Abstract
The goal of this study was to determine the symptoms and microscopic damage caused by fluoride on Spondias dulcis, a fluoride-sensitive species. The plants were exposed to simulated fog with fluoride (0, 5, 10, 15 and 20 mg L−1) for 20 min daily during four consecutive days. Samples from leaflets without any apparent fluoride injury were collected to microscopic analysis. The percentage of necrosed leaf area was measured, and the level of pollutant in the dry matter from the basal and apical portions of the plant was determined. The necroses began 24 h after the first simulation mainly from the base of the leaflets. A higher level of necrosis was observed at the apical portion of the plants, a region of higher fluoride accumulation. The damage on the surface of the leaflets was characterized as plasmolysis, erosion of the epicuticular waxes and epidermal rupture. Structurally, the noticeable accumulation of granules and droplets green stained by toluidine blue in the spongy parenchima and the boundaries of ending veinlets was observed. The limb thickness reduction occurred due to plasmolysis in the mesophyll, showing an apparent correlation with the damage observed on the surface. The parameters observed in the laboratory are promising for field biomonitoring studies.

Keywords
Leaf anatomy, bioindicator, necrosis, pollution, symptomatology.