New Artificial Hybrids in *Chrysalidocarpus* (Arecaceae). Part 3. The Golden-Triangle Palm: *Chrysalidocarpus* x *lutecaryi*

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Abstract

This article, the third in an occasional series about hybrid palms in *Chrysalidocarpus* (Arecaceae) that co-author Justen B. Dobbs is developing in Florida, U. S. A., addresses the golden-triangle palm, *Chrysalidocarpus* × *lutecaryi* (*C. lutescens* × *C. decaryi*), another handsome hybrid entering tropical and subtropical private collections and botanical gardens that is likely to become more popular in the trade. Thus, this new hybrid palm is formally named, described, and illustrated, compared to its parents, and its cultivation and landscape use discussed.

Introduction

We (Hodel at al. 2025, 2026b) recently discussed co-author Dobbs's interest in producing hybrid palms, especially in the genus *Chrysalidocarpus*. In these articles, we named, described, discussed, and illustrated the tri-bear palm, a hybrid of *C. leptocheilos* and *C. decaryi*, and the tribana palm, a hybrid of *C. pembanus* and *C. decaryi*, that Dobbs has championed and produced, and are now gracing collections and landscapes in Florida, California, and elsewhere.

Through his Seabreeze Nurseries in Fort Myers, Florida, Dobbs has been making numerous other *Chrysalidocarpus* hybrids, some of which have matured and will come into production. One of these is the golden-triangle palm, *C.* × *lutecaryi* (**Fig. 1**).

Dobbs is the developer of the golden-triangle palm and will distribute it through two nurseries, one in California and one in Florida. Because the golden-triangle palm will become more common in palm collections in California, Florida, and elsewhere, here we formally name, describe, and copiously illustrate it, compare it to its parents, and discuss its landscape use and cultivation. The description is mostly from fresh, non-dried material of the type plant grown at Dobb's home in Fort Myers, Florida.

1. Co-author Justen Dobbs stands next to the type plant of the golden-triangle palm, *Chrysalidocarpus* × *lutecaryi*, in his garden. All photos are © 2026 D. R. Hodel and of the type plant, *Hodel 4086*, unless noted otherwise.

Taxonomy

Chrysalidocarpus × lutecaryi Hodel, J. B. Dobbs & R. H. Burtscher sp. hyb. nov.

[*Chrysalidocarpus lutescens* H. Wendl. × *Chrysalidocarpus decaryi* (Jum.) Eiserhardt & W. J. Baker]. Type: CULTIVATED. U. S. A., Florida, Lee County: Fort Myers, garden of Justen Dobbs, 24 April 2026, *D. R. Hodel 4086* (Holotype LASCA, Isotype BH). **Figs. 1–25**.

Diagnosis: *Chrysalidocarpus* × *lutecaryi* displays a range of characters with its parents (*C. decaryi* and *C. lutescens*), some greater or smaller or otherwise unique from its parents, some shared with one parent but not the other, or some it shares with both parents. For example, the type plant of this hybrid is unique from its parents in its hybrid vigor; the larger and longer leaf base, peduncle, inflorescence and inflorescence rachis; leaf rachis with minute, white-waxy scales with reddish brown centers, reddish brown tomentose peduncle and peduncular bract; and the inflorescence rachis with lightly scattered, minute, tan scales and reddish brown tomentum. It shares with *C. decaryi* the quantity of leaves per stem, leaf rachis length and color and the quantity of pinnae on each side of the rachis. With *C. lutescens* it shares the yellowish leaf base and moderately ascending pinnae. It is intermediate between both parents in the quantity of stems, stem diameter, and petiole indument (**Table 1**).

Etymology: Because the pistillate or seed parent is typically listed first and the staminate or pollen parent second in a hybrid name, we have combined the first two syllables of the seed parent epithet *lutescens* and the last two of the staminate parent epithet *decaryi* to form the hybrid species epithet, *lutecaryi*.

Common Name: golden-triangle palm, the "golden" derived from one of the common names of the pistillate parent, the golden cane palm (*Chrysalidocarpus lutescens*), and the "triangle" from the common name of the staminate parent, triangle palm *C. decaryi*).

Habit: Clustered with at ca. 3 stems, moderate to robust, monoecious, unarmed, pleonanthic, tree palm, forming clumps to at least 12 m tall and 7–10 m wide (**Fig. 1**).

Trunks/Stems: to at least 9 m tall, ca. 26 cm DSH, ringed, internodes ca. 7.5 cm, smooth, green with white-waxy indument distally, tan proximally, leaf scars ca. 1 cm wide, tan, swollen at base (**Fig. 2**).

Leaves: 16–21 per stem (**Fig 3**), pinnate, strongly tristichous, ascending-spreading, straight to very slightly arcuate but slightly recurved in distal 1 m (**Fig. 4**); **base/sheath** ca. 80 cm long, ca. 60 cm circumference, briefly tubular proximally, deeply open distally (**Figs. 5–6**) and there typically with a discernable, low, rounded "shoulder" to 3 cm high, thick-leathery (drying woody),

Table 1. Summary of some character differences among *Chrysalidocarpus* × *lutecaryi* (golden-triangle palm) and its two parents: *C. decaryi* and *C. lutescens*[z].

