Chrysalidocarpus andersenii and *C.* × *lafazamanga* (Arecaceae): A New Species and its Hybrid from Cultivation

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Abstract

A new species, *Chrysalidocarpus andersenii* (Arecaceae), a moderate, clustering palm with arching, long-pinnate leaves, white crownshafts, pinnae thickly covered abaxially with white-waxy indument, and cultivated in Hawai'i, is named, described, discussed, and illustrated. It performed poorly in the Mediterranean-type climate of southern California and no plants survived but it grew much better in Hawai'i. In contrast, an inadvertent hybrid of it (commonly known as *lafazamanga*) with the suspected pollen parent in Hawai'i of *C. lutescens*, is a splendid, handsome, and superb palm that displays strong hybrid vigor and performs exceedingly well in southern California; thus, *C.* × *lafazamanga* is formally named, described, discussed, and amply illustrated as an artificial hybrid species new to science.

Introduction

In the late 1990s, California and Hawai'i palm collector and grower Jerry Andersen received seeds of an unnamed *Dypsis* (now *Chrysalidocarpus*) from the late plant and seed collector Alfred Razafindratsira in Madagascar. Alfred noted that the Malagasy vernacular name for this palm was *lafazamanga*, likely a name derived from *lafaza*, another Malagasy vernacular name for several species of *Chrysalidocarpus*. Andersen grew them on in his California nursery, distributing them to numerous palm collectors in southern California; these did not perform well and none is alive today.

Andersen also planted out four of the original plants of *lafazamanga* at his nursery on the Big Island of Hawai'i in the early 2000s. These grew well in Hawai'i, and Andersen distributed seeds, seedlings, and small plants over the years to interested parties, including Jeff Marcus of Floribunda Palms, who in turn distributed plants to palm collectors, many in California. In 2014, wind from a tropical cyclone pushed a tree on to the four original plants, destroying three of them. Andersen now has only one plant remaining of the original four.

First-generation offspring from Andersen's original Hawai'i plant differ substantially from the parent, suggesting hybridization, likely with *Chrysalidocarpus lutescens*, of which a substantial hedgerow exists close to the original parent plant on Andersen's property. Another possible but

less likely parent of the hybrid is *C. baronii*. Most importantly, the suspected hybrid offspring from Andersen's original plant in Hawai'i have performed superbly in southern California, easily surpassing the growth of Andersen's original plant and that of the other likely parent, *C. lutescens*, suggesting extraordinary hybrid vigor. Indeed, the suspected hybrid is perhaps the best performing taxon of *Chrysalidocarpus* for southern California.

With good material of Andersen's original plant and excellent material of its hybrid in hand, we worked up descriptions of both and consulted the most complete and detailed account of Madagascar palms available (Dransfield and Beentje 1995) and subsequent accounts of new species of similar, clustered, moderate *Chrysalidocarpus* with long-pinnate leaves (Hodel and Marcus 2004 [*C. albofarinosus*] and Dransfield et al. 2023 [*C. rufescens*]), we concluded that Andersen's last-remaining original plant in Hawai'i and its hybrid cultivated in California were undescribed taxa new to science.

Here we describe, name, and illustrate Andersen's original introduction as *Chrysalidocarpus andersenii*, now existing as only one plant in Hawai'i, and its vigorous, handsome hybrid as *Chrysalidocarpus* × *lafazamanga*, a superb, ornamental palm now somewhat widely cultivated in southern California where it is commonly known as or *Chrysalidocarpus* 'lafazamanga' or *Dypsis* 'lafazamanga'. The descriptions are from fresh, undried, living material.

Taxonomy

Chrysalidocarpus andersenii Hodel sp. nov. Type: CULTIVATED. U. S. A. Hawai'i. County of Hawai'i: Pahoa, Leilani Estates, JD Andersen Nurery, 18 January 2024, *D. R. Hodel 4023* (collected by J. D. Andersen) (holotype LASCA; Isotype BH). **(Figs. 1–15).**

Diagnosis: *Chrysalidocarpus andersenii* is in species Group 3 of Dransfield and Beentje (1995) and likely aligns with an informal complex or alliance of species within that group, including *C. arenarum*, *C. baronii, C. lutescens*, *C. onilahensis*, and *C. psammophila*. With the first four species, *C. andersenii* shares the minute scales along the veins on the abaxial pinna surface; *C. psammophila* lacks these scales. From *C. baronii*, *C. lutescens*, and *C. onilahensis*, *C. andersenii* can be distinguished by its inflorescence architecture, where the longest rachillae about equal or surpass the rachis in length, a feature it shares with *C. arenarum*, to which it appears most closely related and also shares the thick, straight rachillae. However, it differs sufficiently from *C. arenarum* in having greenish yellow petioles, more pinnae per each side of the rachis (34–43 vs. 28–30), the young leaves emerging green (vs. red), and the exceptionally thick, white-waxy indument on the abaxially pinna surface; the latter is a character that also distinguishes it from the other four species in the informal species complex or alliance. Another species similar in habit and leaf, *C. rufescens*, clearly differs in its abundant, lacinate, rust-colored scales on leaf bases and petioles.

1. *Chrysalidocarpus andersenii* is a clustered palm with gracefully arching, long-pinnate leaves and white crownshafts. All photographs of *C. andersenii* are of the type plant, *Hodel 4023*, at the J. D. Andersen Nursery in Hawai'i and © 2023 J. D. Andersen, unless noted otherwise.

Etymology: The specific epithet honors Jerry Andersen, a long-time palm collector and grower in California and Hawai'i, who introduced this species to cultivation, nurtures and protects the last known, remaining plant in his Hawaiian garden, distributed hybrid seeds from it, and generously gave of his time and provided information and material, enabling us to name and describe it and its hybrid.

Common and vernacular names: *lafazamanga*.

Habit: Moderately clustered, moderate, unarmed, pleonanthic tree palm to 7 m tall, forming clumps to 3 m wide (**Figs. 1–2**).

Stems: 4–7, 5 m tall, 5–8 cm diam., smooth and neatly ringed with tan leaf scars 6 mm wide, internodes 7.5 cm at 1.4 m above ground becoming shorter distally, olive green with cover of white-waxy glaucous material to appear nearly white (**Fig. 2**).

Leaves: 6–8 per trunk, pinnate, conspicuously ascending to ascending-spreading, slightly to moderately arching and slightly recurved distally (**Figs. 1–2**); **leaf base** 60 cm long, leathery, deeply splitting opposite petiole to 25 cm, otherwise tightly tubular and forming a conspicuous and well developed crownshaft, abaxially lime green but moderately to heavily covered throughout with white-waxy glaucous material so to appear chalky white (**Figs. 1–2**), distally with small, dark, reddish brown scales, adaxially orange-cream colored and glabrous, a low, oblique "shoulder" on either side of petiole at apex; **petiole** 62–75 cm long, 2–5 cm wide and 1.8–2.5 cm thick at base, 1.7–2 cm wide and 1–1.5 cm thick at most proximal pinna, abaxially rounded, adaxially channeled with slender, sharp, knife-like lateral margins (**Fig. 3**), greenish yellow (**Fig. 4**) but initially densely covered with white-waxy glaucous material so to appear chalky white, aging to tan greenish, dark reddish brown scales proximally, newly emerging petiole greenish or sometimes pinkish brown; **rachis** 1.9–2 m long, attenuate, 1–4 mm wide and 1–1.8 mm thick mm diam. at apex, mostly hemispherical in transverse section, abaxially rounded, adaxially channeled proximally but quickly becoming flat with a narrow, prominently raised central costa, this becoming knife-like distally, greenish yellow proximally transitioning to greenish distally; **pinnae** 34–43 per each side of rachis, regularly arranged **(Fig. 5**), slightly to steeply ascending off rachis to give V-shaped blade in transverse view (**Fig. 6**) but tips drooping, most proximal pinnae opposite to sub-opposite or alternate and spaced 6.5–8 cm apart, mid-blade pinnae sub-opposite and spaced 4.5–5 cm apart, most distal pinnae sub-opposite to opposite and spaced 2–3 cm apart, pinnae thin-leathery, stiffish, green adaxially, conspicuously silvery gray to white abaxially from a thick layer of nearly felt-like, white-waxy glaucous indument (**Fig. 7**), a small, hard "knot" at attachment point, most proximal pinna 61–96 × 0.5–1 cm, proximal pinnae 70–83 × 2.3–2.5 cm, mid-blade pinnae 70–77 × 2.8–3.2 cm, distal pinnae 31–43 × 2 cm, most distal pinna 11 × 0.5 cm, most proximal and mid-blade pinnae long-acuminate, distal pinnae acuminate, most distal

