

## *Sabal* Adans.

### palmetto

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**Growth habit, occurrence, and use.** Palmettos—genus *Sabal*—are native to the Western Hemisphere and are distributed from the Bermuda Islands and the South Atlantic and Gulf States through the West Indies to Venezuela and Mexico (Sargent 1965). Five species inhabit the southeastern United States, Puerto Rico, and the Virgin Islands (table 1). Cabbage palmetto has tree form and attains a height at maturity of 12 to 27 m (Sargent 1965); it is found from North Carolina to south Florida, in low flatwoods and on offshore islands in the north, and becoming common throughout the lower part of the Florida peninsula. Cabbage palmetto has few commercial uses but is used extensively by rural residents for a variety of purposes—the trunk for timber, the bud for food, and the leaves for craft weaving. Cabbage palmetto has been planted widely as an ornamental. It has no forage value and only limited usefulness for wildlife. Scrub palmetto has a low, spreading form and attains a height at maturity of about 1.3 m (Bailey 1939; McCurrach 1960). It has a restricted range in the dry pinelands and scrub of central Florida (Small 1933). The bud is eaten as a salad vegetable, and the fruits are eaten by animals and birds.

**Flowering and fruiting.** The perfect white flowers of cabbage palmetto measure about 6 mm in diameter and are borne in drooping clusters 1.3 to 1.8 m long from June to August, depending upon latitude (Sargent 1965; Snyder 1952; West and Arnold 1947). The flowers are pollinated by insects (Knuth 1906). The fruit is a berry, subglobose or slightly obovoid, about 8 mm in diameter. The fruit is dark brown to black and ripens in late autumn or winter (Bailey 1939). Each fruit contains 1 light brown seed about 6 mm in diameter (Sargent 1965). Fruits and seeds of scrub palmetto are slightly larger (figure 1). Embryos are minute (figure 2).

**Collection, cleaning and storage.** The fruits of these palms may be picked from the plants when ripe, and the seeds separated from the pulp by running them through a macerator or rubbing them on hardware cloth. The purity of seed samples was 100% for seed lots used to determine seed weight (Olson and Barnes 1974) (table 2). Palmetto seeds are orthodox in storage behavior. Cabbage palmetto seeds have been stored successfully at 5 EC for up to 8 weeks (Carpenter 1987). Seeds of Rio Grande palmetto were found to tolerate desiccation, a prerequisite to dry, cold storage (Dickie and others 1993). Seeds of seaberry—*S. parviflora* Becc.—have survived dehydration to 12% moisture content and submersion in liquid nitrogen indicating that this species, and possibly others in the genus, could be stored either under conventional freezer storage or liquid nitrogen (Becwar and others 1983).

**Germination tests.** The seeds of palmetto require no pretreatment to break dormancy, but 30 days of stratification in moist sand at 4 EC increases the speed of germination. For example, the average germinative capacity of 4 samples of fresh, unstratified cabbage palmetto seeds was 91% in 120 days (Olson and Barnes 1974). Four samples of stratified seeds had an average germinative capacity nearly as high (89%) in half the time (Olson and Barnes 1974). The tests were carried out at an alternating night–day temperature regime of 20 to ! 30 EC with 8 hours of daylight. Germination tests were conducted for cabbage palmetto in south Florida on seeds that had the micropyle caps removed and on untreated seeds (Olson and Barnes 1974). The germination percentage was 84 to 95% in 4 days with the micropyle cap removed and only 36% in 100 days for untreated seeds. Carpenter (1987) germinated cabbage palmetto at a constant soil temperature of 30 EC in a greenhouse and found that 7 days of water soaking at 35 EC boosted germination significantly, from 65% to 85%. Speed of germination was also improved by this water soaking. Unstratified seeds of scrub palmetto averaged 72% germination in 82 days at a constant temperature of 22 EC, and only 64% in the same period with alternating 20/30 EC for 16 and 8 hours, respectively (Olson and Barnes 1974). Carpenter (1988) found, in a series of constant-temperature studies of scrub palmetto, that 30 EC was optimal for both germination percentage and speed of germination. This optimal temperature is substantially higher than that reported by Olson and Barnes (1974). The benefit in speed of germination from prechilling the seed reported by the latter authors might be explained by the fact that they reported on germination at about 7 degrees below the optimum. Slow germination has been reported for Puerto Rico, Rio Grande, and dwarf palmettos. Germination of untreated seeds of the first 2 species took from 6 to 18 weeks for completion, whereas dwarf palmetto needed 7 to 24 months of moist prechill before germination at 25 EC (Ellis and others 1985).

**Nursery practice.** Seeds should be planted 13 to 25 mm (½ to 1 in) deep in light textured soil, soon after collection (Jordann 1949). The seeds should not be permitted to dry.

