

Effect of different types of mulching on soil properties and tree growth of *Magnolia champaca* planted at the Montane Rainforest in Cameron Highlands, Pahang, Malaysia

ABSTRACT

Tropical Montane Cloud Forest (TMCF) is among the most vulnerable habitats to fragmentation, deforestation, and global climate change. A successful restoration program requires a comprehensive understanding of variables influencing seedling efficiency. This study was conducted on Sg. Terla Forest Reserve Cameron Highlands, Pahang, Malaysia. In this study, we used a randomized complete block design (RCBD) and measured the *Magnolia champaca* height, root collar diameter, diameter at breast height, plant survival, root diameter, main root length, lateral root length, root coiling, root direction, and chlorophyll content. The soil samples were taken to study the effect of different mulching materials on soil characteristics. We also measured soil compaction, soil texture, soil colour, soil moisture content, soil organic carbon, total nitrogen, total sulphur, available phosphorus, and exchanged potassium. This study indicates that mulching had no significant effect on plant height, diameter breast height, root collar diameter, and chlorophyll content between treatments. Although mulching had a significant effect on root diameter, main root length, and root distributions among treatments while for lateral root length and root:shoot ratio did not show a significant effect among treatments. However, oil palm mulching treatment had a greater effect on plant height, root collar diameter, and diameter at breast height growth, among treatments. Mulching significantly affected soil pH, soil moisture content, total sulphur, and potassium exchange. In contrast, mulching did not significantly affect soil organic carbon, total soil nitrogen, and soil available phosphorus between treatments.