

Qatar University Life Science Symposium 2016: Biodiversity, Sustainability and Climate Change, with Perspectives from Qatar

Allelopathic effects of the invasive *Prosopis juliflora* (sw.) Dc. On seed germination of selected Qatari native plant species

Shazia Bibi, Mohammed H. Abu-Dieyeh*

Department of Biological and Environmental Sciences, College of Arts and Sciences, Qatar University, State of Qatar, Doha

*Email: dandelion@qu.edu.qa

ABSTRACT

P. juliflora is highly recognized for its invasive character and its detrimental effects on different plant species due to the presence of allelochemicals across the world. The purpose of this study is to assess the allelopathic effects of crude water extracts of *P. juliflora* on selected Qatari flora. In order to achieve the goals, aqueous extract of *P. juliflora* was made by immersing 100 g/l of powdered parts of plant in warm distilled water (~50°C) for 24 hours with regular mixing. Whatman filter paper was used to filter the obtained brownish solution. Dilutions of 2 mgml⁻¹, 4 mgml⁻¹, 6 mgml⁻¹ and 8 mgml⁻¹ from stock were prepared. The seeds were surface sterilized prior to treatment. The results obtained showed that germination of test species *Acacia tortilis*, *Prosopis cineraria*, *Sueda aegyptica*, *Halopeplis perfoliata*, and *Prosopis juliflora* was affected by aqueous extract at different treatment level. About 10% of significant reduction was exerted on seed germination of *Prosopis cineraria* at higher concentrations of 6 mgml⁻¹ and 8 mgml⁻¹ while the seed radical length was significantly reduced starting at lowest concentration (2 mgml⁻¹) and with greater reduction at higher concentrations. The seed germination and seed radical length of *Sueda aegyptica* were significantly decreased with increased concentration of crude water extract of *P. juliflora*. The effect of extract was tested on seedlings collected by treating them with different irrigation regimes for one month. The seedlings were grown in pots. The pots were lined up randomly in greenhouse and were allowed to grow under greenhouse environment. *Aeluropus lagopoides*, *Caroxylon imbricatum* and *Tetraena qatarensis* seedlings growth characters were all affected when subjected to the extract. The seedling growth and dry biomass of *Caroxylon imbricatum* were significantly declined at higher concentration of 8 mgml⁻¹. However, the seedling growth and dry biomass of *Tetraena qatarensis* were significantly reduced at all treatment levels. Autotoxic effects of *P. juliflora* were also exerted on the germination potential of *P. juliflora* at higher concentrations of 6 mgml⁻¹ and 8 mgml⁻¹. *P. juliflora* is invasive and has detrimental effects on the Qatari native flora. Based on the research carried out, it is important to protect the Qatari native plants from this invasive species. A use of higher concentrations to test the effects on germination potential of seeds might provide crystal clear knowledge regarding this topic.

<http://dx.doi.org/10.5339/qproc.2016.qulss.20>

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