

**EVALUATING THE GERMINABILITY OF SEEDS  
AND GROWTH PERFORMANCES OF NURSERY  
PLANTS OF ALTERNATIVE SHADE TREE  
SPECIES IN TEA PLANTATION**

A dissertation submitted to the  
Faculty of Animal Science and Export Agriculture  
Uva Wellassa University  
In partial fulfillment of the requirements for the award of  
The Degree of Bachelor of Science in Tea Technology and Value Addition

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**2015**

## ABSTRACT

An experiment was conducted to find out the most suitable alternative tree species for the Uva region under nursery conditions. Seeds of tree species such as *Derris mycrophylla*, *Cassia spectabilis*, *Techoma stance* and recommended shade tree species such as *Albizzia moluccana*, *Grevillea robusta* were used to evaluate the viability percentage and germination percentage after exposing to different pre-treatments. Growth parameters such as seedling height and leaf count at the nursery stage were evaluated after raising the nursery with seeds of *Derris mycrophylla*, *Cassia spectabilis*, and *Albizzia moluccana*; and with small seedlings of *Techoma stance* and *Grevillea robusta*. The seeds of shade and alternative trees were collected from various places and seedlings were collected from nearby field. The viability percentage was measured using Tetrazolium test. Pre-treatments methods used were soaking seeds in water at ambient temperature, hot water treatment, chemical treatment (98%, H<sub>2</sub>SO<sub>4</sub>) and mechanical damaging treatment.

The present studies showed that *Cassia spectabilis* had the highest viability percentage of 92% while *Albizzia moluccana* and *Derris mycrophylla* had only 87% and 85% viability. *Techoma stance* seeds did not show any viability. Germination percentage was also the highest in *Cassia* (98%) with mechanical damaging of seed coat. While *Albizzia* seeds treated with hot water and mechanical damaging resulted in 80% and 64% germination, respectively. However, *Derris mycrophylla* seeds recorded only 55% and 60% germination with mechanical damaging and hot water treatments, respectively. *Cassia spectabilis* recorded the highest seedling height followed by *Albizzia moluccana* and *Derris mycrophylla* and *Grevillea robusta* seedling height was higher than that of *Techoma stance*. Whilst, the fastest growth rate in *Albizzia moluccana* was followed by *Cassia spectabilis* and *Derris mycrophylla* and growth rate of *Grevillea robusta* seedlings was faster than *Techoma stance*. Leaf count was the highest with *Derris mycrophylla* compared with *Cassia spectabilis* and *Albizzia moluccana* and leaf count of *Techoma stance* was higher than that of *Grevillea robusta*. Highest root depth was recorded with *Cassia spectabilis* followed by *Derris mycrophylla* and *Albizzia moluccana*. Root depth of *Techoma stance* was higher than that of *Grevillea robusta*. Hence, *Cassia spectabilis* was found to be most suitable among alternative tree species. *Derris* and *Techoma* are also found to be suitable as far as the nursery growth phase is concerned.

**Key words:** Pre-treatments, Viability, Germination, Shade Trees, Tetrazolium test.