

Allelopathic effects of *Casuarina equisetifolia* L. on seed germination of some crop plants and their associated weeds

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ABSTRACT

Casuarina equisetifolia L. is a widespread tree that has been known for its allelopathic potential causing biological inhibition on plant seed germination. Leaf extract of *Casuarina equisetifolia* L. was evaluated for its allelopathic influence on various plant crops. Laboratory and field experiments were conducted to study its allelopathic effects on seed germination and seedling growth. Various concentrations of leaf extract (0, 1.25%, 2.5 and 5%) were prepared and used while in the greenhouse experiment, leaf powder was mixed with soil at concentrations of (0, 15, 30 and 45 g/kg soil). Results revealed that leaf aqueous extract of *Casuarina equisetifolia* L affected significantly seed germination of all selected plant crops under laboratory condition. Highest inhibition was observed with 5% concentration compared to control that was treated with distilled water. In addition, it was that leaf extract of *Casuarina* had maximum inhibitory effect on roots growth compared to shoots of the studied seedling. Greenhouse experiment demonstrated that *C. equisetifolia* exhibited significant allelopathic activity on wheat germination but did not affect plant growth characteristics based on all treatments. However, *Casuarina* leaf extracts showed positive effect on Mustard germination and plant growth. The inhibitory substances present in *Casuarina equisetifolia* L leaves could be used as a potential environmental friendly herbicide. However, allelopathy is a complex process where further studies should be done in order to understand types of chemical molecules, mode of action of the Allelochemicals on physiology and biochemical process of weeds and crop plants. Attention and effort should be made more in allelopathy now a days because of environmental protection issues as well as the need of organic food so allelopathy will have great value in sustainable agriculture in future.

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