Allelopathic Effects of Some Vegetable Crops on Selected Common weed Species in Jordan

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Abstract

Allelopathic activities of some widely cultivated vegetable crops grown in Jordan namely; bean, cabbage, cauliflower, eggplant , pepper, potato, radish and tomato were investigated against six common weeds included *Amaranthus retroflexus*, *Chenopodium murale*, *Eruca sativa*, *Malva sylvestris*, *Portulaca oleracea* and *Solanum nigrum* under laboratory and glasshouse conditions. Shoot extracts, foliage leachates and volatile materials emanated from extracts of different crops significantly reduced seed germination and seedlings growth of different weed species in Petri-dishes. Effects of extracts was concentration-dependent and roots were more inhibited than shoots. The effects of dried shoot residues in potted soil was varied on different weeds. Certain residues were highly toxic and significantly reduced germination and growth of certain weeds others had stimulatory effects. Soil-incorporated dried residues of cabbage, cauliflower and bean were most toxic, while *A. retroflexus*, *C. murale* and *P. oleracea* were most sensitive to allelopathic effects of the tested crops. Decayed residues of tomato, cabbage, bean and eggplant in the soil were most toxic to the tested weed species. While soil-applied extracts significantly reduced germination and growth of certain weeds, foliage application of these extracts gave inconsistent results on weeds growth. Root exudates of many crops tested severely reduced dry weight of most weed species with radish, cauliflower and bean exudates were most toxic to *A. retroflexus*, *C. murale* and *S. nigrum*. Foliage leachates of Cauliflower and Pepper were highly toxic. Among weeds, *M. syvestris* was the most tolerant weed to allelopathic effects of the tested crop species.

Keywords: Vegetable crops, weeds, extracts, foliage leachates, volatiles, root exudates, crop residues

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