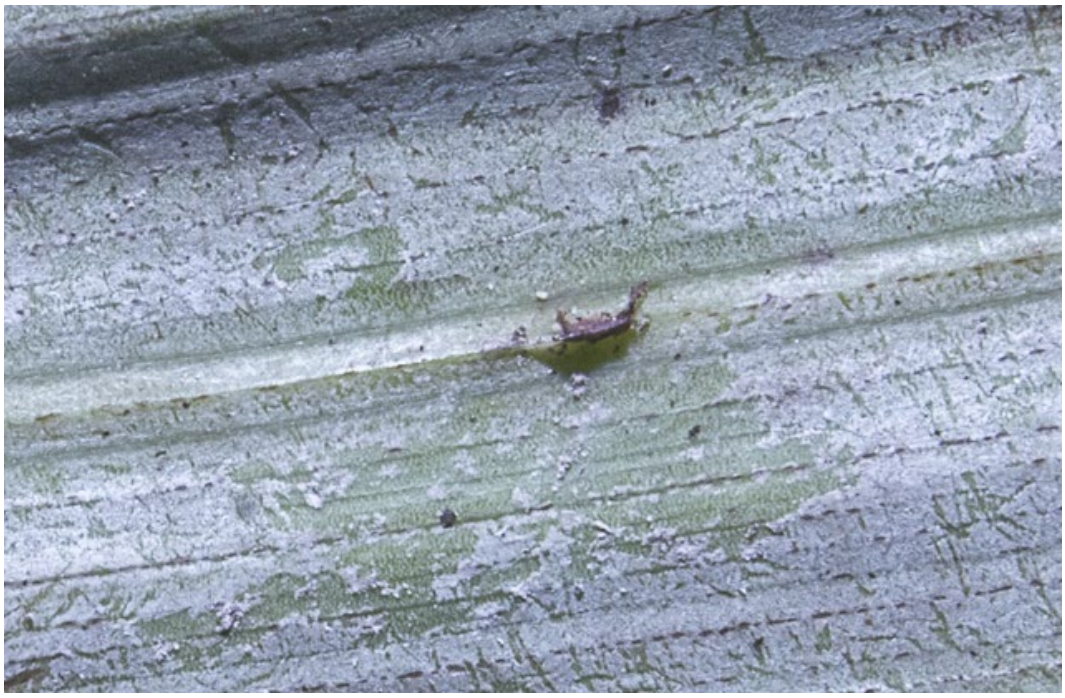
2. The clustering *Chrysalidocarpus andersenii* has ascending, arching, long-pinnate leaves with greenish yellow petioles, and white crownshafts. Note the inflorescence with the rachillae exceeding the rachis in length and the pinkish brown prophyll and peduncular bract and the ringed stems with white-waxy indument distally.

3. Petioles of *Chrysalidocarpus andersenii* are rounded abaxially and channeled adaxially with sharp margins. © 2024 D. R. Hodel.

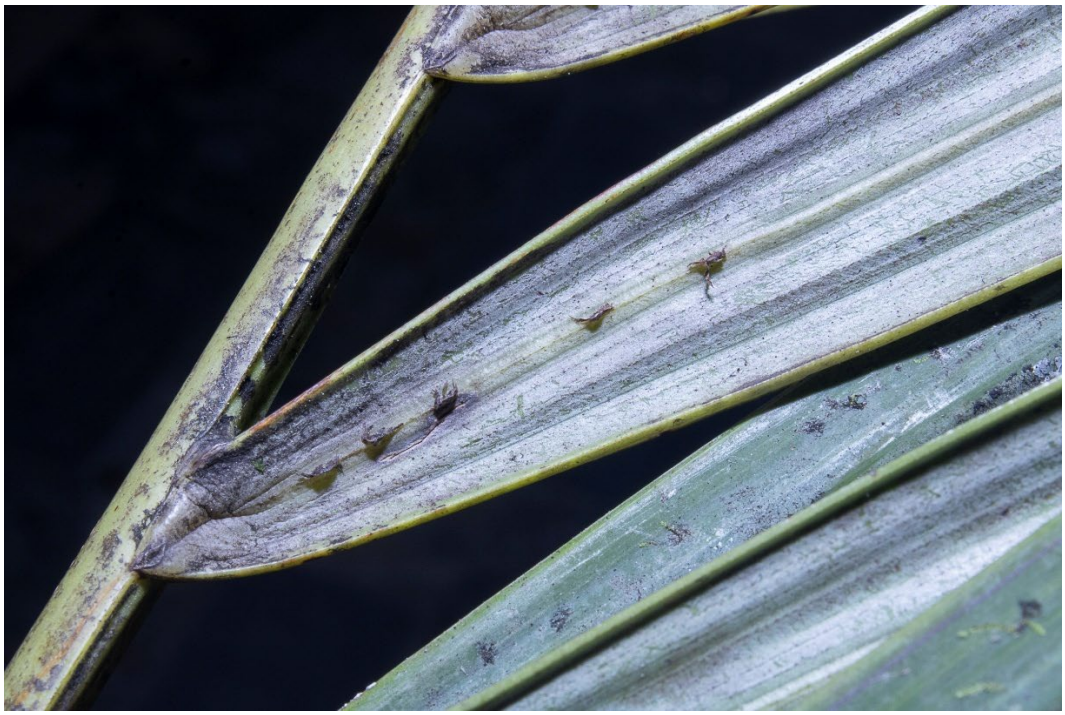
4. *Chrysalidocarpus andersenii* has greenish yellow petioles and an inflorescence with the rachillae about equaling the rachis in length.

5. Pinnae of *Chrysalidocarpus andersenii* are regularly arranged and covered abaxially with thick, white-waxy indument. © 2024 D. R. Hodel.

6. Pinnae of *Chrysalidocarpus andersenii* are slightly to steeply ascending off the rachis to give V-shaped blade in transverse view. © 2024 D. R. Hodel.



7. Pinnae of *Chrysalidocarpus andersenii* are covered abaxially with a thick layer of nearly felt-like, white-waxy indument. Minute, dark, elongate scales lining the lesser veins are barely visible. © 2024 D. R. Hodel.



8. Pinnae margins of *Chrysalidocarpus andersenii* are thickened and revolute while ramenta are on the abaxial midrib mostly within about 10 cm of the rachis. © 2024 D. R. Hodel.

pinna acute, all pinnae straight, margins conspicuously thickened, revolute (**Fig. 8**), proximal and distal pinnae contracted at base and 7 mm wide, mid-blade pinnae contracted at the base and 1 cm wide, adaxially all pinnae with a slender, prominently raised midrib and 1–2 obscure primary veins on either side, abaxially midrib slightly raised and visible with 2–3 primaries on either side, these not raised or conspicuous and these and veins of lesser orders mostly not discernable through the thick indument, 2–4(–7) ramenta on midrib abaxially mostly within about 10 cm of the rachis (**Fig. 8**), sometimes 1–2 within 30 cm of rachis, these 5 × 0.7 mm, reddish brown, medifixed with either end typically curved slightly upward, small, minute, elongate, dark scales on the abaxial veins (**Fig. 7**), these often covered with the thick indument but where visible they mark the mostly obscured veins.

