivated, but may be more common as an indoor potted plant] "Grenoble, Foley, Alabama Montgomery, Alabama Chandler, Arizona (2 reports) Goodyear, Arizona Mesa, Arizona Oro Valley, Arizona Phoenix, Arizona (2 reports) Scottsdale, Arizona Bostonia, California Del Aire, California Downey, California Duarte, California Fresno, California Hayward, California La Mirada, California La Presa, California La Puente, California Lake Elsinore, California Los Angeles, California Murrieta Hot Springs, California Norwalk, California Oceanside, California Palm Springs, California Ramona, California Reseda, California Round Valley, California San Antonio Heights, California San Clemente, California San Diego, California (4 reports) San Francisco, California Santee, California Simi Valley, California Thousand Oaks, California Venice, California Vista, California Yorba Linda, California Edgewater, Colorado Big Pine Key, Florida Bonnie Lock-woodsetter North, Florida Bradenton, Florida Cudjoe Key, Florida Lake Worth, Florida Mary Esther, Florida Miami, Florida North Andrews Gardens, Florida Orangetree, Florida Ormond Beach, Florida Port Charlotte, Florida Sarasota, Florida South Venice, Florida Spring Hill, Florida Wekiva Springs, Florida Whitfield, Florida Yigo, Guam Kailua Kona, Hawaii Lihue, Hawaii Maalaea, Hawaii Mishawaka, Indiana Kenner, Louisiana Metairie, Louisiana Baltimore, Maryland Mount Clemens, Michigan Minneapolis, Minnesota Columbia, Missouri Maryland Heights, Missouri Rogersville, Missouri Teaneck, New Jersey Alden, New York Millbury, Ohio Briggs, Oklahoma Warren Center, Pennsylvania Vieques, Puerto Rico Little River, South Carolina Summerville, South Carolina Dallas, Texas Dickinson, Texas Fort Worth, Texas Galveston, Texas Grape Creek, Texas La Porte, Texas Laguna Heights, Texas Pearland, Texas Bellingham, Washington Lannon, Wisconsin Mount Pleasant, Wisconsin"

301	2009. Chong, K.Y./Tan, H.T.W./Corlett, R.T.. A Checklist of the Total Vascular Plant Flora of Singapore: Native, Naturalized and Cultivated Species. Raffles Museum of Biodiversity Research, National University of Singapore, Singapore	[Naturalized beyond native range? No evidence in Singapore] "Pachypodium lamerei Drake; Apocynaceae; cultivated only"
301	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Naturalized beyond native range? No evidence]
301	2012. Wagner, W.L./Herbst, D.R./Khan, N./Flynn, T.. Hawaiian Vascular Plant Updates: A Supplement to the Manual of the Flowering Plants of Hawai'i & Hawai'i's Ferns & Fern Allies. http://botany.si.edu/pacificislandbiodiversity/hawaiianflora/supplement.htm	[Naturalized beyond native range? No evidence]
302	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Garden/amenity/disturbance weed? No evidence]
303	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Agricultural/forestry/horticultural weed? No evidence]
304	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Environmental weed? No evidence]
305	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Congeneric weed? No species listed as weed. One species, <i>P. saundersii</i> , with an unconfirmed report of naturalization]
401	1999. Rapanarivo, S.H.J.V.. Pachypodium (Apocynaceae): Taxonomy, Ecology & Cultivation. CRC Press, Boca Raton, FL	[Produces spines, thorns or burrs? Yes] "Pachypodium has stipules transformed into spines like those in succulent Euphorbia species. <i>P. geayi</i> , <i>P. lamerei</i> and all continental African species have three spines together 2 of which are subequal, while the third is smaller and placed in between them."
402	2012. WRA Specialist. Personal Communication.	[Allelopathic? Unknown]
403	2012. Tropicos.org. Tropicos [Online Database]. Missouri Botanical Garden, http://www.tropicos.org/	[Parasitic? No] Apocynaceae
404	2012. WRA Specialist. Personal Communication.	[Unpalatable to grazing animals? Unknown] Probably not palatable due to spines and reported toxicity
405	2012. South African National Biodiversity Institute. PlantzAfrica.com - Pachypodium. http://www.plantzafrika.com/plantnop/pachypodium.htm [Accessed 14 Nov 2012]	[Toxic to animals? Unknown. Probably Yes] "Pachypodium falls in a group of the Apocynaceae notorious for poisonous properties and for yielding potent poisons that have been used most effectively in arrow poison since ancient times. The active principles in these poisons are usually glucosides with a digitalis-like action that stimulates the heart, and their effect is well known to hunters who often control and administer them with great skill. "
406	2005. Lebeda, A./Mieslerová, B./Dole alová, I.. Erysiphe pachypodii - a new species on Pachypodium lamerei.. Mycotaxon. 92: 285-287.	[Host for recognized pests and pathogens? No evidence that this is an important or widespread pathogen of other plants] "The morphology of Erysiphe pachypodii sp. nov., a new powdery mildew species found to infect Pachypodium lamerei in the Czech Republic, is proposed and described."
406	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Host for recognized pests and pathogens? No evidence]
406	2008. PATSP. Tin Woodsman (Pachypodium geayi and <i>P. lamerei</i>). http://plantsarethe strangestpeople.blogspot.com/2008/11/tin-woodsman-pachypodium-geayi-and-p.html [Accessed 14 Nov 2012]	[Host for recognized pests and pathogens? No evidence] "PESTS: I've never had a problem with pests on mine, or the ones at work. Rot can be a big problem, even on well-established plants, particularly if the plant has been injured. Mealybugs are not unheard of, and spider mites are a problem for everything else in the Apocynaceae, so I wouldn't be surprised by spider mites. None of these are particularly likely, persistent, or damaging, but they are contagious, so it's good to keep an eye out anyway."
407	2012. Dave's Gardern. PlantFiles: Madagascar Palm - Pachypodium lamerei. http://davesgarden.com/guides/pf/go/509/ [Accessed 14 Nov 2012]	[Causes allergies or is otherwise toxic to humans? Possibly Yes, although other references do not mention toxicity] "Danger: All parts of plant are poisonous if ingested"

