

Syagrus insignis, *S. Weddelliana* (withstood -3°C , 26.6°F without damage).

Thrinax spp. (all species failed to live).

Trachycarpus excelsa [*T. Fortunei*] (the hardest palm known; resisted -15°C , 5°F , in Paris); *T. Martiana* (perhaps

less hardy than *T. excelsa*).

Trithrinax brasiliensis; *T. campestris* (very hardy).

Washingtonia filifera, *W. robusta* (very hardy).

Wallichia caryotoides (-1°C to -2°C , 30.2° - 28.4°F).

Palms at the Jardin Botanique "Les Cedres," France

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The Botanical Garden "Les Cedres" is located on the French Riviera near Nice, France. It is a private garden, consisting of about thirty-five acres, founded by my father in 1922. There are over twelve thousand different species of plants represented in the garden, and it is particularly rich in cacti and succulent euphorbias, Araliaceae, Araceae, bromeliads, aloes, and agaves.

The palms are scattered over most of the garden but they are for the most part located in the warmest places, for we have severe winters about every twenty years when the temperature falls to 21.2°F (-6°C) and can cause heavy losses. The winter of 1956 was particularly severe. On the whole, the trees withstood cold fairly well. They are, however, more resistant when they reach an age of twelve to twenty years. We protect the rare species either by putting them under a light plastic cover or straw mats. The suckering palms, if frozen down to the ground, will spring up again.

Although a number of palms were planted many years ago and have reached good size, the collection was begun in earnest only a few years ago. As a result, many specimens in the collection are still small. I personally believe that many more palm trees

could be introduced and acclimatized on the French Riviera than we already have. But they grow very slowly and it is very difficult to obtain them except by growing them from seed. In this area most palms are slow growing and it may take fifty to sixty years for some species to become adults.

Nearly a hundred and fifty species of palms are represented in our garden. We have a specially good collection of *Chamaedorea* consisting of twenty-six named species and several unnamed ones. Only twenty-four of our palm species produce seed for us. They are the following: *Archontophoenix Cunninghamiana*, *Arecastrom Romanzoffianum*, *Butia capitata*, *B. eriospatha*, *Chamaedorea Ernesti-Augusti*, *C. cataractarum*, *C. oblongata*, *C. species*, *Chamaerops humilis*, *C. humilis* var. *macrocarpa*, *Erythea armata*, *E. edulis*, *Livistona australis*, *L. chinensis*, *Phoenix canariensis*, *P. canariensis* var. *glauca*, *P. reclinata*, *Rhaphidophyllum hystrix*, *Sabal Etonia*, *S. minor*, *S. Palmetto*, *S. texana*, *Trachycarpus Fortunei*, *Washingtonia filifera*, *W. robusta*.

These species can be considered as hardy here. In addition to these, others which have survived the cold of 1956 with little or no injury are the following: *Arenga Engleri*, *Brahea Berlandieri*,



53. Jardin Botanique "Les Cedres." *Archontophoenix Cunninghamiana* (right) with *Arenga Engleri* behind and *Chamaedorea* species (left center). Photograph by J. Marnier-Lapostolle.



54. Jardin Botanique "Les Cedres." *Erythea armata* (left) and *Washingtonia robusta* (right). Photographs by J. Marnier-Lapostolle.



55. *Phoenix canariensis* at Jardin Botanique "Les Cedres." Photograph by J. Marnier-Lapostolle.

B. calcarea, *B. dulcis*, *Erythea Brandegeei*, *Howeia Belmoreana*, *Jubaea chilensis*, *Livistona decipiens*, *Orbignya Cohune*, *Phoenix dactylifera*, *P. paludosa*, *P. Roebelenii*, *P. rupicola*, *Rhapis excelsa*, *R. humilis*, *Rhopalostylis Baueri*, *R. sapida*, *Sabal "Blackburniana"*, *S. causiarum*, *Serenoa repens*, *Trachycar-*

pus Martianus, *Trithrinax acanthocoma*, *Wallichia densiflora*, *W. disticha*.

Other specimens of *Chamaedorea* proved to be hardy. These are: *Chamaedorea costaricana* (*C. Biolleyi*), *C. elatior*, *C. elegans*, *C. graminifolia*, *C. Klotzschiana*, *C. Martiana*, *C. oblongata* (*C. corallina*), *C. Sartorii*, *C. Tepejilote*.



56. A general view of the Federal Experiment Station, Mayaguez, Puerto Rico. The palms to the right are *Roystonea borinquena*, a native royal palm; to the left are *Sabal texana* and *Elaeis guineensis*.

Palms at the Federal Experiment Station, Mayaguez

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The Federal Experiment Station is located at the western end of the island of Puerto Rico and on the northern outskirts of the city of Mayaguez. This station was established in 1901 by act of the U. S. Congress and is administered

through the Agricultural Research Service of the U. S. Department of Agriculture in Washington, D. C.

The principal functions of the station are research on crops of importance to continental agriculture, fundamental