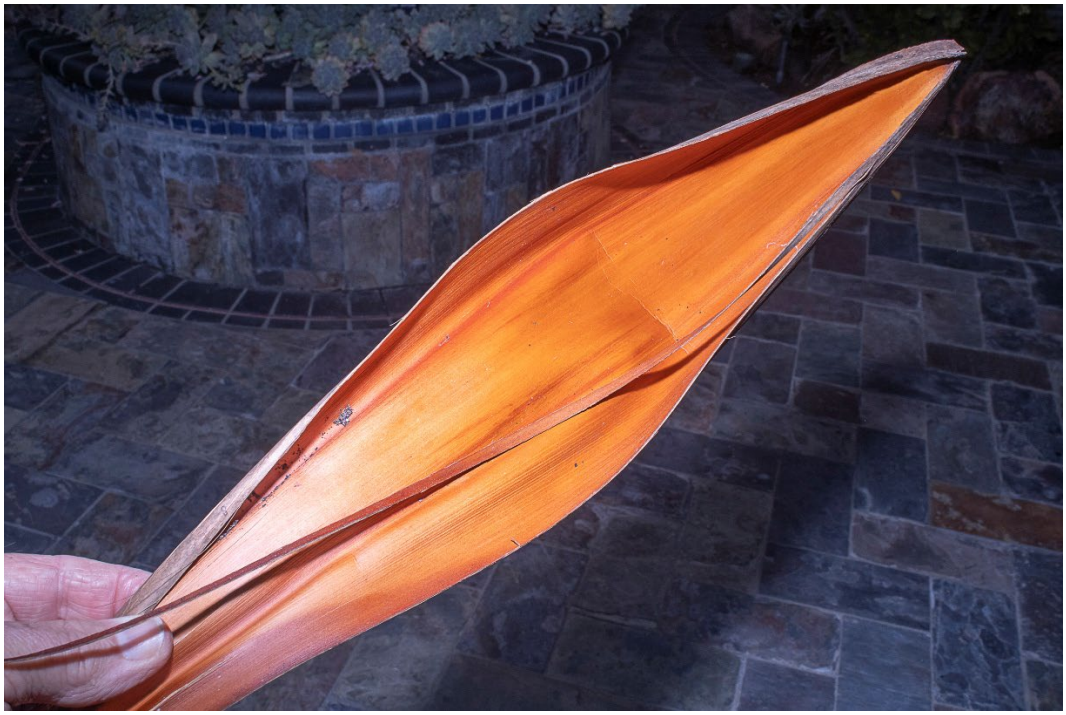
Inflorescences: 1–2 per trunk, interfoliar in flower and likely in fruit, ca. 1.25 m long, branched to 2 orders, rachillae ca. equal to rachis in length (**Figs. 9–10**); **peduncle** ca. 80 cm long, all but ca. 4 cm concealed behind subtending leaf base and this portion behind leaf base straight, conspicuously downward-curved where exposed above leaf base, 4–5 cm wide where clasping trunk, flat, straplike, and abruptly narrowing to ca. 3 cm wide and 1 cm thick at rachis, greenish yellow; **prophyll ca.** 90 cm long, attached ca. 26 cm distally of peduncle base with "wings" extending down both sides of peduncle for ca. 10 cm, bicarinate, pointed apically, leathery, abaxially pinkish tan to tan (**Figs. 11, 15**), adaxially rich coppery brown (**Fig. 12**); **peduncular bract** ca. 72 cm long, attached ca. 42 cm distally of peduncle base, like prophyll but rounded apically; small, rudimentary non-tubular peduncular bract ca. 1.5 cm high, 2.5 cm wide, solitary central lobe narrowly triangular, abaxially pinkish brown (**Figs. 11, 15**); **rachis** ca. 30 cm long, greenish yellow, downward-pointing with ca. 10 branches with 2 to 5 rachillae each and ca. 13 simple rachillae, branches and rachillae subtended by rachis bracts, these 0.25–2 cm high, 0.5–2.5 cm wide, solitary central lobe narrowly triangular, acuminate; sub-peduncles 1.5–2.5 cm long, 1–2 cm wide; **rachillae** 21–28 cm long, 4–6 × 3–5 mm at base, tapering to 1–1.5 mm diam. at apex., downward-pointing, stiffly and slightly spreading straight, greenish yellow.

Flowers: arranged in **triads** of a later-opening pistillate flower flanked on each of two sides by earlier-opening staminate flowers with paired or solitary staminate flowers only in distal 1/5, triads arranged in 2 spirals of 6–7 triads per revolution, triads ca. 10 mm distant within a row and rows ca. 2 mm distant proximally, becoming progressively closer distally until contiguous or nearly so at apex; proximally clefts ca. 6 mm long, 5 mm wide, 2 mm deep with proximal lip 2–3.5 mm high or long and ca. 4 mm wide, crescent-shaped with a triangular, median mucronate tip to ca. 0.5 mm high, thin, knife-like margin or angle, distally clefts progressively becoming smaller to ca. 3 mm high or long, 3 mm wide, 2.5 mm deep with proximal lip ca. 1 mm high, triangular, thin, knife-like; **staminate flowers** not seen; **pistillate flowers** (slightly past anthesis) subtended by 2 bracteoles, these imbricate proximally, forming a cup-like structure 0.3–0.4 mm high, ca. 1.25 mm wide; individual pistillate flowers 4.5–6 × 4 mm, ovoid (**Figs. 13–14**); **calyx** 1.5–

9. Old inflorescence of *Chrysalidocarpus andersenii* showing the longest rachillae about equal the rachis in length. © 2024 D. R. Hodel.

10. This inflorescence of *Chrysalidocarpus andersenii* has young, developing fruits. Note the yellowish, short rachis and long, straight rachillae.

11. The old prophyll of *Chrysalidocarpus andersenii* is tan on the abaxial surface. © 2024 D. R. Hodel.



12. The prophyll of *Chrysalidocarpus andersenii* is rich, coppery brown on the adaxial surface. © 2024 D. R. Hodel.

13. Pistillate flowers of *Chrysalidocarpus andersenii* slightly past anthesis are greenish yellow.

14. Here are dried pistillate flowers of *Chrysalidocarpus andersenii*. Note the bracteoles in the vacant floral clefts. © 2024 D. R. Hodel.

3 × 2.5–3 mm, deeply lobed, crown-like, greenish yellow, **sepals** imbricate in proximal 1/2–3/4, rounded-acute apically; **petals** 4–4.5 × 4 mm, broadly ovate with acute median tip, greenish yellow; **gynoecium** 4.5–6 × 3.5–4 mm, ovoid, light greenish yellow, exserted 1–1.5 mm beyond petals, stigmatic lobes barely discernable, very short, erect.

Fruits: (seen only from photograph) longer than wide, brownish (**Fig 15**).

Discussion: *Chrysalidocarpus andersenii* fits comfortably in species Group 3 of Dransfield and Beentje (1995), which consists of solitary or clustered, sub-canopy palms with mostly long-pinnate leaves, staminate flowers with six stamens, and seeds with homogeneous or ruminate endosperm. It includes such well known species as *C. baronii*, *C. lutescens*, and *C. cabadae*.

In Key 6 of Dransfield and Beentje (1995), which applies to species of *Chrysalidocarpus* with inflorescences branched to two orders and leaves with many, regularly placed pinnae, *C. andersenii* keys out to couplet f18, giving the choice of *C. onilahensis* or *C. psammophila*, neither of which is a match.

Chrysalidocarpus andersenii likely aligns with an informal complex of species within Group 3, including *C. arenarum*, *C. baronii, C. lutescens*, *C. onilahensis*, and *C. psammophila*. With the first four species, *C*. *andersenii* shares the minute scales along the veins on the abaxial pinna surface; *C. psammophila* lacks these scales. From *C. baronii*, *C. lutescens*, and *C. onilahensis*, *C. andersenii* can be distinguished by its inflorescence architecture, where the longest rachillae about equal or surpass the rachis in length, a feature it shares with *C. arenarum*, to which it appears most closely related and also shares the thick, straight rachillae.

Indeed, I strongly considered placing Andersen's original plant in *Chrysalidocarpus arenarum* but concluded it differed sufficiently in having greenish yellow petioles, more pinnae per each side of the rachis (34–43 vs. 28–30), the young leaves emerging green (vs. red), and the exceptionally thick, white-waxy indument on the abaxially pinna surface, the latter of which also distinguishes it from the other four species in the informal species complex or alliance. It also is a significantly larger plant in nearly all its organs than *C. arenarum*, including a longer leaf base (60 vs. 20–47 cm); longer peduncle (80 vs. 34–57 cm); longer prophyll (90 vs. 42–75 cm); longer peduncular bract (72 vs. 39–53 cm); and larger gynocecium (4.5–6 mm vs. 3.2–3.6 mm high). However, these size differences alone do not instill within me a lot of confidence.

