Allelopathic Effect of Foliar Extracts of Leucaena leucocephala on Germination and Growth Behavior of Zea mays L.

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Abstract : Allelopathy is a potential area of research for sustainable agriculture. It is environmentally safe, can conserve the available resources, and also may mitigate the problems raised by synthetic chemicals. The allelo-chemicals are secondary metabolites produced by plants, which are the byproducts of the primary metabolic process. These allelo-chemicals may be stimulatory, inhibitory, or may have no effect on the growth of the other plants. It has been observed in the present study that foliar extracts of Leucaena leucocephala showed an inhibitory effect on the germination of the test crop maize. The results revealed that at different concentrations of Leucaena leucocephala foliar extract, caused a significant inhibition in germination and growth behavior of Zea mays L. seedlings. Minimum germination and growth occurred in 100 % concentration, and an increase in extract concentrations result in a decrease in the germination. Bioassay also depicted that this inhibitory effect was proportional to the concentration of the extract as the higher concentration having a lesser stimulatory effect or vice versa. The phytochemical analysis of the secondary metabolites from foliar extracts of Leucaena leucocephala L. showed the presence of tannins, saponins, phenols, alkaloids, and flavanoids. Among various extracts, the presence of methanol extract was found in a significant amount of phytochemicals, followed by the aqueous and ethanol extracts. Leaves showed a significantly higher amount of the allelochemicals.

Keywords : allelopathic effect, germination /growth behavior , foliar extracts, Leucaena leucceophala , Zea mays L.

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