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Phoenix dactylifera Cultivars with Resistance to Graphiola Leaf Spot

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This article is part two in a series on the cultivation of *Phoenix dactylifera* in a humid rainy climate. The last article addressed the possibility of producing edible dates in Florida and was published in the "Central Florida Palm Bulletin," volume 12 no. 4. This article will discuss the limiting factor of *Graphiola* leaf spot on *P. dactylifera* in Florida and possibly overcoming it.

In 1901 John V. Watkins described *P. dactylifera* in his book "Florida Landscape Plants" as "A very stately feather palm making an excellent free standing specimen or avenue tree." *Phoenix dactylifera* adorned the grounds of many central Florida citrus belt estates around the turn of the century. There are still *P. dactylifera* thriving in open areas of the Ocala National Forest, apparently once a homestead now long abandoned, attesting to their hardiness. Forgotten for years in central Florida landscapes, *P. dactylifera* is once again becoming fashionable, appearing at theme parks, resorts, and in city landscape plans. The recent surge of interest in the date palm is due in part to the lack of damage they received in the 1980s freezes, but also to their stature. *Phoenix dactylifera* and *Phoenix sylvestris* are the tallest growing feather palms for central Florida. However, most Floridians aren't getting the true impression of the beauty of the date palm because of the cultivars being imported. "Zahidi" and "Deglet Noor" are two of the three most imported varieties for Florida and also suffer the most disease caused by the fungus *Graphiola*. Several cultivars have shown more resistance than others to *Graphiola*. In humid climates *Graphiola* thrives and attacks the older fronds causing a reduction of chlorophyll and resulting in a ragged-looking leaf that must be removed, hence the "feather duster look" (Figs. 1,2). Some may like the "feather duster" look because of the formal appearance it gives the palm, but for those who don't there is an alternative. *Graphiola* does not pose much of a problem in arid climates, and

consequently date palms have a fuller crown. In humid climates fungicide could be used to control *Graphiola* but this would be impractical on large specimens. The easiest way to control *Graphiola* is through the cultivation of more resistant varieties.

In 1957 Roy W. Nixon studied several *P. dactylifera* cultivars in Weslaco, Texas in the lower Rio Grande Valley where the humidity is high. In Nixon's study there were differences in the amount of infection by cultivar, the most severely infected being "Zahidi" and "Deglet Noor." Surprisingly the two most severely infected cultivars are the main ones used in Florida landscape projects. The "Kustawy" cultivar was the least infected in Nixon's study, although this cultivar is now thought to be extinct in the United States. The "Amir Hajj" cultivar was moderately infected. The USDA also reports that "Amir Hajj" came through six days of rainy weather in Winter Haven, Texas (between Laredo and San Antonio) without fruit spoilage. The "Amir Hajj" is still available in the United States. Nixon had a second test field 200 miles northwest of Weslaco in Crystal City where the humidity is on average 10% lower. The Crystal City site had different cultivars and Nixon reported "Jozee" and "Tadala" as being only slightly infected with *Graphiola*; both are also thought to be extinct in the United States.

In 1970 another study was conducted on *Graphiola* leaf spot by the Punjab Agricultural University in Abohar, India. M.K. Sinha, R. Singh and R. Jeyarajan found that several cultivars ranked high in resistance to *Graphiola*. The only cultivar ranked high in resistance that I was able to find in the United States was "Barhee." Moderately resistant were "Medjool," "Thoory" and "Halawy," while "Dayri" was severely infected with *Graphiola*; surprisingly, as the fruit of the "Dayri" is probably the most tolerant cultivar to rain and humidity. Ironically, it appears that the fruit and foliage respond to humidity indepen-



1. "Zahidi" variety in Orlando imported several years ago from California displaying "feather duster" crown.

dently of one another. The fruit of a specific cultivar could have a high resistance to humidity but the foliage a low resistance to *Graphiola* fungus and vice versa. The "Barhee" cultivar appears to fit both categories of fungus resistance to the foliage and moderate humidity and rain tolerance to the fruit. "Barhee" is also unique in that the fruit has a relative absence of astringency or tannin flavor in the early stage of ripening. Fruit from "Barhee" does not have to remain on the tree as long exposed to rain and humidity. In the Punjab research the chlorophyll content was also studied in several cultivars and it was found that "Barhee" retained much of the chlorophyll in the older leaves. "Halawy" maintained a moderate amount while "Zahidi" and "Deglet Noor" lost severe amounts of chlorophyll in the older leaves to *Graphiola*.

