

***Cycas micronesica* reproductive organ development in Guam** (Poster)

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Introduction

Cycas micronesica is the only native gymnosperm in the Mariana Islands. Seed tissue was an important part of the diet of the Chamoru people during and prior to WWII. We are continuing to study the issues related to exposure to various toxic metabolites that resulted from reliance on this plant for food. Issues related to plant ontogeny, phenology, and organ development have not been studied to date.

Objectives

To determine the rates of organ development for *C. micronesica* male cones, female sporophylls, and seeds in natural habitats in Guam.

Methods

We surveyed forest habitats during major synchronized reproductive events, and marked individual plants as new organs emerged from stem cataphylls. We visited these plants on 2-7 day intervals to determine male cone and female sporophyll size development. Seed size was measured on monthly intervals.

Results

Female sporophyll extension exhibited a linear growth phase that lasted about 30 days, followed by a rapid decline in extension rate until no more growth occurred thereafter. Ovules were 10-11 mm in diameter as sporophylls emerged, and did increase in diameter until week 7-8. Thereafter, a linear phase of growth occurred until week 25-35, depending on the plant. A lengthy flat phase lasting up to 48 weeks followed with no change in seed diameter. After seeds changed from bronze to a mature brown phenotype, seed diameter declined 3% to 6%. The increase in male cone diameter exhibited a smooth exponential curve with a linear phase during the first 30 days, followed by a slowing of growth rate until a flat phase was reached about day 40. The increase in male cone height was dissimilar to all other measured variables. A first phase was linear for about 30 days, then extension rate declined for 10-15 days, and 10-15 days followed with no increase in height. Cones were about 50% of ultimate height at this stage. Height of the cones doubled during the week following day 60, then pollen shed occurred.

Conclusion

Phenology and stage of organ development may strongly influence many aspects of plant physiology. Our clarification of the characteristics of reproductive organ development is crucial for a greater understanding of this historically important plant species.

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Selected References

None

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