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Allelopathic effects of *Lantana camara* L. on *in vitro* seed germination of *Phaseolus mungo*

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SUMMARY

Lantana camara L. (Verbenaceae) is a noxious weed causing serious threat to the bio-diversity. As per global invasive species data base (GISD 2007) the weed is one among the 100 worst invaders of the world. It was introduced as an ornamental plant in 19th century. An experiment was conducted to understand the effects of aqueous extracts of *L. camara* on *Phaseolus mungo*. The aqueous extract showed inhibitory effect on seed germination, shoot and root elongation. This inhibitory effect may be due to the presence of volatile and non-volatile components present in the aqueous extract. Earlier studies have indicated inhibitory effect of *L. camara* on variety of crops *viz. Brassica juncea, Zea mays* and *Mimosa pudica*.

Key words : *Lantana camara* L. *Phaseolus mungo*, Volatile and non-volatile components, Inhibitory effect

Lantana camara L. is a serious weed in 47 countries owing to its wide adaptability to different environmental conditions and habitats. In natural areas the shrub has serious deleterious effects on some endemic animal and plant species and is known to displace natural scrub communities as well as prevent natural regeneration of some tree species (Sharma *et al*., 1998) This weed exhibits allelopathy. Allelopathy can be regarded as a component of biological control in which plants are used to reduce the vigour and development of other plants. Allelopathy refers to the direct or indirect chemical effects of one plant on the germination, growth, or development of neighboring plants. This can be through the release of allelochemicals while the plant is growing or from plant residues as it rots down. These chemicals can be released from germinating seed, in exudates from plant roots, from leachates in the aerial part of the plant and in volatile emissions from the growing plant. Both crops and weeds are capable of producing these allelochemicals. They may interfere with essential physiological processes of the receiver plant, like inhibition of cell division and elongation (Jankay and Muller, 1976 and Ahmed *et al.*, 2007), effect of stomatal opening (Arntzen *et al.* , 1973), effect of soil activity (Blum and Shafer, 1998) and physiochemical activities (Maiti *et al*., 2008). Allelopathy in general has been considered as the suppressive effect on the growth of some plants through chemicals released from other plants. It is one of the important factors affecting the plant growth in agrihorticultural situations. All plants releases certain chemicals called allelochemicals which either inhibit or stimulate the growth ofneighboring plants. These chemicals can be found in any part of the plant but leaves are the major sources. They can also be found in soil rhizosphere. Similar results have been reported by Shaukat and Siddiqui (2002) in *Mungbean*, Zhang Maoxin *et al.* (2005) in *Eicchornia crassipes* (Mert), Ahmed *et al.*(2007) in some crops and Maiti *et al.*(2008) in *Mimosa pudica*, Their concentration vary with age, season, plant part etc. Allelochemicals selectively inhibit the growth of soil microorganism or other plants. Allelochemicals from plants may be released from living leaves as volatile or leachates or from roots through exudation or sloughing off of dead tissues. They also may be leached from leaf litter or the leaf surface. These allelochemicals can be beneficial or detrimental. The beneficial allelopathic effect of any weed or crop on another weed can be exploited to prepare eco-friendly, cheap and effective green herbicides. Similarly the negative allelopathic effects of many weeds or crops on another crop can be utilized to develop growth-promoting substances(Oudhia and Tripathi,1999). Therefore, in the present study an attempt was made to study the effect of *Lantana camara* on *Phaseolus mungo*.

MATERIALS AND METHODS

To study the effect of *Lantana camara* on crop biodiversity, *Phaseolus mungo* was selected as test crop.

The powder of sun dried root, stem and leaves was used to prepare the aqueous extracts. For each plant part dried powder was taken in required amount of DDW for 24 hours. The extracts were filtered through Whatman's filter paper no. 1. A concentration series of 1%,3%and

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