Investigating the Potential of Using Non-Conventional Materials as Mulches in Tea New Clearings in the Uva Region

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The unavailability of herbicides to manage weeds in tea has been lead to contemplate on cultural weed management strategies. Hence, a field experiment was conducted to investigate the potential of using non-conventional materials as mulches in a tea new clearing at Demodera Tea Estate in Badulla during September to December 2018. Shoots of *Cassia spectabilis (Kahakona)*, *Acacia mangium*, *Megathyrsus maximus* (*Guinea* grass) and Silver/Black artificial mulch were used as treatments and *Mana* grass (*Cymbopogon confertiflorus)* was used as the Control. Each mulch was spread on randomly selected plots each sized 3 × 3.6 m at a rate of 1 kg dry matter m^{-2} and replicated quadruplicate. The rate of ground exposure as a percentage was visually assessed with the decomposition of each material weekly. Weed density (counts per 0.09 m^2) was measured at weekly intervals and the weed dry weight was measured at four weeks intervals. A bioassay was also carried out to study any allelopathic effect of mulches on the suppression of weeds. Tea plant height and diameter were also measured before and 8 weeks after mulching (WAM). Half-life (time taken for the 50% ground exposure) of 8.8, 11.5, 10, 12 weeks was recorded for *C. spectabilis*, *A. mangium*, *M. maximus* and *C. confertiflorus*, respectively. Ground exposure in artificial mulch was remained as zero and weed density was also zero even at 12 WAM. Weed density and weed dry weight were significantly lower in *C. spectabilis* and *C. confertiflorus* treatments and there was also weed growth suppression due to their allelopathic effect. Tea growth was not significantly affected by any treatment. Artificial mulch was found to be more durable and effective than plant based mulches. Although *C. spectabilis* mulch was less durable, the weed occurrence with it was relatively lower than that of other plant mulches.

Keywords: Ground exposure, Mulching materials, Tea, Weed density