Character	C. decaryi	C. × lutecaryi	C. lutescens
Habit	solitary	sparingly clustered; ca. 3 stems	Clustered; 4–20 stems
Trunk (stem)			
Diam. standard height (cm)	30–40	26	5–12
Internode length(cm)/color	3–10/gray with some white way	7.5/green with white-waxy indument distally, tan proximally	2–12/green to gray with white-waxy indument distally, yellowish or pale gray-brown proximally
Leaf			
Leaves per stem	18–24	16–21	5–11
Leaf base length (cm)/ form	30–45, open	80/ open distally, tubular proximally	28–60/ tubular
Leaf base color/indument	abaxially white waxy with reddish pubescence	abaxially light green medially to greenish golden-yellow laterally and proximally/ overlain with conspicuous white-waxy indument and variably dense, ragged, scurfy tufts of reddish brown tomentum	abaxially yellowish with white-waxy indument, dense, scattered scales distally
Petiole length (cm)/color/indument	30–50/grayish green/reddish pubescence	40–55/grayish green/ irregularly rounded, white-waxy, scales with minute, reddish brown centers	19–37/yellow or yellowish orange/glabrous

Character	C. decaryi	C. × lutecaryi	C. lutescens
Rachis length (m)/color/indument	2.2–3/grayish green/densely pubescent	2.9/grayish green/ irregularly rounded, white-waxy, scales with minute, reddish brown centers	1.1–1.9/yellow or yellow-orange/ glabrous
Quantity of pinnae per each side of rachis	55–97	70	44–59
Pinnae disposition	ascending, pinnae on opposite sides forming a 90° angle	moderately ascending, pinnae on opposite sides forming a 90–120° angle	moderately ascending, pinnae on opposite sides forming a 90–120° angle
Pinnae abaxial indument	scattered, minute, reddish scales on fainter veins	green with very light, white-waxy indument and minute, granular, whitish spots; midrib and primary veins with minute, dark scales	gray from white-waxy indument, with scattered glands on minor veins
Inflorescence			
Size (cm)	125–178 × 120	270 × 135	?
Position	interfoliar	interfoliar in flower and fruit	mostly interfoliar but sometimes infrafoliar in fruit
Orders of branching	3	3	3
Peduncle length (cm)	50–58	112	34–88
Peduncle indument	scattered scales	lightly scattered, minute, tan scales and reddish brown tomentum	glabrous
Prophyll length (cm)/indument	25–63/scattered scales	?	31–102/scattered scales
Peduncular bract length (cm)/indument	40–55/scattered scales	54/white-waxy overlain with moderately dense, reddish brown tomentum	48–60/scattered scales

Character	C. decaryi	C. × lutecaryi	C. lutescens
Rachis length (cm)	118	140	20–110
Rachis indument	flaking, densely scaly	lightly scattered, minute, tan scales and reddish brown tomentum	glabrous
Rachillae length (cm)	12–26	32	6–30
Flowers			
Staminate color	yellow to orange	yellow	yellow
Pistillate color	green	greenish yellow to yellow	yellow
Staminate petals (mm)	3.2–3.5 × 1.8–2.3	2.8–3.5 × 2.0–2.3	1.3–2.2 × 2–2.3
Pistillode (mm)	1.6 × 1	?	2.5–2.8 × 0.4–0.5
Fruit/Seed			
Fruit size (mm)/shape	15–22 × 12–19 mm/ovoid to subglobose	(immature) 7 × 4 mm, oblong-obovoid	12–18 × 7–10 mm/ellipsoid to obovoid
Seed size (mm)/shape	17–19 × 16–18 mm/subglobose to ellipsoid	14–16 × 7–9	11–16 × 6–9.5 mm/ovoid with obtuse apex and pointed base
Endosperm	ruminate	?	homogeneous
Eophyll	bifid	bifid	bifid

[z]Characters for both parents taken mostly from Dransfield and Beentje (1995).

abaxially light green medially to greenish golden-yellow laterally and proximally (**Figs. 6–7**), overlain with conspicuous white-waxy indument (**Figs. 8–9**) and variably dense, ragged, scurfy tufts of reddish brown tomentum (**Fig. 10**), the latter especially distally at petiole, adaxially yellow-orange (**Fig. 11**); **petiole** 40–55 cm long, ca. 5 cm thick and wide at base, ca. 4 cm thick and 2.5 cm wide at apex, rounded and light to grayish green abaxially with white-waxy, irregularly rounded scales with minute, reddish brown centers (**Fig 12**), reddish brown tomentum proximally extending from leaf base, shallowly channeled adaxially with white-waxy bloom, margins sharp; **rachis** ca. 2.9 m long, ca. 4 × 2.5 cm at base, tapering to 1 mm diam. at apex, mostly straight to very slightly arcuate but recurved in distal 1 m, abaxially rounded and laterally grayish green (**Fig. 13**) with white-waxy, irregularly rounded scales with minute, reddish brown centers especially proximally but transitioning to nearly glabrous at apex, adaxially shallowly channeled proximally progressively transitioning to a flat, low, broad ridge and then a narrow, knife-like ridge distally, green but with a white waxy bloom especially proximally; **pinnae** ca. 70 per side, regularly arran-

2. Stems of *Chrysalidocarpus* × *lutecaryi* are ringed, smooth, and green with white-waxy indument distally and tan proximally.

3. *Chrysalidocarpus* × *lutecaryi* holds many leaves per stem, typically 16 to 21.

