



## Thesis Abstract

### **Morphometric Characterization of the UPLB Makapuno Coconut (*Cocos nucifera* L) Population and the Influence of Fruit Age and Endosperm Type on *In Vitro* Embryo Germination**

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Genetic diversity of embryo cultured makapuno coconut population growing at the University of the Philippines Los Baños was assessed using morphometric characters from March 2004 to October 2005. Shannon Weaver Diversity Index and  $\chi^2$  tests were used to analyze variation in both the qualitative and quantitative characters. Substantial variation with respect to crown shape, bole category, color of young fruit, petiole and inflorescence pigmentation, shape of stem base, fruit characteristics, and leaf structure was observed in the population of 52 palms. Yield of makapuno was estimated 88 %. Simultaneous occurrence of male and female phases in one palm allows self-pollination, which favors higher yield of makapuno. The principal component analysis revealed that fruit, nut and husk weight accounted for 99 % of the observed variation. Twelve morphological variables, selected on the basis of principal component analysis, grouped the population into 6 clusters. Fruit and nut weights were found to be important characters in all clusters. Common characters of palm belonging to cluster I are lower weights of fruit, nut and husk with shorter fruit equatorial diameter and shorter internodes. Palms belonging to cluster II have higher weight of nut and longer equatorial diameter. Palms of cluster III are characterized by cylindrical stem and lower number of green leaves. Cluster IV is characterized by heavy fruit and nut weight with elongated shape of nut. Higher number of green leaves is the common character of palms of cluster V. Girth, at bole regions and longer petiole length of leaves are the common characters of palms belonging to cluster VI.

Three types of makapuno endosperm i.e., A, B and C type were the three distinct developmental stages of makapuno endosperm at about 9<sup>th</sup>, 10<sup>th</sup>, and 11<sup>th</sup> month of fruit development. Fruit of 9<sup>th</sup> month was observed to be predominantly of the A type, 10<sup>th</sup> month of the B type and the 11<sup>th</sup> month of the C type. The endosperm types seemed to be the indicator of the developmental state of the embryo. Percent germination and subsequent *in vitro* seedling growth of embryos of different types of endosperm and age groups were not statistically different. The survival of seedlings obtained from A, B and C types of makapuno was 33 %. The embryos of 9, 10 or 11 months old nuts, having A, B and C type respectively, were virtually equally capable of *in vitro* germination.