

2. Acaulescent or with very short trunk; middle pinnae 20-40 cm long, 0.3-1.0 cm wide; branched part of spadix 11-30 cm long; flowering and fruiting parts usually greenish.
3. Spathes glaucous at maturity, expanded part 30-39 cm long; branched part of spadix 20-30 cm long; middle pinnae 36-40 cm long, 0.8-1.3 cm wide ..... 2. *B. archeri*
3. Spathes densely brown-tomentose at maturity, expanded part 13-17 cm long; branched part of spadix 11-13 cm long; middle pinnae 20-26 cm long, 0.3-0.4 cm wide ..... 3. *B. microspadix*
1. Petiole margins spiny or dentate; fruit 1-3-chambered; pinnae mostly with obtuse or acute tips.
4. Pistillate flowers 10-16 mm long, 6-10 mm in diam.; mature fruit 3.0-4.2 cm long; persistent perianth 1.5-2.2 cm long.
5. Acaulescent or with trunk 1-2 m tall; leaf rachis 57-93 cm long; pinnae 40-42 on each side, middle ones 45-55 cm long, 0.8-1.5 cm wide; expanded part of spathe 40-60 cm long, 4-8 cm wide; persistent perianth of fruit 1.5-1.8 cm long ..... 4. *B. paraguayensis*
5. Trees 8-12 m tall; leaf rachis 170-200 cm long; pinnae 68-72 on each side, middle ones 75-81 cm long, 2.0-2.4 cm wide; expanded part of spathe 115-125 cm long, 10-12 cm wide; persistent perianth of fruit 1.8-2.2 cm long ..... 5. *B. yatay*
4. Pistillate flowers 3-8 mm long, 4-5 mm in diam.; mature fruit 1.5-2.6 cm long; persistent perianth 0.5-1.0 cm long.
6. Spathes densely brown-tomentose at maturity, 120-135 cm long, 14-16 cm wide at anthesis ..... 6. *B. eriospatha*
6. Spathes glaucous and glabrous or only brownish-pubescent at maturity.
7. Acaulescent, or with very short trunk; middle pinnae 35-40 cm long, 0.8-1.1 cm wide; expanded part of spathe 30-33 cm long, 2-3 cm wide; spadix with 18-22 branches; petiolar spines short and toothlike, less than 2 mm long; fruit mostly 1-chambered ..... 7. *B. arenicola*
7. Caulescent, with trunks to 5 m tall, 40-50 cm in diam.; middle pinnae 60-75 cm long, 1.5-2.5 cm wide; expanded part of spathe 80-100 cm long, 7.0-8.5 cm wide; spadix with 50-60 branches; petiolar spines coarse, the lower ones 8-11 cm long; fruit 1-3-chambered ..... 8. *B. capitata*

## Taxonomic Treatment

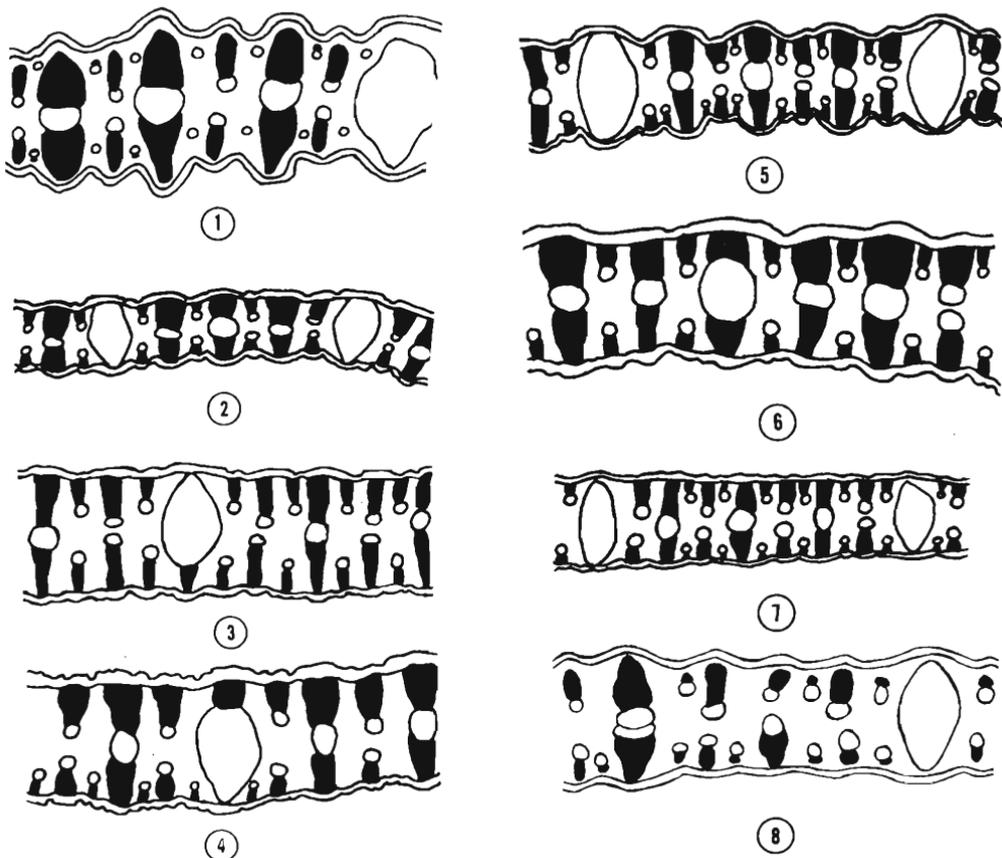
### 1. *Butia purpurascens* Glassman, sp. nov.