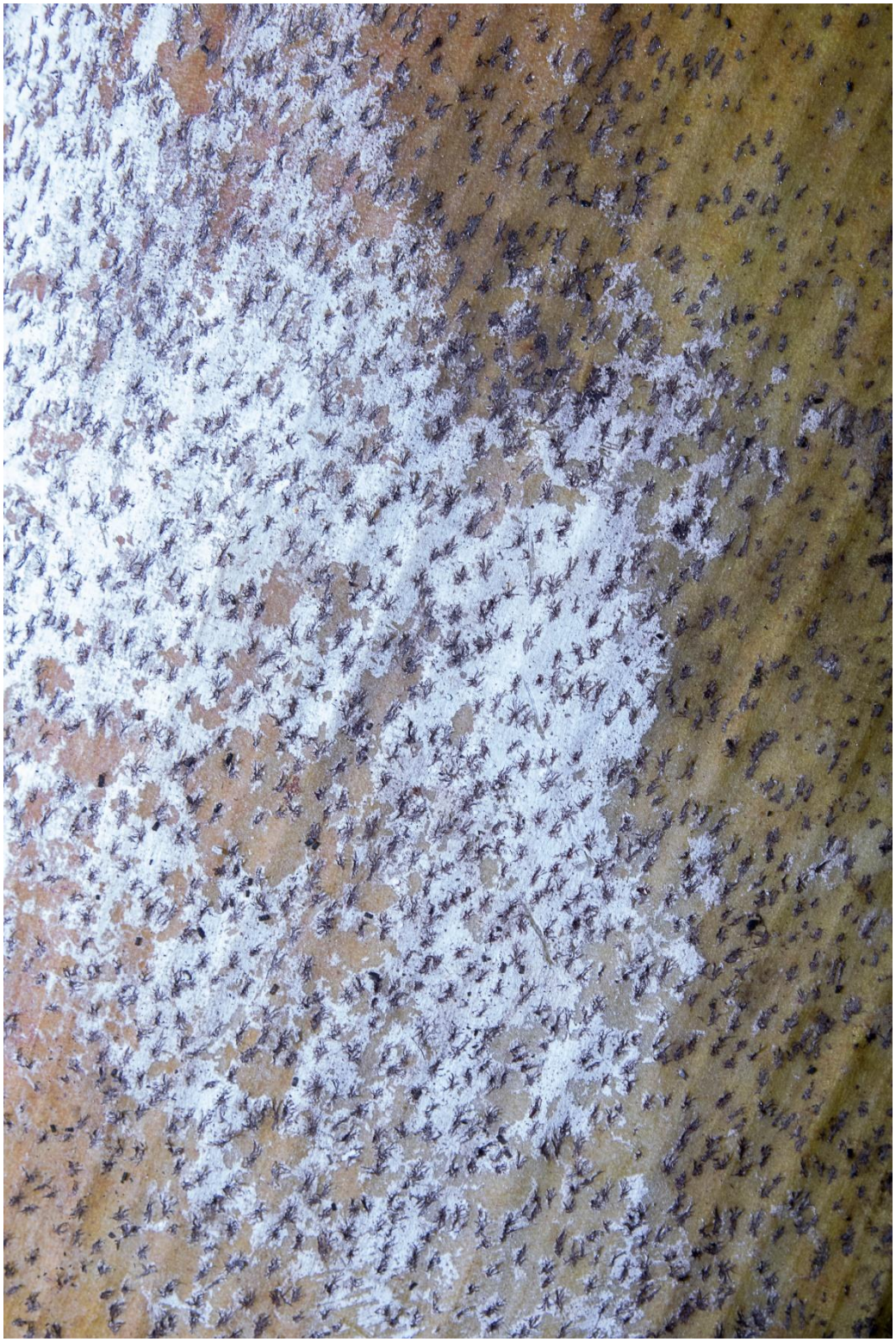
4. Co-author Justen Dobbs holds a complete leaf of *Chrysalidocarpus* × *lutecaryi*, showing that they are pinnate, straight to very slightly arcuate, but slightly re-curved distally.

5. Leaf bases of *Chrysalidocarpus* × *lutecaryi* are about 80 cm long, briefly tubular proximally, and deeply open distally.

6. Leaf bases of *Chrysalidocarpus* × *lutecaryi* are tubular briefly at the base and there are golden yellow with white-waxy indument.

7. Co-author Justen Dobbs holds a leaf base of *Chrysalidocarpus* × *lutecaryi*, which is light green medially to greenish golden-yellow laterally and proximally.

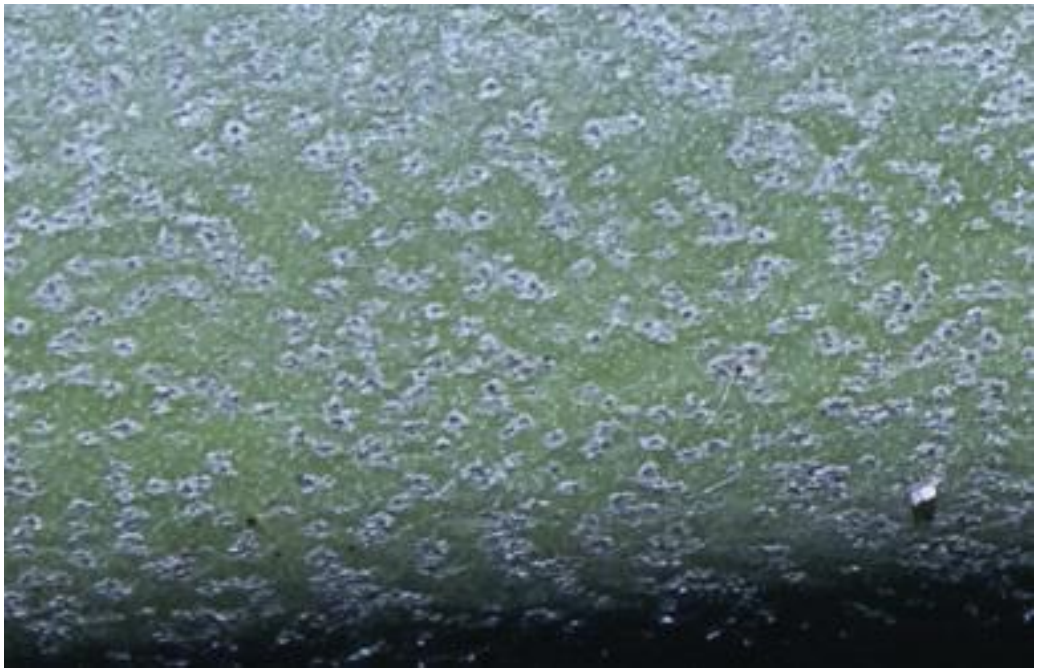
8. Leaf bases of *Chrysalidocarpus* × *lutecaryi* are overlain with conspicuous white-waxy indument.



