Evaluating the Seed Germinability and Growth Performances of Nursery Plants of Alternative Shade Tree Species in Tea Plantations

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Tea is a shade loving plant. Hence, shade trees are necessary to provide shade for tea as well as to add green biomass to soil by regular lopping. There are two species of shade tree species such as *Grevillea robusta, Derris mycrophylla* and *Albizzia moluccana* which cultivate as high shade trees in the Uva region and *Dadap (Tithonia diversifolia)* is cultivated as low shade species. Hence, there was a scarcity of shade tree species in tea plantations, but there is a very high demand for alternative shade tree species in all tea growing regions particularly to face to the sudden drought conditions. An experiment was conducted to study the germination and growth performances of three potential tree species such as *Derris mycrophylla, Cassia spectabilis* and *Techoma stance* to provide shade for tea in comparison with recommended shade tree species such as *Albizzia moluccana* and *Grevillea robusta.* Tetrazolium test was used to test the viability of seeds. Germination of seeds was tested after subjecting seeds to different pre-treatments such as pre-soaking in water at ambient temperature, hot water treatment, chemical treatment (98%, H_2SO_4) and mechanical damaging. The highest viability percentage was shown by *Cassia spectabilis* followed by *Derris mycrophylla* and *Albizia mollucana.* But, *Techoma stance* seeds did not show any viability. The highest germination percentage was recorded with *Cassia* seeds pre-treated with mechanical damaging of seed coat. Whereas, *Albizia mollucana* and showed the highest germination rate with hot water treatment followed by mechanical damaging. Mean growth rate was also the highest with *Cassia spectabilis* followed by *Derris mycrophylla* and *Derris mycrophylla.* Leaf number per plant was more or less same in all species. Growth rate of *Techoma stance* was relatively lower than that of *Grevillea robusta,* but the leaf number per plant is other way round. *Cassia spectabilis* had the highest viability percentage, highest growth rate compared with other alternative species such as *Techoma stance* and *Derris mycrophylla* as far as pretreatment for the germination and growth rate are concerned *Cassia spectabilis* was the best.

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