

## Effect of secondary metabolites of selected fungal pathogens on *Parthenium hysterophorous* L.

**Ovini<sup>1</sup>, I.R., \*Pakeerathan<sup>1</sup>, K., Pushpanji<sup>2</sup>, K. and Mikunthan<sup>1</sup>, G.**

<sup>1</sup>Department of Agricultural Biology, Faculty of Agriculture, University of Jaffna, Sri Lanka

<sup>2</sup>Agriculture Research and Development Centre, Seetha Eliya, , Sri Lanka

\*Corresponding E-mail: [pakeerathank@univ.jfn.ac.lk](mailto:pakeerathank@univ.jfn.ac.lk)

Weeds are one of the major biotic threats in agriculture. Synthetic herbicides are widely used to control weeds, however, their over usage raised many controversial issues on human health and ecosystem. study was aimed to explore the possibility to develop a bioherbicide using cultural filtrates of selected fungi namely, *Phytophthora infestans*, *Fusarium solani* and *Botrytis cinerea*.

The pure cultures of *P. infestans*, *F. solani* and *B. cinerea* were obtained and liquidized cultures were filtered. *Parthenium* seeds were collected, dried at 45 °C for 2 hours in an oven to break the dormancy. Twenty surface sterilized seeds were placed on pre-sterilized Petri dish lined with a double layer of sterilized filter papers, and moistened with 2.5 mL of original fungal metabolites. Glyphosate and double distilled water was used as standard and control, respectively. Each treatment was repeated four times.

The experimental setup was arranged in CRD in a growth chamber at 25 °C with 12 hours light and 12 hours dark period, on a daily basis, for two weeks. Data on seed germination and growth were recorded one week and two weeks after the application of treatments. ANOVA was performed and mean separation was done using DMRT using SAS software version 9.4.

Fungal culture filtrates mixture hampers the *Parthenium* germination by 95 % and 50 % after one and two weeks of application, respectively, in comparison to control ( $p \leq 0.01$ ). This was highly significant in comparison to other all the treatments. *Botrytis cinerea* culture filtrates reduced the *Parthenium* seed germination up to 83 % and 45 % after one and two weeks from the application; fresh weight gain (90 %), shoot length about 64 %, root length about 69 % and the fresh weight about 54% even after two weeks from the application while standard herbicide Glyphosate hindered the germination of *Parthinium* seeds only up to 69 % after one week from the application but was not significant (5 %) after two weeks of application. Further screening on other weeds is necessary to confirm the results. Bio-herbicial properties identified in this study could be useful to eco-friendly control weeds in future.

**Key words :** Weeds, *Fusarium solani*, *Botrytis cinerea*, Culture filtrate, Bio-herbicide