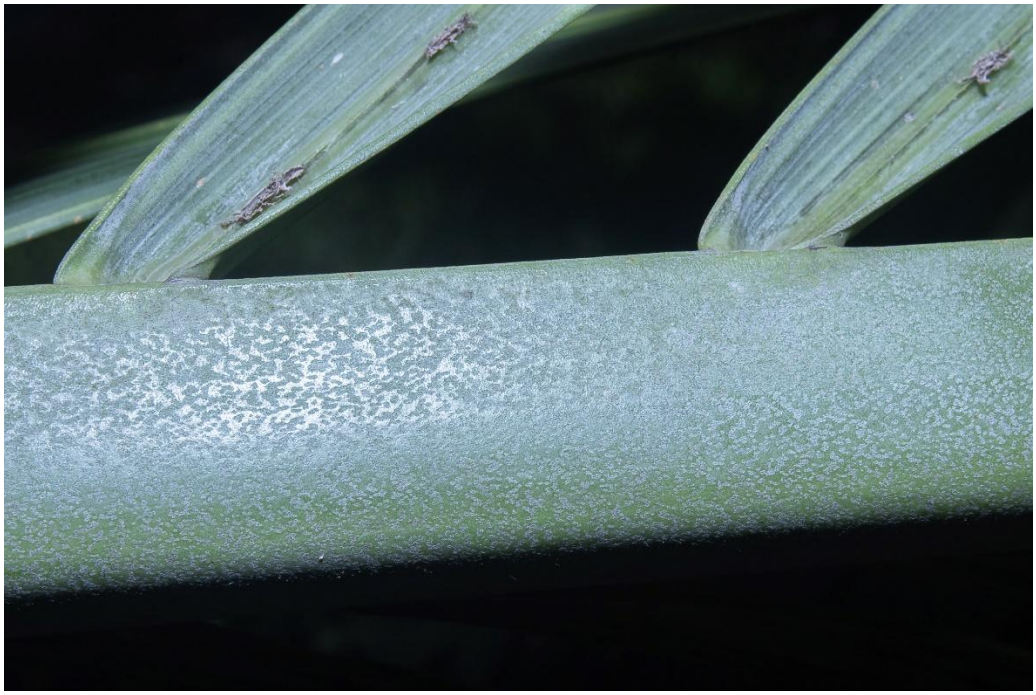
9. Leaf bases of *Chrysalidocarpus* × *lutecaryi* are overlain with conspicuous white-waxy indument. Note the scattered, scurfy, reddish brown tomentum.

10. Leaf bases of *Chrysalidocarpus* × *lutecaryi* have variably dense, ragged, scurfy tufts of reddish brown tomentum especially toward the petiole.

11. Co-author Justen Dobbs holds a leaf base of *Chrysalidocarpus* × *lutecaryi*, which is glabrous and glossy yellow-orange adaxially.



12. Petioles of *Chrysalidocarpus* × *lutecaryi* have white-waxy, irregularly rounded scales with minute, reddish brown centers.



13. Leaf rachises of *Chrysalidocarpus* × *lutecaryi* are abaxially rounded and laterally grayish green.

14. Pinnae of *Chrysalidocarpus* × *lutecaryi* are regularly arranged and moderately ascending off rachis to form a V-shaped blade in transverse section with an interior angle of 90 to120°.

ged, moderately ascending off rachis to form a V-shaped blade in transverse section with an interior angle of 90–120° **(Fig. 14)**, spaced 9–15 cm apart proximally, ca. 3.5 cm apart mid-blade, and 1–1.5 cm apart distally, pinnae slightly imbricate ca. mid-blade to apex, most proximal 109–148 × 1–2.2 cm, proximal mid-blade ca. 106 × 3 cm, most distal ca. 9 × 0.5 cm, all leathery, stiff, straight but drooping proximally, adaxially dark green, abaxially green with very light white-waxy indument and minute, granular, whitish spots (**Fig. 15**), constricted at attachment point to ca. 1 cm wide, adaxially midrib and distal marginal vein of each pinna greenish yellow, elevated, proximal marginal vein only slightly conspicuous, especially abaxially, 4–5 primary veins on either side of midrib adaxially and to a lesser extent abaxially, veins of lesser orders very faint adaxially and abaxially, ca. 5 ramenta on abaxial midrib mostly within ca. 10 cm of rachis, these 5–12 mm long, tan, scurfy (**Fig. 15**), abaxially midrib and primary veins with minute, dark scales (**Fig. 16**).

Inflorescences: 4–5 per stem, interfoliar in flower and fruit (**Fig. 17**), only portion distal of leaf base accessible, this portion ca. 1.9 × 1.35 m (**Fig. 18**) (portion proximal of leaf base estimated ca. 80 cm long, giving total inflorescence length ca. 2.7 m), ascending, spreading, branched to 3 orders; **peduncle** portion distal of leaf base ca. 32 cm long (portion proximal of leaf base estimated ca. 80 cm long giving total peduncle length ca. 112 cm), ca. 5.5 × 2.5 cm at 2nd peduncular bract attachment, green but with lightly scattered, minute, tan scales and reddish brown tomen-

15. Abaxially pinnae of *Chrysalidocarpus* × *lutecaryi* are green with light white-waxy indument and minute, granular, whitish spots. Note the tan, scurfy ramenta on the midrib.

16. Abaxially the midrib and primary veins of *Chrysalidocarpus* × *lutecaryi* show their minute, dark scales best in a dried state.

