INVESTIGATION ON DURABLE PLANT MATERIALS AS SOURCES OF MULCH IN TEA NEW-CLEARINGS IN THE UPCOUNTRY INTERMEDIATE ZONE

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ABSTRACT

With the restrictions imposed for the use of chemical herbicides in tea emphasis is to be given to cultural and ecological weed management strategies. Ground coverage with use of dead plant materials is an eco-friendly practice to manage weeds. Currently two grass species have been recommended for mulching tea field However, mulching is practiced at a minimum level due to scarcity of materials and high cost. Hence, a field experiment was conducted to investigate the potential of using plant materials as alternative mulches in a tea new clearing at Ury estate, Passara, of the Balangoda plantations PLC, during September to December 2019. Tertiary branches of *Acacia mangium* (Acacia), *Cassia spectabilis* (Kahakona), *Megathyrsus maximus* (Guinea grass) and *Grevillea robusta* (Sabukku) were used as treatments and *Cymbopogon confertiflorus* (Mana grass) was used as the 'Control'. Each mulch was spread on randomly selected plots each sized 14.4m^2 at a rate of 1 kg dry matter m^{-2} and replicated three times. The rate of ground exposure occurred in concurrence of mulch break down was visually assessed every other week. Weed density (counts ft^{-2}) was measured at fortnight interval and weed dry weight was measured at four weeks interval. A bioassay was also carried out to study any allelopathic effect of same mulches on the suppression of weeds. Tea plant growth was also measured. Soil moisture, soil pH and soil P and Soil C content were measured. Half-life (time taken for the 50% ground exposure) as 8.1, 9.2, 10, 12, 10.3 weeks was reported for *C. spectabilis*, *A. mangium*, *M. maximus*, *G. robusta*, and *C. confertiflorus* respectively. The weight of a bagged mulch material of *C. spectabilis* and *A. mangium* was significantly lower than the other treatments while the highest weight of bagged mulch was reported with *G. robusta.* Weed density and weed dry weight were also significantly lower with *G. robusta. C. spectabilis and C. confertiflorus* showed some allopathic potential to suppress weed growth. *Megathyrsus maximus shows* some improvement in soil C and P. Tea growth was not significantly affected by any treatment. The highest soil moisture content and soil pH was recorded for *C. confertiflorus*. *G. robusta* was found to be more durable hence, weeds were effectively controlled compared to other mulches. *Grevillea robusta* and *Megathyrsus maximus* can be used as alternative mulching materials.

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