On another note, I did not have access to fruits of *Chrysalidocarpus andersenii* when preparing the description. Andersen did provide me with a photograph of an infructescence with mature fruit but it was hardly sufficiently detailed to prepare a description although the fruits were clearly brownish and longer than wide, and probably larger than the dimensions given *for C. arenarum* in Dransfield and Beentje (1995).

15. Mature fruits of *Chrysalidocarpus andersenii* are brownish. Note the pinkish brown prophyll and peduncular bract.

Provenance data and, thus, habitat data were lacking when Andersen received the seeds from Madagascar. Nonetheless, the strong affinity of *Chrysalidocarpus andersenii* to *C. arenarum* and even somewhat to *C. lutescens* suggests it could be from a rocky, sandy area in littoral forest or similar habitat. Because of its inability to survive in California but thrive in Hawai'i, the provenance of *C. andersenii* might be in northern Madagascar and in more humid and moist environments.

Chrysalidocarpus × lafazamanga Hodel and R. H. Burtscher sp. hyb. nov.

[*Chrysalidocarpus andersenii* Hodel × *Chrysalidocarpus lutescens* H. Wendl.?] Type: CULTIVATED. U. S. A. California. Orange County: Fullerton, garden of Judy and Bob Burtscher, 10 December 2023, *D. R. Hodel 4021* with R. H. Burtscher (Holotype LASCA; Isotype BH). (**Figs. 16–47**).

Diagnosis: *Chrysalidocarpus* × *lafazamanga* displays a range of characters with its parents (*C. andersenii* and suspected *C. lutescens*), some intermediate, a few greater or larger than either parent (heterosis or hybrid vigor), a few lesser or smaller than either parent, a few unique that both parents lack, and some shared with one parent but not the other. For example, this hybrid

16. Co-author Burtscher sits next to the type plant of *Chrysalidocarpus* × *lafazamanga* in his garden in Fullerton, California. All photos of *C.* × *lafazamanga* are of or from the type plant, *Hodel 4021*, unless noted otherwise, and © 2023–2025 D. R. Hodel.

is intermediate with its parents in the quantity of pinnae per each side of rachis, pinnae abaxial indument, inflorescence rachis length, and dimensions of floral pits and gynoecium. *Chrysalidocarpus* × *lafazamanga* has characters greater than either parent, including hybrid vigor, leaf base length, petiole length, and growth rate. In contrast, its peduncle and petal lengths are generally shorter than those of either parent. Some characters it shares with one parent but not the other, including with *C. andersenii* the yellowish petioles and proximal portion of the rachises with substantial amounts of green in them; fewer pinnae per each side of the rachis; the midrib prominently raised only on the adaxially surface; and the inflorescence branched to two orders. With *C. lutescens* only it shares the strongly arching leaves, generally shorter proximal and median pinnae, pinnae with a white-waxy bloom abaxially, and the inflorescences interfoliar in flower but infrafoliar in fruit and with the rachillae shorter than the rachis. **Table 1** compares some characters between *Chrysalidocarpus* × *lafazamanga* and its parents.

Etymology: The specific epithet is the Malagasy vernacular name of this hybrid's pistillate parent, now named *Chrysalidocarpus andersenii* and known from only one plant cultivated in Hawai'i, and is the common name that palm growers and collectors apply to this hybrid, which is a superb grower and becoming more common and widespread in southern California.

Common name: *lafazamanga*.

Habit: Elegant, sparsely clustered, small to moderate, unarmed, pleonanthic tree palm to 6 m tall, forming clumps 3–4 m wide (**Fig. 16**).

Stems: 2–5, 1–4 m tall, 9–14 cm diam. (**Fig. 17**), smooth and neatly ringed with tan leaf scars 5–10 mm wide, internodes 5–7 cm, olive-green covered with moderate to heavy, white-waxy glaucous indument to appear nearly white (**Fig. 18**).

Leaves: 6–7 per trunk, pinnate, ascending to spreading, strongly arching, moderately recurved in distal 1–1.5 m (**Fig. 19**); **base** 60–68 cm long, leathery, deeply splitting opposite petiole 25–34 cm on most proximal leaf, otherwise tightly tubular and forming a conspicuous and well developed crownshaft, abaxially olive-green but moderately to densely covered with white-waxy glaucous indument so to appear white (**Fig. 20**), adaxially coppery colored and glabrous, a low, oblique "shoulder" on either side of petiole at apex and there with scattered, minute, elongate, reddish to grayish brown to purplish brown to black scales ca. 1.5 × 0.5 mm (**Fig. 21**); **petiole** 45–91 cm long, 1–2.5 cm wide and 1–3 cm thick at base, 0.8–2.2 cm wide and 0.9–1.5 cm thick at most proximal pinna, rounded abaxially, channeled adaxially with slender, sharp margins, olive-green to yellow-green or yellowish with a slight glaucous bloom abaxially, adaxially light green, some grayish brown to black scales proximally, newly emerging petiole typically dark pink to maroon (**Fig. 22**); **rachis** 1–2 m long, attenuate, ca. 2.2 cm wide at base, 2.5 mm diam. at apex, mostly hemispherical in transverse section, abaxially rounded, adaxially +/_ flat but with a medial ridge

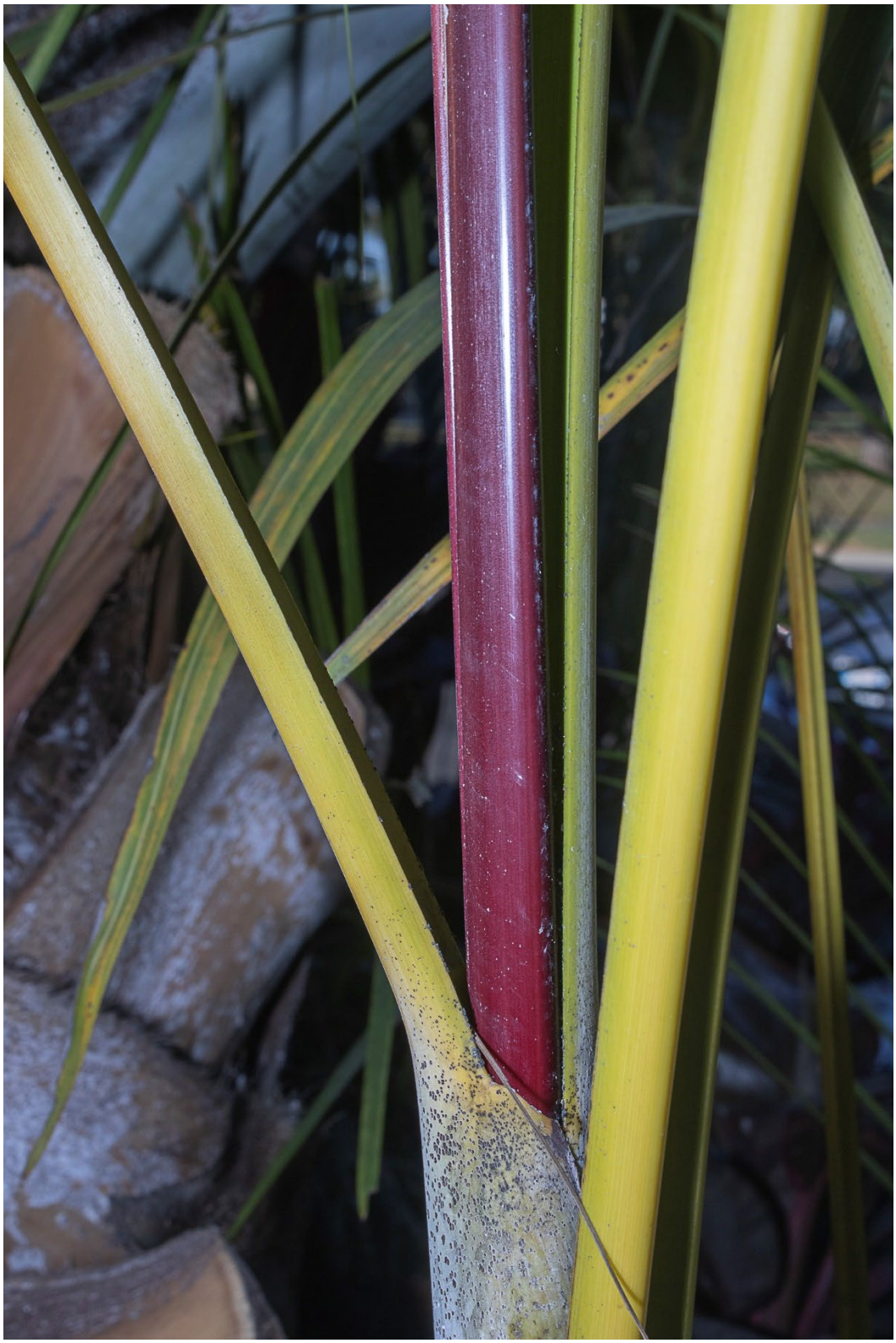
17. Clumps of *Chrysalidocarpus* × *lafazamanga* typically have only two to five trunks. *Hodel 4024* in the Burtscher garden, Fullerton, California, 2025.