407	2012. South African National Biodiversity Institute. PlantzAfrica.com - Pachypodium. http://www.plantzafrica.com/plantnop/pachypodium.htm [Accessed 14 Nov 2012]	[Causes allergies or is otherwise toxic to humans? Yes] "Pachypodium falls in a group of the Apocynaceae notorious for poisonous properties and for yielding potent poisons that have been used most effectively in arrow poison since ancient times. The active principles in these poisons are usually glucosides with a digitalis-like action that stimulates the heart, and their effect is well known to hunters who often control and administer them with great skill. "
408	2012. South African National Biodiversity Institute. PlantzAfrica.com - Pachypodium. http://www.plantzafrica.com/plantnop/pachypodium.htm [Accessed 14 Nov 2012]	[Creates a fire hazard in natural ecosystems? No evidence and unlikely given succulent habit] "Pachypodiums are succulent shrubs or small trees up to 8 m tall, with the stems usually large and swollen at the base"
409	1998. Riffle, R.L.. The Tropical Look - An Encyclopedia of Dramatic Landscape Plants. Timber Press, Portland, OR	[Is a shade tolerant plant at some stage of its life cycle? No] Sun
409	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Is a shade tolerant plant at some stage of its life cycle? No] "In Hawaii, pachypodiums are grown only in hot, dry areas in full sun and are carefully and sparingly watered."
409	2012. South African National Biodiversity Institute. PlantzAfrica.com - Pachypodium. http://www.plantzafrica.com/plantnop/pachypodium.htm [Accessed 14 Nov 2012]	[Is a shade tolerant plant at some stage of its life cycle?] "Pachypodiums are usually found in sunny positions in rocky environments where they are associated with other representatives of the flora of dry areas. "
410	1999. Rapanarivo, S.H.J.V.. Pachypodium (Apocynaceae): Taxonomy, Ecology & Cultivation. CRC Press, Boca Raton, FL	[Tolerates a wide range of soil conditions? Yes] "P. lamerei is geography - wise the most widely distributed species in Madagascar and has been found on a variety of substrates. P. lamerei grows on sand and sandy soils, Mesozoic and Tertiary calcareous rocks and on outcrops of gneiss, granite and sandstone. It is adapted to acid as well as almost basic soil with pH values ranging from 4.5 to 7."
411	2002. Eggl, U.. Illustrated handbook of succulent plants: Dicotyledons. Springer-Verlage, Berlin - Heidelberg - New York	[Climbing or smothering growth habit? No] "Tree-like to 6 m with a tapered or cigar-shaped cactus-like trunk covered with tough, glossy bark and spirally set low ... "
412	1999. Rapanarivo, S.H.J.V.. Pachypodium (Apocynaceae): Taxonomy, Ecology & Cultivation. CRC Press, Boca Raton, FL	[Forms dense thickets? No evidence]
501	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Aquatic? No] Terrestrial
502	2012. Tropicos.org. Tropicos [Online Database]. Missouri Botanical Garden, http://www.tropicos.org/	[Grass? No] Apocynaceae
503	2012. Tropicos.org. Tropicos [Online Database]. Missouri Botanical Garden, http://www.tropicos.org/	[Nitrogen fixing woody plant? No] Apocynaceae
504	2002. Eggl, U.. Illustrated handbook of succulent plants: Dicotyledons. Springer-Verlage, Berlin - Heidelberg - New York	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] "Tree-like to 6 m with a tapered or cigar-shaped cactus-like trunk covered with tough, glossy bark and spirally set low ... "
504	2012. South African National Biodiversity Institute. PlantzAfrica.com - Pachypodium. http://www.plantzafrica.com/plantnop/pachypodium.htm [Accessed 14 Nov 2012]	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? Not a true geophyte] "The thick tuberous underground stems also help the plants to survive long periods without water. All species can therefore withstand intense heat and long periods of drought."
601	2012. South African National Biodiversity Institute. PlantzAfrica.com - Pachypodium. http://www.plantzafrica.com/plantnop/pachypodium.htm [Accessed 14 Nov 2012]	[Evidence of substantial reproductive failure in native habitat? No] "The habitats of pachypodiums in Madagascar are also disappearing fast as a result of human impact. Urbanization and agriculture cause the decline of habitats and distribution range of many species, putting the smaller, slow-growing species especially at risk. Some authors argue that the mastering of propagation and cultivation would be the only means to ensure the long-term survival of many of these species. "
602	2012. Cactus Art Nursery. Pachypodium lamerei. http://www.cactus-art.biz/schede/PACHYPODIUM/Pachypodium_lamerei/Pachypodium_lamerei.htm [Accessed 14 Nov 2012]	[Produces viable seed? Yes] "Fresh seeds results in a remarkable yield of new plants, perhaps 90%, Soak seeds in warm water for 24 hours before sowing in moist sand. Seed start sprouting in just 3-4 days (but continue to germinate erratically for about 6 month) "
603	2002. Eggl, U.. Illustrated handbook of succulent plants: Dicotyledons. Springer-Verlage, Berlin - Heidelberg - New York	[Hybridizes naturally? Unknown] "Occasional wild hybrids have been reported, and garden hybrids have been created, but none so fare between Madagascar and African species."

