cides are used on the trees. The nuts have a shelf life of two weeks, longer if refrigerated with high humidity. A 28.3 g (one oz.) serving contains the following: 180 Calories, 2.34 g protein, 5.01 g carbohydrates, 17 g fat, and 3.4 g fiber.

It is encouraging to see *Jubaea* being exploited in a nondestructive manner. Destructive exploitation, for wine and "honey" (syrup), has severely reduced the numbers of this magnificent palm in the wild. Chilean botanists already consider *Jubaea* to be endangered. Will its spectacular size and impressive beauty alone be enough to save *Jubaea* from extinction? Perhaps not, but maybe its economic potential as an export crop will tilt the balance in favor of *Jubaea chilensis*.

SCOTT ZONA
Department of Botany
220 Bartram Hall
University of Florida
Gainesville, FL 32611-2009

Principes, 35(2), 1991, pp. 108–109

PALM BRIEF

Bonsai Chrysalidocarpus lutescens and Cocos nucifera

Centuries ago the Japanese developed the bonsai method of cultivating trees in small containers, by means of root and branch pruning, to produce miniature long-lived plants of great beauty. The bonsai technique apparently was more recently applied to *Rhapis* palms, giving us strikingly attractive small ornamental plants. The two major sources of information on growing these small rhapises (Okita and Hollenberg 1981, McKamey 1983) occasionally refer to them as bonsai, although the most common designations employed are "miniature" or "dwarf." Searching through the palm literature, I was able to find reference to other bonsai palms only in a note by Satake (1980).

In April 1988 I was at the Bogor Botanic Garden in Indonesia, to meet with Johanis Mogea concerning the World Wildlife Fund project on palm conservation and utilization. As part of local field visits, Johanis took me to a nearby plant nursery. Perched on a hillside above Bogor, Robbyanto Jayanata has created a plant lover's paradise of local and exotic species, with palms being very well represented. The palm collection was impressive, but Robby's personal bonsai *Chrysalidocarpus lutescens* and *Cocos nucifera* palms, were captivating. I photographed the palms (Figs. 1,2) and Johanis later sent me the following details he obtained from Robby about how these remarkable bonsai were grown.

1. Twenty-five-year old bonsai *Chrysalidocarpus lutescens* measuring 35 cm (13.8 in) in height.

2. Bonsai coconut palm with two stems. It is 14 years old and stands 90 cm (35.4 in) tall.

About 25 years ago, the *Chrysalidocarpus lutescens* was started by separating a group of 6 suckers from the clump of a normal plant. These suckers were planted in a small pot and it was placed within the orchid garden. There it received twice weekly applications of Hyponex, an orchid leaf fertilizer, at a concentration of 2.5 grams per liter. About once every two years, new suckers were pruned to maintain a desirable number. The clump has been repotted only three times, because of pot deterioration and to enhance its appearance for a local exhibition. For the past 10 years, no fertilizer has been applied.

The history of the 14-year-old bonsai coconut is somewhat different since it originated from a single polyembryonic seed of *Cocos nucifera* var. *eburnea*, which produced two suckers. The *eburnea* variety is a dwarf coconut growing to 3 m in height with a trunk diameter of about 25 cm. It begins to bear at three years of age and produces a rounded yellow fruit. This bonsai coconut has not been given any special treatment, and no fertilizer has been applied.

Both of these palms are such commonplace ornamentals in the tropics that one scarcely gives them more than a glance. Robby's skill and imagination has transformed them into beautiful and unusual new growth forms.

Literature Cited

McKamey, L. 1983. Secret of the orient: dwarf Rhapis excelsa. Rhapis Gardens, Gregory, Texas.

Okita, Y. and J. L. Hollenberg. 1981. The miniature palms of Japan. Weatherhill, New York.

Satake, T. 1980. Bonsai palms. Principes 24(1): 40–42.

Dennis V. Johnson
605 Ray Drive
Silver Spring, MD 20910