18. The handsome trunks of *Chrysalidocarpus* × *lafazamanga* are conspicuously ringed and olive-green covered with moderate to heavy, white-waxy glaucous indument.

19. Leaves of *Chrysalidocarpus* × *lafazamanga* are strongly arching and moderately recurved distally. *Hodel 4024* in the Burtscher garden, Fullerton, California.

20. Leaf bases of *Chrysalidocarpus* × *lafazamanga* are covered with a white-waxy indument and form a handsome, white, crownshaft.

21. Distally the leaf bases of *Chrysalidocarpus* × *lafazamanga* have scattered, minute, elongate, reddish to grayish brown to purplish brown to black scales. Note the slight "shoulder" in the upper right.



22. Petioles of *Chrysalidocarpus* × *lafazamanga* are yellow-green to yellowish and typically dark pink to maroon when emerging. Larry Black garden, Fountain Valley, California.

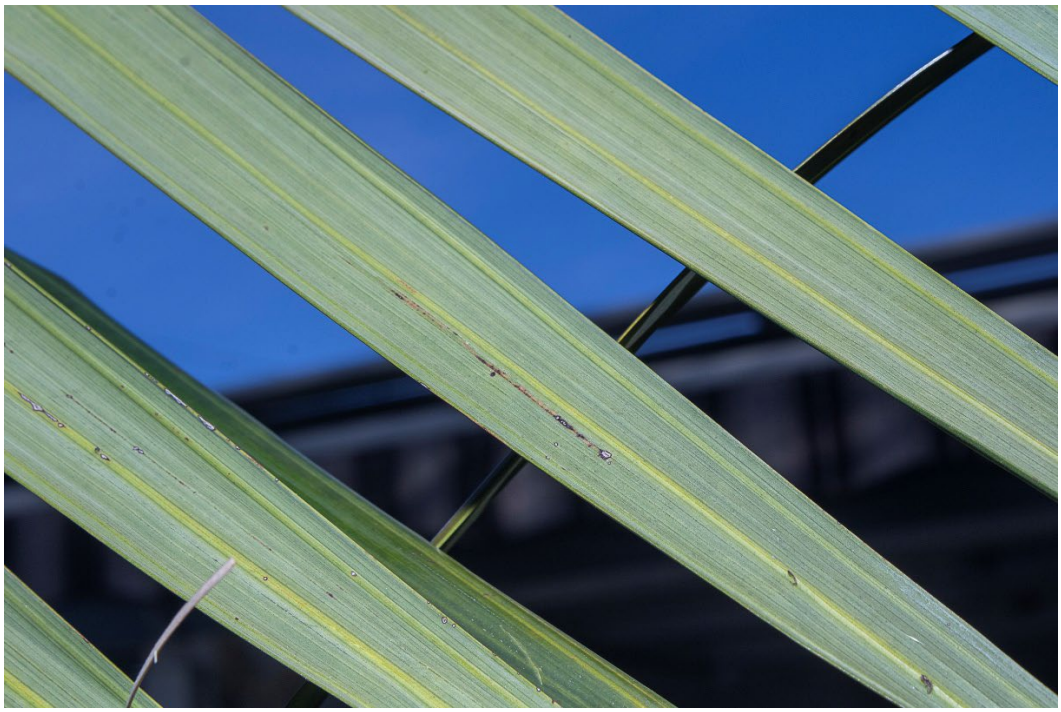
or costa, this becoming knife-like distally, narrowing to 1.5–2 mm wide and 1 mm thick at apex, yellowish green proximally transitioning to green distally; **pinnae** 31–40 per each side of rachis, regularly arranged (**Fig. 23**) , alternate to sub-opposite proximally to opposite distally, very steeply ascending off rachis to give V-shaped blade (**Fig. 24**), most proximal spaced 7–8 cm apart, at ca. 3/4 distance from base of rachis spaced 4–5 cm apart, most distal spaced 1–6 cm apart, longest pinnae most proximal and progressively shortening distally, tips curled downward, most proximal 43–90 cm long, 0.5–1 cm wide at point of attachment, 1.4–3.2 cm wide ca. 1/3 distance from base, then tapering to a long-acuminate tip, mid-blade pinnae 54–69 × 2.2–3.5 cm, constricted at base to 8 mm wide, terminal pinnae 7–18 × 0.5–1.7 cm, constricted at base to 1 mm wide, short-acuminate, all pinnae with raised hard "knot" at base, forward-pointing, narrowly or long-lanceolate, mostly straight to slightly falcate, thin- to thick-papery, proximal margin slightly thickened and revolute, abaxially slightly covered with white-waxy bloom, adaxially dark green with a very slight glaucous bloom, adaxially midrib prominently raised, yellowish, and 2–3 inconspicuous primary veins on either side of midrib (**Fig. 25**), abaxially midrib slightly raised, yellowish green, rounded, sometimes a second prominent vein toward one margin (**Fig. 26**) and 4–5 visible primary veins on either side of midrib, these lined like stitching with barely discernable, minute, elongate, dark scales **(Fig. 27**), secondary veins and lesser veins inconspicuous, 1–6 ramenta abaxially along midrib within ca. 3–6 cm of rachis but occasionally a few to mid pinna, 2–3(–5) mm long, 0.5–0.75 mm wide, medifixed with either end typically curved slightly upward, dark-centered with tan margins (**Fig. 27**).

Inflorescences: 2–3 per trunk, interfoliar in flower (**Fig. 28**), infrafoliar and spreading to drooping when heavily laden with fruit (**Fig. 29**), ca. 1.25 m long, 0.7 m wide, branched to 2 orders; **peduncle** flattened, strap-like, ca. 75 cm long, 9–10 cm wide where clasping trunk, 6 cm wide at prophyll attachment, 5.5 cm wide at most proximal branch, ca. 2 cm thick, greenish in flower and minutely white spotted with slight glaucous bloom, greenish yellow in fruit (**Fig. 29**); **prophyll** attached ca. 20 cm from base, 65 cm long, thin-leathery, abaxially green with a slight glaucous bloom and adaxially cream-colored prior to and at staminate anthesis (**Fig. 30**), aging abaxially to tan to brown (**Fig. 31**) adaxially reddish coppery brown (**Fig. 32**); **peduncular bract** attached ca. 18 cm distal of prophyll attachment, similar to prophyll, 63 cm long, thin-leathery, abaxially green to tan with moderate glaucous bloom prior to and at anthesis, aging abaxially to tan to brown and adaxially reddish coppery brown; **rachis** ca. 60 cm long with 14 branches with 2–7 rachillae each and 10 simple rachillae (**Fig. 33**), rachis bracts subtending branches with a semi-circular base to 4 cm long or wide and a narrowly triangular, median tip to 1.3 cm high (**Fig. 34**), sub-peduncles at base, 1.75 cm wide at apex, 1 cm thick, sub-rachis to 7 cm long, 1 cm diam. at apex and +/- terete, green with a slight glaucous bloom in flower, greenish yellow in fruit; **rachillae** 22–29 cm long, shorter than rachis (**Figs. 35–36**), 5–8 × 3.5–4.5 mm diam. at base and flattened, tapering

23. Pinnae of *Chrysalidocarpus* × *lafazamanga* are regularly arranged, ascending off rachis with distally curled tips, and abaxially with a glaucous bloom.