604	1999. Lipow, S.R./Wyatt, R.. Floral morphology and late-acting self-incompatibility in <i>Apocynum cannabinum</i> (Apocynaceae). <i>Plant Systematics and Evolution</i> . 219: 99-109.	[Self-compatible or apomictic? Unknown for <i>P. lamerei</i>] "...five species of <i>Pachypodium</i> (Anderson 1983) are self compatible." [Unknown if <i>P. lamerei</i> is self-compatible]
605	2002. Egli, U.. <i>Illustrated handbook of succulent plants: Dicotyledons</i> . Springer-Verlage, Berlin - Heidelberg - New York	[Requires specialist pollinators? Yes] "Pollination is as for <i>Adenium</i> ..." ... " <i>Adenium</i> .. Pollination requires a long, slender proboscis to enter the lower chamber between one of the five slits in the androecial cone. Incoming pollen lands on the stigmatic area; as the proboscis is withdrawn it is gummed by contact with the knob of the style and picks up fresh pollen from the anthers above. In cultivation a cat's whisker or horse's tail hair can be used to cross-pollinate two plants."
606	2005. Staples, G.W./Herbst, D.R.. <i>A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places</i> . Bishop Museum Press, Honolulu, HI	[Reproduction by vegetative fragmentation? This reference suggests No] " <i>Pachypodium lamerei</i> is easily propagated by seed (produced only by mature plants) and less reliably so by cuttings (unlike the case of many succulents that reproduce easily by this method)."
606	2012. Cactus Art Nursery. <i>Pachypodium lamerei</i> . http://www.cactus-art.biz/schede/PACHYPODIUM/Pachypodium_lamerei/Pachypodium_lamerei.htm [Accessed 14 Nov 2012]	[Reproduction by vegetative fragmentation? Only by artificial propagation] " <i>Pachypodium lamerei</i> are also propagated by removal of small offshoots that grow at the base of the old plant. Carefully break off the offshoots, they should be allowed to dry for 5 to 8 days before potting up."
606	2012. South African National Biodiversity Institute. <i>PlantzAfrica.com - Pachypodium</i> . http://www.plantzafrika.com/plantnop/pachypodium.htm [Accessed 14 Nov 2012]	[Reproduction by vegetative fragmentation? No] "Seed is the only means by which plants reproduce in nature."
607	2005. Staples, G.W./Herbst, D.R.. <i>A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places</i> . Bishop Museum Press, Honolulu, HI	[Minimum generative time (years)? 3+] "Potted specimens are young plants that do not flower until they have attained a height of several feet, which for this slow-growing species takes several years; flowering rarely occurs indoors in any case."
701	2012. South African National Biodiversity Institute. <i>PlantzAfrica.com - Pachypodium</i> . http://www.plantzafrika.com/plantnop/pachypodium.htm [Accessed 14 Nov 2012]	[Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? No evidence]
702	2005. Staples, G.W./Herbst, D.R.. <i>A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places</i> . Bishop Museum Press, Honolulu, HI	[Propagules dispersed intentionally by people? Yes] "A native of Madagascar often cultivated as a container plant in temperate regions, <i>P. lamerei</i> is the most commonly cultivated <i>pachypodium</i> in the Hawaiian Islands."