Finally in 1985 F. W. Howard, R. Atilano, and D. Williams at the University of Florida Agricultural Research Center in Ft. Lauderdale studied "Halawy," "Zahidi," and "Deglet Noor." The study examined the number of fronds badly dam-

aged by *Graphiola* leaf spot. The "Halawy" cultivar lost the fewest leaves while "Zahidi" and "Deglet Noor" lost the most.

Most Florida nurseries label smaller *P. dactylifera* without a varietal name mainly because the variety is not known. Unnamed varieties were probably started from an unknown seed source which could also result from hybridization. When selecting *P. dactylifera* for Florida it is not recommended to purchase trees without varietal names for reasons discussed in this article. When retired from fruit production date palms are used for ornamental purposes. "Zahidi," "Deglet Noor," and "Medjool" are popular commercial varieties in the United States. These popular commercial varieties are grown in large quantities and upon retiring these trees the excessive stock floods the landscape markets. I believe more resistant cultivars are not offered as frequently in Florida, because they are not as widely planted commercially. Fruit from the less frequently cultivated varieties are not necessarily inferior in taste and



2. "Medjool" variety in Orlando displaying "feather duster" crown.

in some cases are better than the popular commercial varieties. A limiting factor preventing wider cultivation could be perishability, making them difficult to get to market. Of these three varieties "Medjool" is most resistant to rain and humidity. "Zahidi" and "Deglet Noor" are probably better suited to arid regions and more resistant varieties should be sent to rainy, humid regions such as Florida. It is hoped with this information, varieties with foliage more resistant to *Graphiola* and/or fruit that is tolerant of humidity and rain will be imported to Florida for possibly edible fruit and a more ornamental appearance. At this writing I have a "Medjool," "Dayri," "Thoory," "Hal-awy," "Amir Hajj," and "Barhee." I will observe how each cultivar responds to *Graphiola* on the foliage and rain and humidity on the fruit. Under Florida conditions these cultivars, in my estimation, show the most promise for either edible fruit or a more ornamental appearance or both. There are several other varieties that fared well with respect to rain and humidity in other studies but

are not available in the United States and have probably never been imported here. If others have observations of *P. dactylifera* in humid and rainy climates please contact me.

Acknowledgments

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BOOK REVIEW—CHAMAEDOREA PALMS

Piet Vorster, Botany Department, University of Stellenbosch

Personally I have never liked *Chamaedorea*. For me the charm of palms lies in their majestic dimensions and bearing, properties which are conspicuously absent in *Chamaedorea*. Added to this is the plebeian presence of *Chamaedorea elegans* in every supermarket and reception room. Yet this magnificent book completely changed my mind, to the extent that I am now determined to grow as many species of *Chamaedorea* as I can. Dear Reader, there are species more beautiful than you can ever imagine, such as *C. amabilis*, *C. deneversiana*, *C. lucidifrons*, *C. palmeriana*, *C. stricta*, *C. tenella*, *C. tenerrima*, *C. tuerckheimii* . . . the list is endless. All these are very different from *C. elegans* and indeed often look very unpalmlike. Then there is the magnificent *C. tepejilote* which grows as tall as 7 meters.

Essentially this book is a monograph. Each species, of which quite a number were discovered and first described by the author, is treated comprehensively with regard to bibliography, typification, nomenclature, geographical distribution, and general discussion, and there are comprehensive descriptions and

at least one plate of stunningly beautiful color photographs depicting habit (usually in nature), flowers, and fruit. This book is living proof that a scientific work need not be inaccessible to the layman, as it is written and presented in a most attractive and user friendly way.

Background chapters treat scientific concepts such as priority in nomenclature, typification, the species concept, history (with beautiful reproductions of old illustrations), distribution and ecology, economic uses, conservation, culture including nutrition, a glossary and a bibliography. There is also an identification key which, a prominent palm taxonomist told me, does not work all that well.

Lastly, practically all species are not only cold hardy, but grow well under less than tropical conditions; and favor shady situations where so few other palms thrive.

I unhesitatingly recommend this lovely book not only to *Chamaedorea* enthusiasts, but to all interested in beautiful plants.

BOOK REVIEW—Courtesy of *The Palm Enthusiast* (journal of the South African Palm Society)