

- FAEGRI, K. AND L. VAN DER PIJL. 1966. Principles of Pollination Ecology. Pergamon Press, Oxford. 248 pp.
- LEPESME, P. 1947. Les Insectes des Palmiers. Paul Lechevalier, Paris.
- OCHSE, J. J. AND R. C. BAKHUIZEN VAN DEN BRINK. 1931. Vegetables of the Dutch East Indies. Archipel Drukkerij, Bogor.
- PAIST, W. O. 1958. Cellulosics. Reinhold Publishing Corporation, New York.
- SCHMID, R. 1970. Notes on the reproductive biology of *Asterogyne martiana* (Palmae). Principes 14: 3-9, 39-49.
- TAN KIM SAN. 1953. Bercocok tanam buah-buahan salak. Pusat Djawatan Pertanian Rakjat, Djakarta.

*Principes*, 22(2), 1978, p. 63

## NOTES ON CULTURE

*Parajubaea cocoides* seeds have a reputation with at least a few growers of being rather slow and difficult to germinate. I recently had a very fast and successful germination of a number of these seeds. Freshly collected fruits from Quito, Ecuador, arrived still reeking of fumigant from the U.S.D.A. station. They were intact, with the fibrous fruit coat around the bony endocarps, and were quite dry and hard. I soaked them for about two days in a weak fungicide solution, after which the fibrous fruit coats softened and came away easily. I moistened some very loose, porous, commercial planting mix in a large plastic container and placed the endocarps with enclosed seeds on top of the soil, covering them with only a layer of loose moist sphagnum. When the sphagnum became completely dry, I watered lightly. The container was kept loosely covered in my garage, which maintains a temperature of about 60° F at night and 80° by day rather consistently. Within four weeks the seeds began germinating, and after six more weeks approximately 80% had sprouted.

I believe the good results came from having the endocarps exposed to fresh air while at the same time surrounded loosely by a slightly moist medium. They never became overly wet, and the day-night temperature variation may

also be important. Their native habitat is one of large day-night temperature differences.

That these conditions were conducive to good germination was proved by the fact that a number of *Parajubaea* fruits that I collected myself in Quito had never germinated under similar condition except that they were completely buried in soil for over eighteen months. I removed them to the above container with more air and they began germinating also. It is possible that, as with *Jubaeopsis caffra*, there is a growth inhibitor that is overcome in the presence of oxygen. This would certainly be of survival advantage to the seed. So long as the fruit coat remains intact, a condition approximated by the fruit being completely buried, the embryo remains dormant. With the arrival of a wet season, the fruit wall quickly decomposes, exposing the endocarp with its seed to air, and the seed can germinate.

*Parajubaea cocoides* is a beautiful tree and should be adaptable to most of coastal California as well as mild areas inland. But it has been extremely difficult to obtain plants. I hope the above information may help change that situation.

J. GARRIN FULLINGTON  
3017 May Road  
Richmond, CA 94803