17. Inflorescences of *Chrysalidocarpus* × *lutecaryi* are interfoliar in flower and fruit.

18. Co-author Justen Dobbs holds the portion of the inflorescence of *Chrysalidocarpus* × *lutecaryi* that was distal of the subtending leaf base.

tum; **prophyll** not seen; 1st **peduncular bract** only distal portion seen, this ca. 54 cm long, abaxially white-waxy with reddish brown tomentum (**Figs. 19**–**20**), adaxially glabrous and rich, coppery red (**Fig. 21**); 2nd peduncular bract rudimentary, incompletely encircling peduncle, ca. 5 × 8 cm; **rachis** ca. 1.4 m long, tapering to ca. 5 × 4 mm at apex; ca. 22 **branches** and 13 simple rachillae, most proximal branches largest and most complexly branched, most proximal branch ca. 1 m long, sub-peduncle ca. 17 × 4 × 1 cm, sub-rachis ca. 54 cm long with ca. 7 branches and 14 simple rachillae, most proximal sub-branch largest, ca. 40 cm long, sub-sub-peduncle ca. 4 cm long, ca. 1 × 0.7 cm at base, tapering to ca. 8 mm diam. at apex, sub-sub rachis ca. 2 cm long, ca. 5 mm diam., indument as in peduncle (**Fig. 22**) but becoming mostly glabrous at distal extremes; branches and rachillae subtended by **rachis bracts**, most proximal largest, these ca. 6 cm wide and 5 mm high except for central, median tip to ca. 8 cm long, this median tip lanceolate, dagger-like (**Fig. 23**), bracts becoming smaller distally, eventually barely discernable distally (**Fig 22**); **rachillae** ca. 32 cm long, ca. 5 × 4 mm at base, tapering to ca. 2–3 mm diam. at apex, spreading, light green at pistillate anthesis.

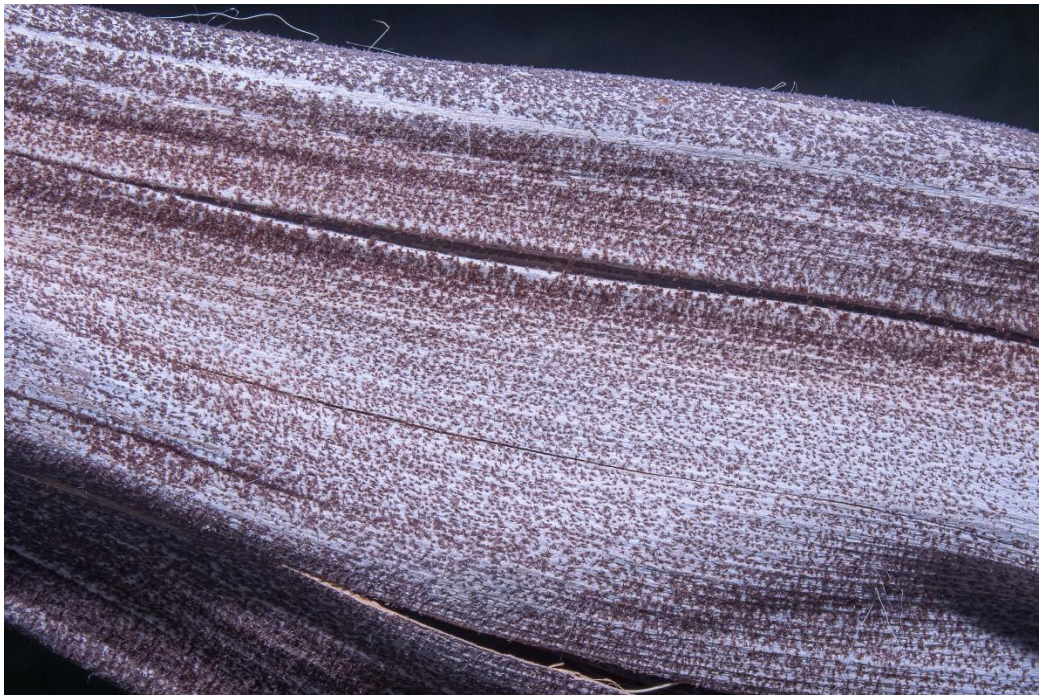
Flowers: arranged in **triads** of a center, later-opening pistillate flower flanked on each of two sides by earlier-opening staminate flowers, triads (or a dyad of a staminate and a pistillate flower) nearly throughout rachilla length, solitary or dyad of staminate flowers only in distal 1/30–1/10 (1–3 cm) of rachilla, triads and dyads in two spiraling rows with 5–6 triads or dyads in 1 revolution, triads or dyads ca. 5 mm distant within a spiral proximally and 2–3 mm distant distally, rows 1–3 mm apart, triads or dyads in dried state in shallow clefts ca. 3 mm long, 2.75 mm wide, and 0.5 mm deep, proximal lip prominent (when dry), 1.25 × 2 mm, crescent-shaped, broadly ovate, ascending to ca. 90°, thicker proximally, thin and knife-like distally along margins, bracteoles ca. 1 × 1.25 mm, crescent-shaped, imbricate, thin, white, truncate to slightly rounded-truncate distally (**Fig. 24**); **staminate flowers** (not seen); **pistillate flowers** 4.5–5.5 × 3–3.25 mm, ovoid, greenish yellow to yellow (**Fig. 25**); **calyx** ca. 2 × 3–3.25 mm, crown-like, **sepals** bowl-like, imbricate in proximal half, rounded apically, yellow with narrow, whitish margins, **corolla** ca. 4 × 3 mm, petals triangular, slightly bowl-like, imbricate in proximal 3/4, rounded-triangular to triangular apically, yellow to greenish yellow with narrow, whitish margins; **gynoecium** exserted ca. 1.7 mm above petals, 4–4.5 × 2.5–3 mm, **ovary** ovoid, clear-colored, stigma lobes 3, clearly differentiated, erect to slightly spreading, clear-colored, margins papillose.

Fruit: ca. 19 × 12.5 mm, oblong-obovoid, green; seed ca. 12.5 × 10 mm (**Fig. 26**); eophyll bifid.

Discussion

Chrysalidocarpus × *lutecaryi* can be more like *C. decaryi*, its staminate parent, or closer to *C. lutescens*, its pistillate parent, as progeny within a grex typically "lean" more towards one of the parents although progeny can be within an intermediate range between both parents. Nonethe-

19. The abaxial surface of the peduncular bract of *Chrysalidocarpus* × *lutecaryi* has white-waxy indument and reddish brown tomentum.



