D 168

Effect of light seedling growth and survival of nine late - successional tree species growth across topographic positions within Sinharaja rain forest

Light, and moisture availability are key factors, determining seedling establishment in tropical rain forests. Growth and survival of tropical forest tree seedlings are dependent on the total daily photosynthetic photon flux density in the canopy gap and forest understory. The radiation regime in the canopy gap is strongly dependent on the size, location and aspect of the canopy gap.

In this study we have investigated the influence of light for seedling growth and survival of nine late-successional tree species planted in the canopy gap and forest understory on different topographic positions; valley, mid-slope and ridge-top. At the end of every six months height and mortality were recorded and total daily photosynthetic photon flux density was recorded on full sunny days.

The largest amount of photosynthetic photon flux density (PPFD) 29.9 mol/m^2 /day was recorded in the ridgetop and the lowest PPED 2.3mol/m^2/day was recorded in the centre of valley site. The respective PPED of full sun were 75% and 32.6%. The PPFD received by the centre of midslope site was 18.9 mol/ m^2/ day and it was 48% of PPFE of the full sun.
After three years, survival and growth performance of seedlings planted in gap and understory plots in the valley, midslope and ridgetop sites were compared. Results

showed that clear differences in survival and growth of seedlings among sites. Growth and survival of seedlings were greater on the gap site than all understories in all locations and Shorea disticha exhibit high growth performance than other species on each topographic position in each site. Survival of these in the understory decline progressively from valley to ridgetop and Seedlings of *Mesua Ferrea* had a higher survival than other species in the canopy opening and understory conditions of the topographic position. These differences are related to the available amount of daily total photosynthetic photon flux density and soil moisture.