24. Pinnae of *Chrysalidocarpus* × *lafazamanga* steeply ascend of the rachis to make blade V-shaped in transverse view.

25. Abaxially pinnae of *Chrysalidocarpus* × *lafazamanga* have a prominently raised and yellowish midrib. *Hodel 4026*, Len Geiger garden, Vista, California.



26. Abaxially pinnae of *Chrysalidocarpus* × *lafazamanga* have a slightly raised, yellowish green, rounded, midrib and sometimes a second prominent vein toward one margin. *Hodel 4024*, Burtscher garden, Fullerton, California.

27. Abaxially lesser veins of pinnae of *Chrysalidocarpus* × *lafazamanga* are lined like stitching with barely discernable, minute, elongate, dark scales. Note the large ramenta on the midrib.

28. Inflorescences of *Chrysalidocarpus* × *lafazamanga* are typically two to three per trunk and interfoliar in flower.

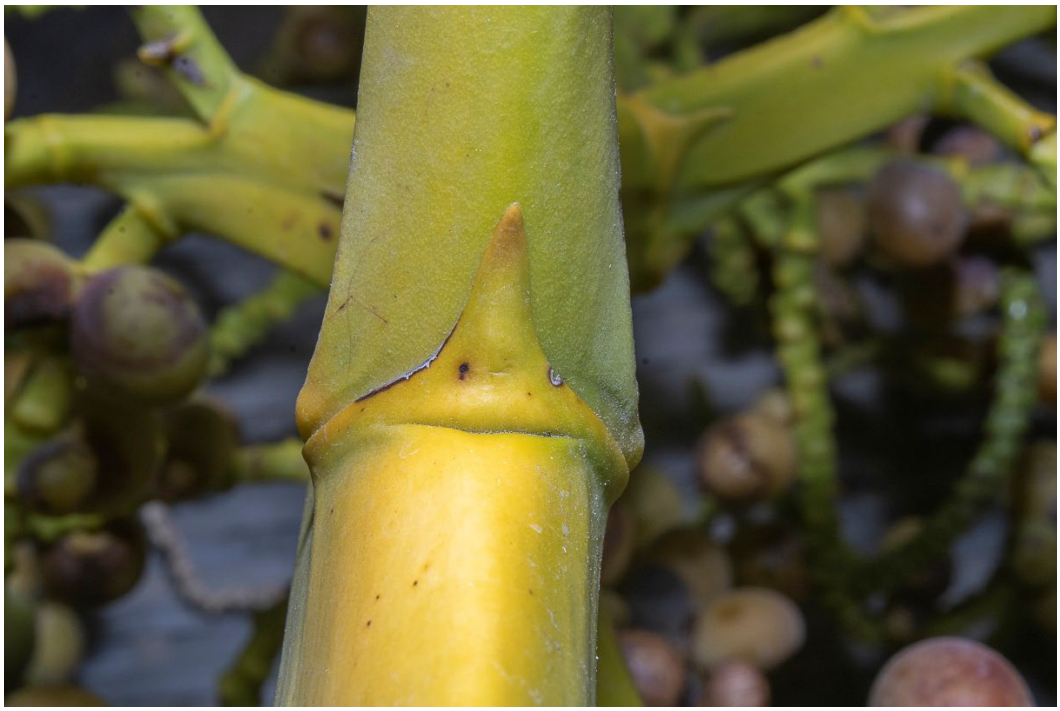
29. Co-author Burtscher holds up an infructescence of *Chrysalidocarpus* × *lafazamanga* heavily laden with fruit.

30. At anthesis, the leathery prophyll and peduncular bract of *Chrysalidocarpus* × *lafazamanga* are green.

31. Abaxially the prophyll of *Chrysalidocarpus* × *lafazamanga* quickly ages to tan or brown, as here on its often thrust-off apical portion.

32. Adaxially, the prophyll of *Chrysalidocarpus* × *lafazamanga* quickly ages to a rich coppery brown, as here on its often thrust-off apical portion.

33. The rachis *Chrysalidocarpus* × *lafazamanga* is substantially longer than the rachillae. Note the proximal prophyll and distal peduncular bract. *Hodel 4024*, Burtscher garden, Fullerton, California.



34. Inflorescence rachis bracts of *Chrysalidocarpus* × *lafazamanga* have a semi-circular base and a median, narrowly triangular point.

35. Rachillae of *Chrysalidocarpus* × *lafazamanga* are substantially shorter than the rachis and green in flower.

36. Rachillae of *Chrysalidocarpus* × *lafazamanga* are substantially shorter than the rachis and green in flower. Note the proximal prophyll and distal peduncular bract. *Hodel 4024*, Burtscher garden, Fullerton, California.

to 1.5–3 mm diam. at apex with a 6–7 cm long point, pale green to green at anthesis, minutely white-spotted, greenish yellow in mature fruit.

Flowers: in triads of a center, later-opening pistillate flower flanked on each of two sides by earlier-opening staminate flowers, triads in indented clefts and in 2 spiraling rows, proximally triads ca. 2 mm distant within a spiral and spirals ca. 2 mm distant becoming progressively closer distally to 1.5 mm distant within a row and the rows ca. 1.5 mm distant to nearly contiguous, floral clefts ca. 3.5 mm long, 2.5 mm wide, 1–1.5 mm deep, subtended proximally by a swollen, lip-like bracteole with a thickened, triangular, sharp medial point; **staminate flowers** at anthesis ca. 9 × 7.5 mm (**Fig. 37**); **calyx** 1–1.5 × 2.5 mm (at base, flared distally to 5 mm wide), **sepals** connate in proximal 1/2–3/4, broadly rounded to truncate apically with a median costa, slightly transparent, clear-colored and tinged with green along costa; **petals** ca. 4 × 4 mm, broadly ovate, apex acute, ca. 0.5 mm thick distally, imbricate in proximal 1 mm, valvate, spreading, and free apically, curved proximally and cupped adaxially with the tip briefly erect, clear-colored proximally, tinged with green distally, slightly transparent with faint longitudinal veins, the latter becoming green distally; **stamens** 6, 3 opposite petals and 3 between them, ca. 7 mm tall, erect; **filaments** ca. 6.5 mm long, 0.9–1 mm in diameter, curved proximally and there flared and flattened, clear-colored; **anthers** ca. 1.1 mm long, narrowly elliptic, medifixed; **pistillode** ca. 5.5 mm tall, shorter than stamens, 1.5 mm in diameter, rounded-truncate at tip, white; **pistillate flowers** 2.5–3 × 2.25–2.5 mm, broadly ovoid (**Fig. 38**); **calyx** 1.75–2 ×2.25–2.5 mm, **sepals** 2–2.25 mm wide, cupped or concave adaxially, imbricate in proximal 1/3–3/4, broadly rounded with a small mucronate to acute apex, yellowish with slightly transparent margins and faint longitudinal veins; **petals** ca. 2.5 × 2.5 mm, imbricate in proximal 3/4 to nearly to apex and there triangular-acute, light green where exposed, slightly transparent with faint longitudinal veins; **gynoecium** 3–3.5 × 2–2.5 mm, ovoid, exserted distally of petals by ca. 0.5 mm and there truncate, **stigma lobes** not clearly differentiated, clear-colored.

Fruits: ca. 1.8 × 1.5 cm, ovoid-ellipsoid, yellowish and firm when full size, changing to amber to brownish to purplish when soft ripe, grape-like (**Figs. 39–41**); **seeds** 1.5–1.7 × 1.1–1.2 cm, ovoid-ellipsoid (**Fig. 42**); **epicarp** ca. 1 mm thick, thin-leathery; **mesocarp** ca. 1 mm thick, mucilaginous; **endocarp** ca. 0.6 mm thick; endosperm homogeneous or with very slightly intruding brownish orange discoloration, embryo nearly lateral, slightly below the middle (**Fig. 43**); **fruiting perianth** 5–7 × 5–7 mm, **sepals** 1.5–2 mm high, broadly rounded, **petals** ca. 4.5 × 5 mm, triangular.

