

Investigation on Durable Plant Materials as Alternative Sources of Mulch in Tea New Clearings in the Upcountry Intermediate Zone

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Mulching as a cultural technique is an eco-friendly practice to manage weeds. Hence, a field experiment was conducted to investigate the potential use of different plant materials as mulches in a tea new clearing at Ury estate, Passara, from September to December 2019. Tertiary branches of *Acacia mangium* (Acacia), *Cassia spectabilis* (Kahakona), *Grevillea robusta* (Sabukku) with leaves, and *Megathyrsus maximus* (Guinea grass) were used as treatments and *Cymbopogon confertiflorus* (Mana grass) was used as the 'Control'. Each mulch was spread on randomly selected tea plots each sized 14.4 m² at a rate of 1 kg dry matter m⁻² and replicated three times. The rate of decomposition of each material was assessed in terms of ground exposure percentage and weight reduction in litter bags filled with each mulch material at fortnight intervals. Weed density and weed dry weight were measured at 2 and 4 weeks intervals, respectively. Plant growth parameters were measured before and after 12 weeks mulching. Soil moisture and soil carbon content were measured. A bioassay was also conducted for any allelopathic effect of mulch materials. Half-life (time taken for 50% ground exposure) as 8.1, 9.2, 10.0, 10.3, 12.0 weeks was recorded for Kahakona, Acacia, Guinea grass, Mana grass, and Sabukku respectively. Whilst, the same was recorded as 100%, 98%, 88%, 68%, and 50% respectively 12 weeks after mulching. The weight of Sabukku mulch was significantly higher ($p < 0.05$) than other materials. Weed density and weed dry weight were significantly lower with Sabukku. Tea growth was not significantly affected by any treatment. Guinea grass and Sabukku were found to be increased the soil carbon level while high moisture content was recorded underneath the mulch of Mana and Sabukku. Sabukku was found to be more durable and could effectively suppress weed growth. Guinea grass and Mana grass showed some comparable performances. Sabukku and Guinea grass can be used as alternatives mulches for Mana grass

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