

Diversity in Seed Morphology and Anatomy in Selected Genera of the Lythraceae

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Lythraceae are a globally distributed family within the tropics and sub-tropics. They are found in a range of habitats, including woodland and aquatic. Plants in the Lythraceae generally have numerous small seeds; however, some seeds can reach 35 mm. Seeds can be quite diverse in their external morphology such as size and color within a family; however they can share a general structure at the microscopic level. Though, even within the general seed coat structure of Lythraceae, variety exists. The seed coat consists of an outer integument called the testa, and an inner integument called the tegmen. The terminology follows from Corner (1976). Lythraceae seeds are known to contain a well-developed, multi-layered testa. Structures particular to some Lythraceae genera are epidermal hairs that evert after immersion in water. This study used light microscopy and scanning electron microscopy to observe and describe seed characters in selected genera of Lythraceae. Before the seeds were embedded in paraffin, photographs of whole seeds were taken for size measurements. Seed then were soaked overnight in 4% ethylenediamine to soften the tissue. The seeds were dehydrated using a t-butyl alcohol series. Paraffin blocks of embedded seeds were sectioned using at rotary microtome set at 10 μ m. Sections were mounted on slides and stained with toluidine blue. Additional seeds were broken or hand sectioned with a razor blade for viewing with SEM. Several characters observed are important components of seed dispersal. The variety of characters indicates diverse dispersal mechanisms. A few genera of Lythraceae are winged; selected here are *Galpinia*, *Lagerstroemia*, and *Lafoensia*. These wings, which contain light, thin-walled cells, imply wind dispersal. Dispersal in the aquatic habitat of *Ammannia* is aided by thin-walled aerenchymatous float cells. Many genera have trichomes which evert upon wetting of the seed. Some of these, most notably *Cuphea*, are known to be mucilaginous. Mucilage production upon wetting is most commonly thought of as a way of fixing seeds to the soil. The presence of such variety has allowed for Lythraceae to disperse in a world-wide distribution. By observing and describing seed characters of several genera, the diversity across the family Lythraceae becomes clearer. The diversity in seed characters supports a variety in dispersal mechanisms used in a range of habitats. The diversity of characters that enhance dispersal has allowed Lythraceae to occupy habitats across the globe.