Additional Specimens Examined: CULTIVATED. USA. California. Orange County: Fullerton, garden of Judy and R. H. Burtscher, 10 December 2023, *D. R. Hodel 4024* with R. H. Burtscher (LASCA). San Diego County: Vista, garden of Josh Allen, 8 January 2024, *D. R. Hodel 4022* (juvenile) with J. Allen and R. H. Burtscher (LASCA); Vista, garden of Len Geiger, 12 February 2024, *D. R. Hodel 4025*, *4026* (juvenile) with L. Geiger and R. H. Burtscher (LASCA).

37. Staminate flowers of *Chrysalidocarpus* × *lafazamanga* have a light green calyx and petals and whitish stamens exceeding the petals and pistillode.

38. Pistillate flowers of *Chrysalidocarpus* × *lafazamanga* have a light green calyx, green petals, and a whitish gynoecium exceeding the petals.

39. The infructescence of soft-ripe, amber to brownish to purplish fruits of *Chrysalidocarpus* × *lafazamanga* appears like a great bunch of grapes.

40. Fruits of *Chrysalidocarpus* × *lafazamanga* are grape-like with a slight, glaucous bloom when mature and soft ripe.

41. Fruits of *Chrysalidocarpus* × *lafazamanga* are grape-like when mature and soft ripe. Note the greenish yellow to yellowish rachillae.

42. Seeds of *Chrysalidocarpus* × *lafazamanga* are tan to light brown with longitudinal and reticulate fibers.

43. The endosperm of *Chrysalidocarpus* × *lafazamanga* is homogeneous or with very slightly intruding, brownish orange discoloration. Note the nearly lateral embryo.

Sight Records: CULTIVATED. USA. California. Orange County: Fountain Valley, Larry Black garden, 20 November 2024; Huntington Beach, John Boyer garden, 28 March 2025; Laguna Hills, 8 January 2024. San Diego County: Escondido, Michael and Joyce Masterson garden, 15 March 2025; San Diego, Matt Patricelli garden, 27 January 2024. All except one specimen in the Patricelli garden were juvenile plants.

Discussion: Like its pistillate parent *Chrysalidocarpus andersenii* and its likely staminate parent *C. lutescens*, *C.* × l*afazamanga* fits comfortably in Group 3 of Dransfield and Beentje (1995), which consists of solitary or clustered, sub-canopy palms with mostly long-pinnate leaves, staminate flowers with six stamens, and seeds with homogeneous or ruminate endosperm. It includes such well known species as *C. baronii*, *C. lutescens*, and *C. cabadae*.

Also like its pistillate parent *Chrysalidocarpus andersenii*, in Key 6 of Dransfield and Beentje (1995), which applies to species of *Chrysalidocarpus* with inflorescences branched to two orders and leaves with many, regularly placed pinnae, *C.* × *lafazamanga* keys out to couplet f18, giving the choice of *C. onilahensis* or *C. psammophila*, neither of which is a match.

In its general gross appearance, *Chrysalidocarpus* × *lafazamanga* is more like its suspected pollen parent *C. lutescens* than its seed parent *C. andersenii*. With the former it shares the strongly arching leaves with ascending pinnae, white crownshaft, and inflorescence architecture (rachillae conspicuously shorter than the rachis in length). The leaf rachis and petiole are not as conspicuously yellow to orange as in *C. lutescens* but nonetheless still show a fair amount of yellow. With its seed parent *C. andersenii*, *C. lafazamanga* shares similarly colored leaf rachises and petioles but the former differs in its weakly arching leaves and inflorescence architecture (rachillae about equal to or slightly exceeding the rachis in length). **Table 1** compares some characters between *Chrysalidocarpus* × *lafazamanga* and its parents.

Chrysalidocarpus × *lafazamanga* has many features that make it an unusually attractive and appealing palm for southern California gardens and landscapes. It has several, ringed, white trunks, each topped with a canopy of strongly arching, nearly recurved leaves with pinnae ascending off the rachis to make a V-shaped blade and anchored by a strikingly white crownshaft. Furthermore, and adding to its handsome habit is its exceptional hybrid vigor. Indeed, it is perhaps the best performing of all taxa of *Chrysalidocarpus* in southern California gardens. It is such a vigorous performer in the landscape that some collectors and growers have jokingly referred to it as “a *C. lutescens* on steroids.”

Co-author Burtscher obtained the two plants *Chrysalidocarpus* × *lafazamanga* in his garden, including the type plant, from then California and now Hawai’i grower and collector Ed Green in 2018. At the time, they were in 3.8-liter containers and about 50 cm tall overall. Burtscher held them for about a year in the original containers until they were about one meter tall overall and

Table 1. Comparison of some characters of *Chrysalidocarpus arenarum*, *C. andersenii*, *C.* × *lafazamanga*, and *C. lutescens*.

Character	C. arenarum	C. andersenii	C. × lafazamanga	C. lutescens
Leaf				
disposition	slightly arching	moderately arching	strongly arching	strongly arching
leaf base (length cm)	20–47	60	60–68	39–60
color, indument	abaxially whitish green to pale yellow-brown; white waxy distally with scattered reddish scales; adaxially reddish brown	abaxially lime-green, thick, white-waxy throughout; small, scattered, reddish brown scales distally; adaxially orange-cream-colored	abaxially olive-to yellow-green, thick white-waxy throughout; small, elongate, scattered, reddish to grayish brown to black scales distally; adaxially copper-colored	yellow, white waxy; dense, scattered scales distally
petiole (length cm, color)	60–72, pale brown	62–75, greenish yellow; thick, chalky, white waxy indument	45–91, olive- to yellow-green;	19–37, yellow or yellowish orange
rachis	pale brown	greenish yellow, white waxy indument	olive- to yellowish-green, light white waxy bloom	yellow or yellow orange
pinnae				
per side	28–30	34–43	31-40	45–59
most proximal (length cm)	81–129	61–95	43–90	35–66
median (length cm)	67–80	70–77	54–69	44–70
midrib	faint both sides	adaxially prominently raised; abaxially barely raised but visible	adaxially prominently raised; abaxially slightly raised	prominent both side
abaxial indument	white waxy glaucous bloom	thick, nearly felt-like, white waxy indument	white waxy glaucous bloom	light white waxy glaucous bloom

Character	C. arenarum	C. andersenii	C. × lafazamanga	C. lutescens
minute scales on veins abaxially	yes	yes	yes	yes
emerging leaf red	yes	no	no	no
Inflorescences				
inter- or infrafoliar	interfoliar	interfoliar	interfoliar in flower, infrafoliar in fruit	interfoliar in flower, infrafoliar in fruit
orders of branching	2	2	2	3 (mostly)
peduncle (length cm)	34–75	80	55	34–88
prophyll (length cm)	42–75	90		31–102
peduncular bract (length cm)	39–53	72		48–60
rachis (length cm)	11–28	30	60	20–110
rachillae (length cm)	10–31	21–28	22–29	6–30
Flowers				
triad pits (mm)	slightly sunken	6 × 5 × 2	3.5 × 2.5 × 1–1.5	shallow
pistillate (mm)	3.5–4.2 × 3–4	4.5–6 × 4, ovoid	2.5–3 × 2.25–2.5, broadly ovoid	---
calyx (color)	greenish	yellowish	---	---
petals (mm, color)	3.2–3.6 × 2.9–3, ---	4–4.5 × 4, greenish yellow	2.5 × 2.5, green	2.8–3.2 × 2.3–3, ---
gynoecium (cm)	---	4.5–6 × 3.5–4	3–3.5 × 2–2.5	3 × 1.4
fruit (cm, shape)	10–12 × 8–9, ovoid-ellipsoid	longer than wide	18 × 15, broadly ovoid-ellipsoid	12–18 × 7–10, ellipsoid to obovoid
seed (mm, shape)	8–9.5 × 5.5–6, obovoid	---	15–17 × 11–12, broadly ovoid-ellipsoid	11–16 × 6–9.5, ellipsoid to obovoid

then planted them out into his garden in 2019. They first flowered about four years later in 2023 and at that time had about one meter of trunk and were about three meters tall overall. At the time, they were the largest and first to attain maturity in southern California, of which we are aware. Now they have about 2.5 meters of trunk and are about five meters tall overall.