20. A closer look at the reddish brown tomentum on the peduncular bract of *Chrysalidocarpus* × *lutecaryi*.

21. Adaxially the peduncular bract of *Chrysalidocarpus* × *lutecaryi* is glabrous and rich, coppery red.

22. Like the peduncle, the inflorescence rachis of *Chrysalidocarpus* × *lutecaryi* has sparsely scattered, minute, tan scales and reddish brown tomentum. Note the low, much-reduced rachis bract.

23. Proximal inflorescence rachis bracts of *Chrysalidocarpus* × *lutecaryi* are largest and have a low, circular base and a long, dagger-like, central, median tip.

24. Floral triads of *Chrysalidocarpus* × *lutecaryi* are shallow clefts with a prominent, proximal, crescent-shaped, broadly ovate, ascending lip. Note the imbricate, thin, white, truncate to slightly rounded-truncate bracteoles.

25. Pistillate flowers of *Chrysalidocarpus* × *lutecaryi* are ovoid , greenish yellow to yellow, and with the white, stigma lobes exserted.

26. Fruit and seed of *Chrysalidocarpus* × *lutecaryi*. © 2026 J. B. Dobbs.

less, *C.* × *lutecaryi* typically has a sparingly clustered habit; in fact, most larger specimens in Florida and California have no more than three trunks. Thus, they do not produce as many trunks as *C. lutescens* but more than *C. decaryi*, which, of course, is a solitary species. It is possible that a small percentage of golden-triangle specimens could remain solitary if they were to inherit the solitary trait of *C. decaryi*, but this has not yet been observed.

The leafy canopy of *Chrysalidocarpus* × *lutecaryi* is similar to that of *C. decaryi*. Indeed, the type specimen of *C.* × *lutecaryi* can be likened to a clustered *C. decaryi*. The leaf canopies of both are grayish, their leaf rachises are mostly straight except becoming moderately recurved in the distal one m or so, and their thick, sturdy, open leaf bases are similar in shape, color, and indument. However, the discerning eye might detect that the leaf canopy of *C.* × *lutecaryi* is less gray than that of *C. decaryi*.

Minute, brown scales line the midrib and veins on the abaxial pinna surface. These are inconspicuous on fresh material, even under magnification, because they mikght be somewhat obscured by the white-waxy indument but are conspicuous and readily viewed in dry material under

magnification, perhaps because the heat of the drying process melted or altered the waxy indument, revealing the brown scales lining the veins.

Chrysalidocarpus × *lutecaryi* holds an astounding quantity of leaves per stem, up to 21, so much so that we were unable to remove an inflorescence in its entirety for closer study without removing an inordinate quantity of living leaves and their bases, perhaps damaging the plant. Thus, we were relegated to removing only the portion of the inflorescence that was exserted beyond the subtending leaf base, which prohibited us from accessing most of the peduncle, prophyll, and peduncular bract.

Chrysalidocarpus × *lutecaryi* is similar to *C. × pembacaryi*, especially in habit. However, it can be distinguished from the latter with a number of characters, including slightly more leaves per stem; slightly larger leaf base with variably dense (vs. dense) reddish brown tomentum; longer petiole but shorter leaf rachis, both with irregularly round, white-way scales with minute, reddish brown centers (vs. reddish brown tomentum only); slightly fewer pinnae per each side of the rachis; moderately (vs. steeply) ascending pinnae; inflorescence branched to three (vs. four) orders; peduncle with sparsely scattered, minute, tan scales and reddish brown tomentum (vs. reddish brown tomentum only); shorter inflorescence rachis; and rachis with minute, tan scales, and reddish brown indument (vs. reddish brown indument only (**Table 2**).

Seedlings of *Chrysalidocarpus* × *lutecaryi* are extremely difficult to discern from those of both parents, even for an experienced collector, mainly because both parents produce seedlings with bifid eophylls. Red or pink petioles, a key hybrid trait, can be seen once plants have their first two to three leaves, a trait lacking in *C. lutescens*. They sometimes have conspicuous tristichous leaf arrangements at this size but it depends on how much *C. decaryi* parentage was passed on in the hybrid.

Co-author Dobbs, who has been making many hybrids in *Chrysalidocarpus* for about 20 years, feels that most but not all hybrids in the genus are self-sterile. The golden-triangle palm is self-sterile; it will not produce viable seeds when self-pollinated, a condition found in many hybrid plants. The reasons for hybrid self-sterility are several and are typically related to the chromosomes of each parent. One of the primary reasons is that the two parents of a hybrid have different chromosome numbers, which means that during meiosis they do not pair correctly, resulting in the failure to produce gametes with the correct number of chromosomes to produce viable offspring (Blackwell 2025, Velos 2022).

However, Dransfield et al. (2008) noted that nearly all species of *Chrysalidocarpus* (as *Dypsis*) have a chromosome number of 2n = 32, a common number in subfamily Arecoideae and the dominant number in the tribe Arecaceae in which *Chrysalidocarpus* is placed. Thus, differences

Table 2. Comparison of some characters of *Chrysalidocarpus* × *pembacaryi* and *C.* × *lutecaryi*.

