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POLLEN TUBE GROWTH IN *Calotropis procera* IS CONTROLLED BY ENVIRONMENTAL CHANGES: DOES IT HAVE AN IMPACT ON DELAYED FERTILIZATION?

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ABSTRACT

In *C. procera*, as in many other Apocynaceae, the nectar from these flowers is secreted from the nectaries located inside the stigmatic chamber, with the excess flowing via the capillary system into special reservoirs (cucculi). The nectar has two functions: it is used as a reward to attract pollinating insects; and it serves as the germination medium for pollen grains. Under natural conditions the nectar concentration is subjected to a large variability, ranging from 22-68% sucrose.

In the present study we followed the process of pollen germination under various experimental sucrose concentrations simulating the nectar. We found that the optimal concentration of a sucrose medium for pollen germination is 20%. However, if the already-germinated pollen grains are subjected to high sucrose concentration for different periods of time (between one and three hours), elongation of the pollen tubes is inhibited. In all the experimental groups, the pollen tubes renewed their elongation following a reduction of the sucrose concentration to 20%.

This phenomenon of increased sucrose levels causes delayed fertilization, as already well known in animals (Blandau and Young 1939); and in the plant it enables it to postpone fertilization until conditions improve and thus to thrive under the extremely high temperatures and fluctuations in relative humidity that characterize its habitat.