703	2012. South African National Biodiversity Institute. <i>PlantzAfrica.com - Pachypodium</i> . http://www.plantzafrika.com/plantnop/pachypodium.htm [Accessed 14 Nov 2012]	[Propagules likely to disperse as a produce contaminant? No evidence] "The fruit are cylindrical or spindle shaped follicles up to 100 mm long and look like two diverging horns. The fruit splits apart at maturity to shed the many seeds, which have an apical tuft of hair aiding their distribution." ... "The tufts of hairs on the seed indicate wind dispersal, but insects, birds and even small rodents may also aid in the dispersal."
704	2012. Cactus Art Nursery. <i>Pachypodium lamerei</i> . http://www.cactus-art.biz/schede/PACHYPODIUM/Pachypodium_lamerei/Pachypodium_lamerei.htm [Accessed 14 Nov 2012]	[Propagules adapted to wind dispersal? Yes] "Fruits and seeds: It produces seed pods that look like cucumbers. Left alone, they eventually open along the seam revealing great numbers of white-winged seeds."
704	2012. South African National Biodiversity Institute. <i>PlantzAfrica.com - Pachypodium</i> . http://www.plantzafrika.com/plantnop/pachypodium.htm [Accessed 14 Nov 2012]	[Propagules adapted to wind dispersal? Yes] "The fruit are cylindrical or spindle-shaped follicles up to 100 mm long and look like two diverging horns. The fruit splits apart at maturity to shed the many seeds, which have an apical tuft of hair aiding their distribution."
705	2012. South African National Biodiversity Institute. <i>PlantzAfrica.com - Pachypodium</i> . http://www.plantzafrika.com/plantnop/pachypodium.htm [Accessed 14 Nov 2012]	[Propagules water dispersed? Unknown] "The fruit are cylindrical or spindle-shaped follicles up to 100 mm long and look like two diverging horns. The fruit splits apart at maturity to shed the many seeds, which have an apical tuft of hair aiding their distribution." [Tufted seeds may be buoyant]
706	2012. South African National Biodiversity Institute. <i>PlantzAfrica.com - Pachypodium</i> . http://www.plantzafrika.com/plantnop/pachypodium.htm [Accessed 14 Nov 2012]	[Propagules bird dispersed? Possibly No. Primarily adapted for wind dispersal] "The fruit are cylindrical or spindle-shaped follicles up to 100 mm long and look like two diverging horns. The fruit splits apart at maturity to shed the many seeds, which have an apical tuft of hair aiding their distribution." ... "The tufts of hairs on the seed indicate wind dispersal, but insects, birds and even small rodents may also aid in the dispersal."
707	2012. South African National Biodiversity Institute. <i>PlantzAfrica.com - Pachypodium</i> . http://www.plantzafrika.com/plantnop/pachypodium.htm [Accessed 14 Nov 2012]	[Propagules dispersed by other animals (externally)? Possibly. Hairs may adhere to fur or feathers, or rodents may cache and disperse seeds] "The tufts of hairs on the seed indicate wind dispersal, but insects, birds and even small rodents may also aid in the dispersal. "