Palma 1.2-4 m alta. Folia aequaliter pinnatisecta petiolo non dentato rachidi 84-122 cm longa pinnis utrimque 52-58. Spatha spadix flores fructus purpurascens. Spathae pars inflata non plicata 71-80 cm longa 8-9 cm lata. Flores masculi inferiores 6-7 mm longi superiores 4-4.5 mm longi; flores feminei 5-6 mm longi 4.5-5.0 mm lati. Fructus 2.3-2.9 cm longus 1.0-1.3 cm in diam.

Holotype: Brazil, Goias, near Jatai, *Glassman 13076* (CHI).

Small trees 1.2-4 m tall, about 15 cm in diam.; sheathing leaf base and petiole not clearly separated, combined length of about 49 cm; margins of petiole densely fibrous on lower half, becoming less fibrous toward base of

rachis, not armed with teeth or spines; rachis of leaf 84-122 cm long; pinnae 52-58 on each side, more or less evenly spaced, middle ones 44-60 cm long, 1.6-1.8 cm wide, with long-acuminate, asymmetrical tips; expanded part of spathe frequently purplish, 71-80 cm long, 8-9 cm wide, smooth or striate, peduncular part 30-37 cm long; branched part of spadix frequently purplish, 60-64 cm long, peduncular part 41-48 cm long, rachillae about 50 or more, each 23-26 cm long; pistillate flowers more or less globose, frequently purplish, 5-6 mm long, 4.5-5 mm in diam., sepals and petals about equal in size; staminate flowers frequently purplish, lower ones 6-7 mm long, with prominent pseudopedicel and calyx 2-4 mm long, upper ones 4-4.5 mm long with calyx 1.5-2.5 mm long; fruit ovoid, usually purplish, 2.3-2.9 cm long, 1.0-1.3 cm in diam.,



1-8. Diagrams of cross sections of pinnae of various species of *Butia*. Double lines on upper (adaxial) and lower (abaxial) sides represent the upper and lower epidermis. Solid black areas represent clusters of nonvascular fibers, whereas the circles are diagrams of small-, medium- and large-sized veins. All other tissues have been omitted from the diagrams. Magnifications: Figs. 1, 3, 4, 5, 6, 8,  $\times 55$ ; fig. 2,  $\times 33$ ; fig. 7,  $\times 42$ . 1, *B. yatay* from Pedersen 4456 (GH); 2, *B. paraguayensis* from Pedersen 3030 (GH); 3, *B. capitata* from Glassman 8766 (CHI); 4, *B. eriospatha* from Glaziou 8059 (K); 5, *B. arenicola* from Hassler 3761 (G); 6, *B. archeri* from Glassman & Gomes 8023 (CHI); 7, *B. microspadix* from Hatschbach 11668 (F); 8, *Butia purpurascens* from Glassman 13076 (CHI).

beak 4-5 mm long, persistent perianth 7-8 mm high, locules 1-2, mature seeds not seen.

Specimens examined: BRAZIL. GOIAS: 3 km N.E. of Jatai, in pasture and cerrado, common (about 400 trees seen) for about 25 km along both sides of road, spathes, spadices, flowers, and fruits mostly purplish, Glassman 13076 (CHI, holotype); Glassman 13075, 13077, 13079, 13080, 13081, 13082

(CHI, SP); 26 km N.E. of Rio Verde, along BR 060, dense cerrado, associated with *Syagrus flexuosa*, *Attalea*, and *Alagoptera*, rachillae and flowers purple, Glassman 13071 (CHI, SP); and probably Balsamo, palma campestre, Macedo 3321 (SP, US).