## References

- Bailey LH. 1939. The standard cyclopedia of horticulture. New York: Macmillan. 3639 p.
- Becwar MR, Stanwood PC, Leonhardt KW. 1983. Dehydration effects on freezing characteristics and survival in liquid nitrogen of desiccation-tolerant and desiccation-sensitive seeds. *Journal of the American Society of Horticultural Science* 108(4): 613–618.
- Carpenter WJ. 1987. Temperature and imbibition effects on seed germination of *Sabal palmetto* and *Serenoa repens*. *HortScience* 22(4): 660.
- Carpenter WJ. 1988. Temperature affects seed germination of four Florida palm species. *HortScience* 23(2): 336–337.
- Dickie JB, Balick MJ, Linington IM. 1993. Studies on the practicality of *ex situ* preservation of palm seeds. *Princeps* 37(2): 94–98 [Seed Abstracts 1996; 9(4): 1304].
- Ellis RH, Hong TD, Roberts EH. 1985. Handbook of seed technology for genebanks. Volume 2, Compendium of specific germination information and test recommendations. Rome: International Board for Plant Genetic Resources. 667 p.
- Jordann AC. 1949. Observations on the propagation of palms. *Florida State Horticulture Society Proceedings* 62: 240–242.

- Knuth P. 1906–09. Handbook of flower pollination. Oxford: Clarendon Press.
- McCurrach JC. 1960. Palms of the world. New York: Harper Bros.
- Olson DF, Barnes RL. 1974. *Sabal*, palmetto. In: Schopmeyer CS, tech. coord. Seeds of woody plants in the United States. Agric. Handbk. 450. Washington, DC: USDA Forest Service: 744–745.
- Sargent CS. 1965. Manual of trees of North America (exclusive of Mexico). 2nd ed., corrected and reprinted. New York: Dover. 934 p.
- Small JK. 1933. Manual of southeastern flora. New York: J.K. Small.
- Snyder E. 1952. Florida trees. 2nd ed. Sanibel, FL: E. Snyder.
- Wasson E, ed. 2001. Trees and shrubs: illustrated A–Z of over 8000 plants. Willoughby, NSW, Australia: Global Book Publishing: 692.
- West E, Arnold LE. 1947. The native trees of Florida. Gainesville: University of Florida Press. 212 p.

**Figure 1**—*Sabal*, palmetto: fruits (**left**) and seeds (**right**), all H 1.

**Figure 2**—*Sabal etonia*, scrub palmetto: longitudinal section through a seed, H 8.

**Table 1**—*Sabal*, palmetto: nomenclature and occurrence

Scientific name & synonyms	Common names	Occurrence
<b><i>Sabal causiarum</i> (O.F. Cook) Becc.</b>	<b>Puerto Rico palmetto,</b> Puerto Rico hat palm	Puerto Rico & the Virgin Islands
<b><i>Sabal etonia</i> Swingle ex Nash</b> <i>S. miamiensis</i> Zona	<b>scrub palmetto,</b> etonia palmetto	Florida
<b><i>Sabal mexicana</i> Mart.</b> <i>S. exul</i> (O.F. Cook) Bailey <i>S. texana</i> (O.F. Cook) Becc. <i>Inodes exul</i> O.F. Cook <i>Inodes texana</i> O.F. Cook	<b>Rio Grande palmetto</b> Mexican palmetto, Oaxaca palmetto	Texas
<b><i>Sabal minor</i> (Jacq.) Pers.</b> <i>S. deeringiana</i> Small <i>S. glabra</i> Sarg., non P. Mill. <i>louisiana</i> (Darby) Bomhard <i>Corypha minor</i> Jacq.	<b>dwarf palmetto,</b> Sonoran palmetto	Florida and Louisiana, N to North Carolina, W to Oklahoma, Arkansas, & Texas S. S.
<b><i>Sabal palmetto</i> (Walt.) Lodd. ex J.A. &amp; J.H. Schultes</b> <i>S. jamesiana</i> Small <i>Inodes schwarzii</i> O.F. Cook <i>Corypha palmetto</i> Walt.	<b>cabbage palmetto,</b> cabbage palm, palmetto	Florida, Georgia to Louisiana, North Carolina & South Carolina

**Source:** Wasson (2001).

**Table 2**—*Sabal*, palmetto: seed data

Species	Cleaned seeds/weight				Samples	Moisture content (%)
	Range		Average			
	/kg	/lb	/kg	/lb		
<i>S. etonia</i>	—	—	1,280	581	8	9.8
<i>S. palmetto</i>	758-763	1,668-1,682	1,675	7,600	2	19.3

**Sources:** Olson and Barnes (1974).