708	2012. South African National Biodiversity Institute. PlantzAfrica.com - Pachypodium. http://www.plantzafrica.com/plantnop/pachypodium.htm [Accessed 14 Nov 2012]	[Propagules survive passage through the gut? Probably No. Seed dispersal, if any, by animals likely to occur externally] "The tufts of hairs on the seed indicate wind dispersal, but insects, birds and even small rodents may also aid in the dispersal. "
801	2012. WRA Specialist. Personal Communication.	[Prolific seed production (>1000/m2)? Unknown]
802	1997. Midgley, J. J./Cowling, R.M./Hendricks, H./Desmet, P.G./Esler, K./Rundel, P.. Pachypodium) in the arid western Cape: decline of keystone species. <i>Biodiversity and Conservation</i> . 6: 869-876.	[Evidence that a persistent propagule bank is formed (>1 yr)? Probably No] "As far as recruitment is concerned, very little field information is available on Southern African tree succulents. For example, there is no field information as to whether seeds of Aloe or Pachypodium have sufficient dormancy to enable the development of a seed bank from which germination could take place in optimum years. A seed-bank seems unlikely because seeds of both genera do not have thick coats and also germinate very rapidly given suitable conditions. Retief (1988) found that Pachypodium seeds germinate immediately and Hitchcock (personal communication) found the same for Aloe seeds."
802	2008. PATSP. Tin Woodsman (Pachypodium geayi and P. lamerei). http://plantsarethe strangest people.blogspot.com/2008/11/tin-woodsman-pachypodium-geayi-and-p.html [Accessed 14 Nov 2012]	[Evidence that a persistent propagule bank is formed (>1 yr)? No] "Usually, Pachypodium are grown from seed, and different websites report different degrees of success getting the seeds to sprout. The seeds don't store well, and are best used as soon as possible. They are also somewhat slow to germinate (about a month?) and not necessarily all that easy to find in the first place."
802	2012. Dave's Gardern. PlantFiles: Madagascar Palm - Pachypodium lamerei. http://davesgarden.com/guides/pf/go/509/ [Accessed 14 Nov 2012]	[Evidence that a persistent propagule bank is formed (>1 yr)? No] "Seed does not store well; sow as soon as possible"
803	2012. WRA Specialist. Personal Communication.	[Well controlled by herbicides? Unknown] No information on herbicide efficacy or chemical control of this species
804	2012. Dave's Gardern. PlantFiles: Madagascar Palm - Pachypodium lamerei. http://davesgarden.com/guides/pf/go/509/ [Accessed 14 Nov 2012]	[Tolerates, or benefits from, mutilation, cultivation, or fire? Presumably Yes] "Though branching is usually a response to naturally injury, or something that happens in older specimens, one can stimulate branching by cutting off its top. It has amazing regenerative properties."
805	2012. WRA Specialist. Personal Communication.	[Effective natural enemies present locally (e.g. introduced biocontrol agents)? Unknown]

Summary of Risk Traits

High Risk / Undesirable Traits

- Thrives in tropical climates
- Possesses spines
- Toxic properties
- Tolerates many soil conditions (and potentially able to exploit many different habitat types)
- Seeds dispersed by wind and people
- Able to regenerate after cutting

Low Risk / Desirable Traits

- Landscaping and ornamental value
- No evidence of naturalization or invasiveness reported
- Requires full sun
- Slow growth rate and reaches reproductive maturity after several years
- May require specialized pollinators
- Short seed viability