

## AQUEOUS LEAF-EXTRACTS OF *Artemisia vulgaris* L. AS A POTENTIAL BOTANICAL HERBICIDE IN TEA PLANTATIONS

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Absence of effective herbicides with least threats on herbicidal residues in made tea warranted alternatives. The potential use of aqueous leaf extracts of *Artemisia vulgaris* (*Marikolundu*) to control weeds has been reported with no proper validation of its efficacy. The present study aimed to evaluate aqueous leaf extracts of *A. vulgaris* at 50, 100, 150, 300 g L<sup>-1</sup> doses with synthetic chemicals; Glyphosate, Glufosinate ammonium, Oxyfluorfen, Diuron, Triasulfuron, MCPA, and natural extracts; Pelargonic acid, Eucalyptol and Pine oil with untreated control. A series of bio efficacy trials were performed with *Erigeron sumatrensis* (*Alavangu pillu*) and *Panicum repens* (Couch grass) in glasshouse conditions and in pruned tea fields. Histological studies on weed roots were done to validate the mode of action of the tested herbicides. Non-target effect of *A. vulgaris* on tea plants was also performed *in vivo*. Data were analysed using R statistical software. All treatments showed mortality of *E. sumatrensis* in the field except untreated control. Tray culture studies revealed 100% mortality of *E. sumatrensis* with Eucalyptol at 08 days and Triasulfuron and MCPA in 24 days after application. *Artemisia* 150 g L<sup>-1</sup> treatment showed mortality in 16 days after application. Eucalyptol had significantly greater bioefficacy against *E. sumatrensis*. Knockdown effect of *A. vulgaris* 150 g L<sup>-1</sup> treatment on *P. repens* was similar to that of Glyphosate. However, re-emergence of grasses was observed at 60 days after the application of *Artemisia*, while Glyphosate did not record any re-emergence. The systemic mode of action of *Artemisia* was proved through root histology changes, necrotic/dicoloured cells and wilting of tea shoots. Aqueous leaf extracts of *A. vulgaris* have shown progressive herbicidal effects for consideration as alternatives to chemical weedicides in tea. Further, experimentation is proposed to evaluate the non-target effect on beneficial organisms, formulations to increase the efficacy and method of application.

**Keywords:** Bio efficacy, Mortality, Mode of action, Re-emergence, Weeds