Character	C. × pembacaryi	C. × lutecaryi
Habit	clustered	clustered
Trunk		
Diam. standard height (cm)	30	26
Internode length(cm)/color	7/green distally with some light white wax, tan proximally	7.5/green with white-waxy indument distally, tan proximally
Leaf		
Leaves per stem	14–18	16–21
Leaf base length (cm), form	70, open	80, open
Leaf base abaxial color/indument	green distally and yellow-cream proximally/white-waxy indument overlain with dense, reddish brown tomentum	light green medially to greenish golden-yellow laterally and proximally/ conspicuous white-waxy indument overlain with variably dense, ragged, scurfy tufts of reddish brown tomentum
Petiole length (cm)/ color/indument	35/green/ white-waxy, laterally with dense, reddish brown tomentum	40–55/grayish green/ white-waxy, irregularly rounded white-waxy scales with minute, reddish brown centers
Rachis length (m)/color/indument	3.6/ green/ reddish brown tomentum	2.9/grayish green/ white-waxy, irregularly rounded scales with minute, reddish brown centers
Quantity of pinnae per each side of rachis	87	70
Pinnae disposition	steeply ascending, pinnae on opposite sides forming a 60° angle	moderately ascending, pinnae on opposite sides forming a 90–120° angle
Pinnae abaxial indument	dense, small, white-waxy scales; veins with minute, brown scales	very light, white-waxy indument and minute, granular, whitish spots; midrib and primary veins with minute, dark scales
Inflorescence		
Size (cm)	260 × 180	270 × 135
Position	interfoliar in flower, infrafoliar in fruit	interfoliar in flower and fruit

Character	C. × pembacaryi	C. × lutecaryi
Orders of branching	4	3
Peduncle length (cm)	95	112
Peduncle indument	dense reddish brown tomentum	lightly scattered, minute, tan scales and reddish brown tomentum
Peduncular bract length (cm)/indument	55/white waxy overlain with dense, reddish brown tomentum	54/white-waxy overlain with moderately dense, reddish brown tomentum
Rachis length (cm)	175	140
Rachis indument	reddish brown tomentum	lightly scattered, minute, tan scales and reddish brown tomentum
Rachillae length (cm)	29	32

in chromosome numbers do not seem to be the reason for golden-triangle palm's self-sterility. Another possible reason for hybrid sterility is the occurrence of micro- and macro-gene inversions, which reorder the genes, so they do not match up well. Other genetic discrepancies, aberrations, and mutations can also be responsible for self-sterility, and more work is needed to resolve this phenomenon.

Thus, to produce fruits with viable seeds on the golden-triangle palm, pollen from another species (not a hybrid) must be used, and pollen from the hybrid's staminate parent, *Chrysalidocarpus decaryi*, seems to be the most compatible and effective. However, the resulting offspring will not be an authentic or true golden-triangle palm but a back-crossed hybrid, which Dobbs has also produced but in extremely low quantities. If authentic golden-triangle palm is desired, the original F1 cross must be made (pollen of *C. decaryi* placed on pistillate flowers of *C. lutescens*).

Through trial and error, Dobbs has also determined that golden-triangle palm hybrids are only successfully produced if the pollen source is *Chrysalidocarpus decaryi*, not *C. lutescens*. He suspects that, for an unknown reason, *C. decaryi* has pollen that makes it a successful staminate or pollen parent in a hybrid, a suspicion that is borne out by other hybrids of *C. decaryi* that Dobbs has made. Dobbs theorizes that the hot, dry, and relatively brutal habiat of *C. decaryi* in Madagascar creates unique environmental demands that require a longer window of pollen viability and greater incidence of survivability, thus improving its efficacy in pollinating neighboring *C. decaryi*. The pollen's unique shape and size, coupled with a superlative window of viability might render it more compatible as a pollen donor for other *Chrysalidocarpus sp.* These pollen properties could be likened to the way a skeleton-key is able to open many locks whereas a standard key only works in one lock. Similarly, in oil palms (*Elaeis guineensis*), Criollo-Escobar and

Dominguez (2018) found that the genotype of the pollen provider determines pollen quality, especially viability and germinability, which are critical for proper pollination and fruit and seed development. More work is needed to resolve this phenomenon.

Attesting to its lengthy pollen viability, Dobbs once emasculated the inflorescence (by hand) of a *Chrysalidocarpus decaryi* at the beginning of staminate anthesis but failed to treat the immature and later-opening pistillate flowers with a denaturing agent. The pistillate flowers opened three to four weeks later but surprisingly were still fertilized by remnant pollen and later developed into fruits with viable seeds. Thus, *C. decaryi* pollen might be viable for up to three to four weeks or more, whereas most other *Chrysalidocarpus* sp. have a pollen viability window closer to four to seven days at typical outdoor temperatures and conditions. The reason that *C. decaryi* fails as a pistillate (seed) parent in hybridization might be its pistillate flowers are incompatible witb pollen from other species, which might prove to be an interesting study.

On the occasion that flowers of *Chrysalidocarpus* × *lutecaryi* self-pollinate, it develops fruit that inexorably aborts when about five mm in diameter, being either parthenocarpic or containing brown endosperm void of any embryo.

The golden-triangle palm clearly exhibits hybrid vigor, surpassing both parents in its growth rate in Florida. Another possible byproduct of hybridization in golden-triangle palms is yellow and brown splotching that might appear on lower or older leaves in the canopy. This splotching is more evident with a backlit leaf. One's first inclination might be to diagnosis this splotching as a nutrient disorder, such as potassium deficiency (Broschat et al. 2014, Hodel 2012), and, indeed, these symptoms can fit this potential disorder. Another explanation could be lesion mimic mutants, which are a result of the hybridization process and can become sufficiently severe to kill some palms, such as the mule palm (×*Butiagrus nabonnandii*) (Dhillon et al. 2024). Lesion mimic mutants do not respond to fertilizer or pesticide and fungicide applications because they are the result of genetic anomalies in the hybridization process. While we suspect that lesion mimic mutant might occur on the tri-bear palm, *Chrysalidocarpus* × *leptocaryi* (see Hodel at al. 2025 for illustrations), fortunately, we have not yet observed this yellow and brown splotching on older leaves of the golden-triangle palm yet.

Because hybrids can be inadvertently produced in palm collections and nurseries with species-rich holdings of *Chrysalidocarpus* (and likely other genera) (Hodel 2023, 2025; 2026a; 2026b; Hodel et al. 2025), foreign pollen-exclusion techniques must be employed to ensure "pure" offspring are produced under such conditions. Otherwise, instead of being a typically, long-touted method to perpetuate and conserve species and genetic material, cultivation could result in just the opposite, inadvertent, largely undocumented, and mostly unwanted hybridization, diluting and

mixing genetic material (Hodel 2023, 2025; Hodel and Burtscher 2025; Hodel et al. 2025, 2026a, 2026b).

