

Allelopathic effect of crude extract of *Parthenium hysterophorus* L. on seed germination of *Capsicum annuum* L. (Chilli)

S M Jayasumana and S M W Ranwala*

Department of Plant Sciences, University of Colombo, P O 1490, Colombo 03

Allelopathic substances are secondary metabolites of plants, which escape into the environment and influence the germination and growth of other plants. *Parthenium* allelochemicals are reported to effect in a similar manner.

The objectives of this study were to determine the effect of *Parthenium* allelochemicals obtained from different parts of the plant on final germination percentage and mean germination time (MGT) of Chilli and to identify the effective strengths of the extract.

Parthenium plant parts were separated into leaves, inflorescence, stems and roots. Crude extracts were separately prepared from dried plant parts. These were diluted using distilled water to obtain 1:5 w/v, 1:20 v/v and 1:50 v/v solutions. A crude Chilli leaf extract and its dilutions were also prepared. These solutions were used to test the effect on seed germination of Chilli using three procedures with distilled water as the control.

In procedure I, 500 Chilli seeds were soaked for 24 h in each dilution of *Parthenium* extract obtained from different plant parts and placed on petri plates lined with filter paper. The petri plates were kept moist with relevant dilution of *Parthenium* until the end of experiment. In procedure II, the seeds were soaked in dilutions containing extract of *Parthenium* leaves. Distilled water was used to moisten the filter paper after placing seeds on Petri plates. In procedure III, dilutions of Chilli leaf extraction were used instead of *Parthenium* extracts. The number of seeds germinated was counted every other day until the germination ceased.

When Chilli seeds were soaked and grown with *Parthenium* extracts, seed germination was significantly decreased especially at higher concentrations from all three plant parts. *Parthenium* leaf extract had the most adverse effect on Chilli seed germination. Seeds took a longer time to germinate. This may be due to high concentrations of *Parthenium* allelochemicals that are toxic to Chilli seeds and the toxicity was further aggravated by the use of extracts to grow seeds. When Chilli seeds were soaked with *Parthenium* extract and grown in distilled water (procedure II) the Mean Germination Time was reduced compared to the control.

This study showed that a short term exposure to high concentration of *Parthenium* allelochemicals significantly accelerate germination of Chilli seeds.

* ranwala@pts.cmb.ac.lk