Indian Journal of Tropical Biodiversity
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ALLELOPATHIC EFFECT OF LEAF LEACHATE OF MELIA COMPOSITA WILLD. ON THE GROWTH OF WHEAT CROP

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ABSTRACT: The present study was conducted at seed technology laboratory of Forest Research institute, Dehradun for understanding the inhibitory effect of leaf leachetes of *Melia composita* on growth and germination of wheat crop under the laboratory conditions. For the study we have prepared the leaf leachate of five different concentrations namely 10%, 20%, 30%, 40%, 50% and 100%. From the data it has been observed that there is not significant effect of different concentration levels of leaf leachates of *Melia composita* on germination percentage, root length and shoot length of wheat crop. It can grow as the combination of wheat and *Melia composita* in agroforestry system.

Key Words: *Concentrations, Leaf leachate, Melia composita, Seed etc.*

Citation: Sharma V, Kumar D, Singh C, Rai N, Shekhaer C (2018) Allelopathic effect of leaf leachate of *melia composita* willd. on the growth of wheat crop. Indian J of Trop Biodiv 26(2) 156-158

Received on : 25 Nov. 2018
Accepted on : 30 Nov. 2018
Published on : 31 Dec. 2018

Melia composita Willd. belongs to family Meliaceae. *M. composita* bears clean cylindrical bole of usually 15-20 ft in height and sometimes up to 40 ft with big branches. The species originated from southern Asia (India-Pakistan-Iran). It has been widely distributed and cultivated in South Africa, Middle East, America (Bermuda, Brazil and Argentina), Australia, SE Asia-Pacific islands, and southern Europe. Its mainly found in the dryer eastern part of the Indonesia. The tree requires deep red gravelly soil, high light intensity, rainfall of about 800-1000 mm and an elevation of 800-1000 meters. Seedlings can tolerate frost but in case of severe frost seedling leads to died. Wide range of important activities were reported for *M.composita* (Vijayan et al.,2004; Nagalakshmi et al.,2003; Koul et al., 2000), chemical constituents and incriminated properties.(Han et al.,1991; Sharma et al.,2000; Khare, Sahag et al., 2003). The farmers was encouraged to plant a *Melia dubia* with different agricultural crops in large scale just because of its industrial and ecological importance (Parthiban et al., 2009; Nuthan et al., 2009).

Many plants have Contain Chemicals with inhibitory activity are present in many organs, including leaves, flowers, roots, bark, fruits and buds (Inderjit, 1996; Ashrafi et al., 2007). In some of the woody species used in agroforestry models shows allelopathic effects on under storey crops have been reported (Gupta et al., 2007; Narwal et al., 2011; Gunarathne and Perera, 2016). Allelopathy defined as an adverse influence or interference of one plant or microorganism on another and involves the addition of a chemical compound, which adversely affects other neighboring plants (Rice, 1984; Putnam, 1985). Compounds are released into the environment through different way like leaching, litter decomposition, root exudation or direct volatilization, and could affect (either positively or negatively) germination and growth of other species (Gross and Parthier, 1994; Seligler, 1996). Present study carried out for understanding the inhibitory effect of leaf leachetes of *Melia composita* on growth and germination of wheat crop under the laboratory conditions.

MATERIALS AND METHODS

The leaves of *Melia composita* were collected during the month of April, 2016. The sampled leaves of the plants were dried and soaked in distilled water in the ratio of 1:5 (w:v) and kept in refrigerator at 8 °C for 48 hours. The leachates were filtered with muslin cloth and Whatman No. 1 filter paper. They were raised to original volume by adding distilled water and were treated as leachates of 100% concentration. Leachates of graded concentration of 10, 20, 30, 40, 50, and 100% were prepared by diluting the mother leachates. These leachates were transferred in capped bottles and kept in refrigerator at 7- 8 °C (Richardson and Williamson, 1988) and applied finally for tests.

In agro-forestry systems following characters (Germination %, Root length and shoot length) of suitable agriculture crops may be compared between the experimental plots i.e agriculture crop with *Melia composita* and controlled plots i.e agricultural plot without *Melia composita*.(Shalpa et al. 2011)