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Allelopathic effects of *Prosopis juliflora* (Sw.) Dc. on selected crops and native plants

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Allelopathic effects of exotic plant species in natural and agricultural ecosystems have received increasing attention because of their negative impacts on native plant growth and reduction of crops yields. It was hypothesized that leaf extracts of *P. juliflora* have allelochemicals that could inhibit seed germination and seedling growth of the selected plants. The objective of the study was to investigate the allelopathic effects of the *Prosopis juliflora* leaves on seed germination and seedling growth of selected crops (*Eleusine coracana, Vigna radiata*) and native plants (*Manilkara hexandra, Calophyllum inophyllum*). The stock extract (100 gL^{-1}) was prepared from *P. juliflora* leaves collected from Bundala National Park after five days of digestion in deionized water. The stock solution was used to prepare dilution series for applications (10.0 gL^{-1}, 25.0 gL^{-1}, 50.0 gL^{-1}, and 75.0 gL^{-1}). The above concentrations of *P. juliflora* leaf extracts were separately tested for percentage seed germination, shoot lengths, root lengths, and seedling growth of the selected plant species with distilled water as the control. Seed germination percentages, root lengths, and shoot lengths results of the test species were analyzed using One-way ANOVA followed by Tukey's test at p=005. The findings indicate that with the increasing concentration of *P. juliflora* leaf extracts, seed germination and seedling growth of *E. coracana, V. radiata* were significantly reduced. The negative effects were more visible in *E. coracana* than *V. radiata*. The lowest germination percentage of *E. coracana* (0.0 %) was observed when seeds were treated with 100 gL^{-1} and 75 gL^{-1} and *C. inophyllum* seeds were also not germinated in those concentrations. *Manilkara hexandra* seeds were not germinated in all concentrations of *P. juliflora* leaf extracts. Allelopathy was concentration-dependent and with increasing concentration of *P. juliflora* leaf extract, seed germination and seedling growth of *C. inophyllum* significantly reduced (One-way Anova, p=0.05). Hence it showed that *Prosopis juliflora* aqueous leaf extracts have an allelopathic effects on the seed germination and seedling growth of the selected crops and the native plants. Therefore, allelopathic effects of the aqueous leaf extracts *P. juliflora* need to consider in forest management and agriculture.

Keywords: *Prosopis juliflora*, Allelopathy, Seed germination, Seedling growth