Vernacular names: none recorded.

Distribution: at present, only known from cerrados in the state of Goias.

*Macedo 3321* also seems to belong to



9. *Butia purpurascens* in Goias, near type locality. Daniel Vital stands next to small but mature tree subjected to fire in the cerrado.

*B. purpurascens*. It is 2-4 m tall, has petiole margins free of spines or teeth, and has other morphological characteristics which match closely; but no

information is given on the color of the flowers. Cross sections of the pinnae, however, reveal a tissue pattern very similar to *Butia archeri*.

The new species resembles *Butia capitata* superficially, but differs from it mainly in the smooth or fibrous rather than toothed petiole margins, the long-acuminate rather than acute or obtuse tips of pinnae, and the purplish rather than greenish spathes, spadices, flowers, and fruits. It is assumed that the purplish color is due to anthocyanin pigments. When specimens were dried, some lost all of their purple color whereas others retained some or most of their color.

From a morphological standpoint, *Butia purpurascens* seems to be most closely aligned to *B. archeri* because both taxa have smooth (not toothed) petiole margins, long-acuminate tips to the pinnae, staminate and pistillate flowers similar in size, and fruits similar in size, shape and number of locules. *Butia archeri*, as described by me (1968), differs primarily in being mostly acaulescent, in the smaller dimensions of leaves, spathes, and spadices, and in the lack of the purplish color in flower and fruit parts.

As I had expected, an examination of cross sections of the pinnae of *B. purpurascens* (Glassman 13076) reveals that its anatomical pattern matches the other seven species of *Butia* very closely, thus confirming its placement within this group.

## 2. *Butia archeri* (Glassman) Glassman, **comb. nov.**

*Syagrus archeri* Glassman, Fieldiana, Bot. 31: 235, fig. 1. 1967.

Holotype: Brazil, Minas Gerais, near Lavras, *W. A. Archer 4048* (A).

Acaulescent or sometimes with a short trunk up to almost 1 m high; sheathing leaf base 13–15 cm long; petiole 8–9 cm long and 1 cm wide, margins not spiny, merely fibrous; rachis of leaf 66–72 cm long; pinnae 28–44 on each

side, regularly arranged, middle ones 36–40 cm long, 0.8–1.3 cm wide, mostly with acuminate, asymmetrical tips; expanded part of spathe 30–39 cm long, 3 cm wide, smooth or striate, glaucous, peduncular part 30 cm long; branched part of spadix 20–30 cm long, rachillae 15–31, each 10–19 cm long, peduncular part of spadix 36 cm long; pistillate flowers rounded or ovoid, 4–7 mm long, 4–6 mm in diam., sepals and petals with obtuse tips; staminate flowers 5–7 mm long on lower part of rachilla, 3–5 mm long on upper part; mature fruit 1.8–2.0 cm long, 1.0–1.4 cm in diam., short-beaked, persistent perianth 8–10 mm high, endocarp woody, 1–1.5 mm thick, locules 1–2; seed (when single) irregularly globose, 7–9 mm long and 7–9 mm in diam., or when two are present flattened laterally, 10 mm long, 6 mm in diam.

Specimens examined: BRAZIL. MINAS GERAIS, near Lavras, *Archer 4048* (A, holotype; BH, MO, NY, US, isotypes); 16 km N. of Lavras, campo natural, *Glassman & Gomes 8018, 8019, 8020, 8021, 8022, 8023, 8024* (CHI); 10 km N. of Diamantina, associated with *Alagoptera*, in campo rupestre, common, about 50 plants seen, *Glassman 13001* (CHI). SÃO PAULO, Casa Branca, *O. Handro 313* (SP). GOAIS, Serro do Caiapó, 35 km S. of Caiaponia, *H. S. Irwin & T. R. Soderstrom 7750* (BH, NY, US); 9.5 km S.E. of center of Brasília, D. F., in tree and scrub woodland cerrado, *G. Eiten 13062* (CHI).

Vernacular names: none recorded.

Distribution: native to Brazil in the states of Minas Gerais, São Paulo, and Goiás, in grassland pastures and cerrados.

This taxon can be easily distinguished from other acaulescent species of *Butia* (e.g., *B. arenicola* and *B. paraguayensis*) by its smooth rather than dentate petiole margins; and from *B. microspadix* by