REPRODUCTIVE BIOLOGY OF *PAULOWNIA ELONGATA*, A MULTIPURPOSE TREE

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Paulownia genus is a group of fast growing trees that grow well in the southern United States. *Paulownia* (Paulowniaceae) is a genus of deciduous hardwood trees from China used for agroforestry, biomass production, land reclamation, and animal waste remediation. *Paulownia* (*Paulownia tomentosa*), or kiri, was introduced into the US during the 1800s. It quickly became naturalized over much of the eastern states. Except for its ornamental qualities, it was generally ignored as a non-native weed tree. However, since Japanese buyers have begun to buy US grown logs, *Paulownia* is now considered a premier timber species. Forestlands, an important source of cellulosic biofuels feedstock, are expected to play an important role in meeting the national biofuel target. Plants are improved continuously by using molecular or classical breeding tools and in both cases it is important to have a clear understanding of reproductive biology. Light, Fluorescent, and Scanning Electron Micrography was conducted to study pollination and subsequent steps. Variable Pressure Scanning Electron Microscopy (VP SEM: Hitachi 3400 NII) was conducted at Agricultural Research Station, Fort Valley State University. This work represents *Paulownia* floral and reproductive parts in various magnifications. Current research deals with the structure of male and female reproductive parts, pollen germination and subsequent pollen tube growth through style using fluorescent aniline blue and SEM methods. We also present freeze fracturing technique to show internal structures of reproductive parts. Results indicate a pore at the wide spindle shaped stigmatic tip followed by hollow style. Stigmatic pore opens into a cavity with internal surface lined with elongated cells that are secretory in nature. Pollen grains parachute through stigmatic pore filling up the cavity and crowding stigmatic tip. Pollen grains germinate readily and hundreds of pollen tubes with callose plugs can be visualized in the style region. Ovary contains numerous ovules attached to the placenta. Pollen tubes can be seen in the close vicinity of ovules to commence fertilization.

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