

Allelopathic effects of litter *Axonopus compressus* against two weedy species and its persistence in soil.

Abstract

This study investigated the allelopathic effect of *Axonopus compressus* litter on *Asystasia gangetica* and *Pennisetum polystachion*. In experiment 1 the bioassays with 0, 10, 30, and 50 g L⁻¹ of aqueous *A. compressus* litter leachate were conducted. Experiment 2 was carried out by incorporating 0, 10, 20, 30, 40, and 50 g L⁻¹ of *A. compressus* litter leachate into soil. In experiment 3, the fate of *A. compressus* litter leachate phenolics in the soil was investigated. *A. compressus* leachates did not affect the germination percentage of *A. gangetica* and *P. polystachion*, but delayed germination of *A. gangetica* seeds and decreased seed germination time of *P. polystachion*. *A. compressus* litter leachates affected weeds hypocotyl length. Hypocotyl length reductions of 18 and 31% were observed at the highest concentration (50 g L⁻¹) compared to the control in *A. gangetica* and *P. polystachion*, respectively. When concentration of *A. compressus* litter leachate-amended soil increased *A. gangetica* and *P. polystachion* seedling shoot length, root length, seedling weight and chlorophyll concentration were not affected. The 5-week decomposition study of *A. compressus* showed that the phenolic compounds in *A. compressus* litter abruptly decreased about 52% after two weeks and remained steady until the end of the incubation.

Keyword: Allelopathy; Poaceae; Soil; Weed Control; *Asystasia gangetica*; *Pennisetum polystachion*.