In *Chrysalidocarpus*, inadvertent hybrids seem to occur in South Florida in the most commonly cultivated species, such as *C. lutescens*, which is grown by the millions for the nursery and landscape trades in Florida and for export. J & K Plant Distributors in Miami, Florida reported in 2024 (pers. comm.) that *C. lutescens* and *C. decaryi* will occasionally and inadvertently hybridize in their nursery; the hybridized nature of some open-pollinated, seed-grown plants will become evident as they grow and develop. These occasional hybrids are seen as a novelty by some nursery growers and sold to local collectors while others simply sell them unknowingly as "pure" species.

Cultivation

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

Although experiences cultivating golden-triangle palms are few, they would seem well adapted to a variety of subtropical and tropical climates and regions around the world. Golden-triangle palms exhibit remarkable hybrid vigor. They grow about three times faster in South Florida and two times faster in southern California than tri-bear palms (*Chrysalidocarpus* × *leptocaryi*) or tribana palms (*C.* × *pembacaryi*), two other fast-growing hybrids with much horticultural potential. For example, in South Florida a golden-triangle palm grew from seed to 45 cm tall in just 10 months (**Fig. 27**).

Golden-triangle palms seem adapted to tropical and warm subtropical, moist to wet conditions, like those of southern Florida, northern Australia, Thailand, and elsewhere. They would likely be tolerant and grow unusually well in warm or slightly cooler, drier, and more arid subtropical conditions, like the Mediterranean-climate regions of southern California, southern Europe, southern Africa, parts of Australia, and elsewhere. One of golden-triangle palm's parents, *Chrysalidocarpus decaryi*, likely imparts heat, cool, drought, wind, and arid tolerance to golden-triangle palms. Golden-triangle palm's seed parent, *C. lutescens*, naturally inhabits exposed, scrubby forest on sandy, rocky, often calcareous substrates near the sea, which likely imparts tolerance of wind, alkaline soil conditions, and drought. Despite this drought tolerance, golden-triangle palms perform best with occasional irrigation during dry, rainless periods (see later).

Golden-triangle palms will tolerate hot temperatures, likely as warm as 45 C, especially if given some afternoon shade and occasional irrigation. They will also tolerate short, overnight periods of near-freezing and slightly sub-freezing temperatures to -2 C with little or no damage.

27. This young plant of *Chrysalidocarpus* × *lutecaryi* grew to 45 cm tall from seed in just 10 months. © 2026 J. B. Dobbs.

Propagation of golden-triangle palms is by seed, which can be produced on *Chrysalidocarpus lutescens* whose pistillate flowers are pollinated with pollen from *C. decaryi*. Measures should be taken to emasculate the inflorescence. Remove staminate flowers of *C. lutescens* pre-anthesis to exclude unwanted pollen, which is critical to maximize hybrid fruit production and prevent self-pollination.

To remove staminate flowers mechanically, simply rub them off with your fingers beginning at the distal end of each rachilla and moving toward the proximal end. Removal should be done well before staminate anthesis to eliminate the chance of stray pollen escaping the flower during removal and lodging on the pistillate flower. It is helpful to start by cutting off or removing the distal portion of each rachilla, which contains only solitary or paired staminate flowers anyway and no pistillate flowers. Then remove the staminate flowers in triads with a pistillate flower in the more proximal portion of the rachilla. Be careful not to damage pistillate flowers when removing staminate flowers.

After removal of staminate flowers, spray the entire inflorescence with a mixture of water, a denaturing agent, and a surfactant to wash off any escaped pollen. Also, the now emasculated inflorescence must be protected to exclude unwanted, foreign pollen spread by wind and/or insects from adjacent or nearby individuals of *Chrysalidocarpus*, which can be done by emasculating or removing inflorescences on other palms or enclosing securely the just emasculated inflorescence in a protective bag of cheesecloth, poly screen mesh, or specialized pollination bags used in the date and oil palm industries. The poly mesh bags also provide protection of the developing fruits against marauding herbivores. When pistillate flowers of *C. lutescens* have attained anthesis, which typically can be determined by petal and pistil color and sometimes the presence of a minute, clear dew-drop at the tip of the pistil, pollen collected from *C. decaryi* can be applied. Make repeated applications of pollen to the pistillate flowers of *C. lutescens* over several days to ensure successful pollination.

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 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. Golden-triangle palms perform well in just about any type of soil as long as the soil environment is managed properly, especially as it pertains to irrigation.

Situate golden-triangle palms in full sun or with some light, afternoon shade in the hottest, driest regions. Provide sufficient space from adjacent palms and other plants and buildings to account for the eventual size of golden tringle palms. Otherwise, nearby plants and building will physically clash with the golden-triangle palm, detracting from their beauty and visual impact.

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 might sometimes occur on older or lower leaves in the canopy of golden-triangle palms, which could indicate potassium deficiency or potentially the lesion mimic mutant disorder discussed earlier.

Golden-triangle palms are sufficiently handsome and imposing to make a statement in any landscape. Their clustering habit, moderately robust trunk, reddish fuzzy crownshaft, and splendid canopy of grayish-looking leaves are sure to draw attention. Because it typically but sparsely clusters and is an unusually attractive palm, it is sufficiently powerful to stand alone as a single specimen. Companion plants should be kept at least 60 cm away from the trunk and low, so as not to hide or obscure the handsome, colorful trunk.

We feel that golden-triangle palms have their maximum appeal and ornamental value when they have just initiated flowering and have about three to four m of trunk. They will continue to reward for many more years, but then unusually tall specimens tend to lose some of their allure and replacement becomes a consideration.

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