Although many if not most *Chrysalidocarpus* hybrids are self-sterile (Hodel et al. 2025), *C.* × *lafazamanga* appears to be an exception and is self-fertile. In the Burtscher garden it produces such prodigious amounts of fruits with viable seeds that the heavy infructescences must be supported to prevent them from ripping right off the plant by their sheer weight alone. Hand-pollination was unnecessary to produce such large quantities of fruits but the absence of other flowering *Chrysalidocarpus* in the vicinity likely precludes hybridization. Thus, F2 offspring will likely appear similar to their F1 seed parent.

Although *Chrysalidocarpus andersenii*, the seed parent of *C.* × *lafazamanga*, was brought in with the local Malagasy vernacular name *lafazamanga*, it now exists as only one plant in its namesake Jerry Andersen's garden in Hawai'i. More importantly, because its hybrid offspring are continuing to become more common and widespread in southern California and are known by the name *lafazamanga*, we selected that name as the specific epithet for this new hybrid to avoid confusion among growers and collectors who already know it by this name.

The power of the emerging inflorescence of *Chrysalidocarpus* × *lafazamanga* erupting from behind a leaf base often completely separates the distal one-third or so of the prophyll and peduncular bract, which then are caught in and carried farther along the still expanding inflorescence or they drop off. The horizontal point of separation is typically rather clean, even, and neat, as if cut with a pair of strong shears, yet we do not understand the reason or mechanics of this phenomenon. We have seen it on other species and hybrids of *Chrysalidocarpus* and also in the palm *Pelagodaxa* but suspect it is more widespread than we have observed.

That *Chrysalidocarpus* × *lafazamanga* was initially inadvertently produced in Hawai'i is more evidence that supports the possibility or even likelihood that cultivated collections of numerous, closely related palm species might be a source of hybrid progeny unless pollen-exclusion techniques are employed, rather than being a typically, long-touted method to perpetuate and conserve species and genetic material. This inadvertent, undocumented, and mostly unwanted hybridization is worrisome and disconcerting (Hodel 2023, 2025; Hodel et al. 2025). While hybrids can expand and enhance our palette of landscape palms, we feel that they should be well documented, typified, described, and supported with meticulous notes, photographs, and records.

Cultivation

For comprehensive reviews of palm horticulture and landscape management, see Broschat et al. (2014) and Hodel (2012).

Chrysalidocarpus andersenii did not survive multiple attempts to cultivate it in California with its Mediterranean-type climate of cool, moist winters and arid, dry, warm to hot summers. It performed well in moist to wet, humid, tropical Hawai'i; thus, it is likely a strictly tropical palm.

Chrysalidocarpus × *lafazamanga*, on the other hand, seems especially well adapted to a variety of subtropical and tropical climates and regions around the world. It is a superb performer in warm or even slightly cooler, drier, and more arid subtropical conditions, like the Mediterranean-climate regions of southern California, and would likely do equally well in regions with a similar climate, like southern Europe, southern Africa, parts of Australia, and elsewhere. It would also likely perform adequately in tropical and warm subtropical, moist to wet conditions, like those of southern Florida, northern Australia, Thailand, and elsewhere but we are unaware of its performance in these areas or even if it is currently cultivated there. *Chrysalidocarpus* × *lafazamanga* displays remarkable hybrid vigor in southern California. It easily surpasses its suspected pollen parent *C. lutescens* in growth and esthetic quality while its seed parent *C. andersenii* did not survive in southern California. **Figures 44–47** track the growth of *C.* × *lafazamanga* (*Hodel 4024*) in the Burtscher garden from 2020 (one year after planting) through 2024. See earlier **Figure 17** for its growth by 2025.

Chrysalidocarpus × *lafazamanga* tolerates hot temperatures, occasionally as warm as 45 C, especially if given some afternoon shade and regular irrigation. It will also tolerate short, overnight periods of near-freezing and slightly sub-freezing temperatures to ¯2 C with little or no damage.

Propagation of *Chrysalidocarpus* × *lafazamanga* is by seeds, and because it is self-fertile, tedious and meticulous pollination techniques are mostly unnecessary although if other flowering *Chrysalidocarpus* are in the vicinity, measures should be taken to exclude foreign or unwanted pollen. When fruits are mature and soft ripe, they can be collected from the palm, cleaned of their pulp, and planted in a clean, moist, porous, well aerated medium composed of about 25% organic matter like peatmoss or coir and 75% inorganic matter like perlite, pumice, or sand. Plant the seeds, barely covering them with about 5 to 10 mm of medium. Place the clean, planted containers off the ground and keep them clean. Keep the medium moist but not soggy wet and maintain temperatures of from 24 to 32 C.

When the first eophyll has appeared, pot up seedlings into appropriately sized, clean containers using the same or similar mix used for germination, only now incorporate dolomite lime and a




44–47. Yearly comparison of growth of *Chrysalidocarpus* × *lafazamanga* (*Hodel 4024*) in the Burtscher garden. **44.** Upper left, **2020,** one year after planting; **45.** Upper right, 2022; **46**. Lower left, 2023; **47.** Lower right, 2024, with co-author Burtscher.

palm-special fertilizer into the mix following recommended rates. Keep plants off the ground and in light shade, especially in the afternoon. As root fill out their containers, move up young plants into larger containers and gradually decrease any shade until they are in full sun. Keep the potting medium evenly moist.

When the plants are of sufficient size, they can be planted out into the ground. *Chrysalidocarpus* × *lafazamanga* performs well in just about any type of soil, including the clays, sandy loams, and decomposed granites of southern California as long as the soil environment is managed properly, especially as it pertains to irrigation.

Situate *Chrysalidocarpus* × *lafazamanga* palms in full sun or with some light, afternoon shade in the hottest, driest regions. Dig a whole as deep as the root ball is high and twice as wide. Place an appropriate amount of palm-special fertilizer in the bottom of the hole. Remove the container and place the palm in the hole. Backfill with the same soil that was dug out of the hole without amending it, tamp firmly, apply about five cm of good quality mulch from the palm's stem out to 60 cm, and irrigate thoroughly. If rain is insufficient, irrigate when the palm needs it by checking the original root ball, backfill, and surrounding site soil. Whichever one of these zones first dries out at a depth of about three to five cm under the soil surface (not counting the mulch), then immediately apply sufficient water to moisten the upper 30 cm of the root zone. Irrigate again only when the root zone dries out again to a depth of three to five cm and continue this irrigation regimen.

Fertilize with a palm-special fertilize following label recommendations. Yellow and dark splotching could occur on older or lower leaves in the canopy of *Chrysalidocarpus* × *lafazamanga*, which might indicate potassium deficiency. However, because *C.* × *lafazamanga* is a hybrid, this condition could also be the disorder called lesion mimic mutant (Dhillon et al. 2024). Also, maintain about five cm of mulch from the trunk out to at least one meter and keep companion plants at least 60 cm away from the trunk and low, so as not to hide or obscure the handsome, colorful trunk.

Chrysalidocarpus × *lafazamanga* is sufficiently handsome and imposing to make a statement in any landscape. Its whitish trunks and crownshafts and strongly arching leaves with ascending pinnae are sure to draw attention. Its appearance is sufficiently powerful to stand alone as a single specimen or, for added emphasis, three or five well spaced individuals in a group. However, it is arranged, be sure to give it adequate space to show its attractive features, especially the leaves, to best advantage, uncrowded and unencumbered by adjacent, clashing plants.

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We sincerely thank palm growers and collectors who opened their gardens to us and shared information about *Chrysalidocarpus andersenii* and *C.* × *lafazamanga*, including Jerry Andersen and Ed Green in Hawai'i and, in California, Matt Patricelli in San Diego, Michael and Joyce Masterson in Escondido, Josh Allen and Len Geiger in Vista, John Boyer in Huntington Beach, and Larry Black in Fountain Valley.

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