

Seasonal Flooding and Its Impact on Growth and Latex Yield of Rubber (*Hevea brasiliensis*) in Kalutara District, Wet Zone of Sri Lanka

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Rubber plantations extend over large areas in the Wet Zone, where unprecedented annual rainfall often causes seasonal flooding. The rubber plantations in low-lying areas and at riparian sites are therefore more prone to damage and growth retard due to frequent floods. This study investigated the impact of seasonal flooding on immature and mature plantations in Kalutara District in 2024 - 2025. Field experiments were conducted in a 2-year-old immature and a 13-year-old monoclonal mature fields, alongside a survey in smallholder fields in an affected area. In the immature fields, growth parameters including stem girth, leaf count, stomatal conductance and chlorophyll content were periodically recorded. In mature fields, latex yield, bark thickness, bark consumption, and tapping panel dryness were assessed under fully, partially, and non-flooded field conditions. Random sampling and a RCBD design were applied for immature and mature field experiments, respectively. ANOVA and chi-square/t-tests used for SAS analysis. Flood-affected immature plants showed significant ($p < 0.05$) reductions in girth, leaf number, and chlorophyll, with growth decreasing by 25%. In mature trees, latex yield, bark thickness, and bark consumption were significantly reduced under fully and partially flooded conditions compared to non-flooded controls. Survey results further indicated interactions of flood severity and duration with plantation proximity to water bodies. Overall results demonstrate that seasonal flooding imposes severe constraints on both growth and latex yield of rubber, highlighting the need for adaptive land-use planning, careful site selection, and effective flood-mitigation strategies for sustainable cultivation.

Keywords: Flood, Growth, *Hevea*, Rainfall, Yield

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