The Allelopathic Effects of Ailanthus altissima on Nuisance Species

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Ailanthus altissima (tree of heaven) presents an ecological problem due to its ability to out-compete native species. This project attempted to determine the presence of allelopathic chemicals in the leaves and/or roots of this plan for potential use as an herbicide. Such an herbicide might be expected to inhibit neighboring plant growth before and/or after germination. To test for the presence of such an herbicide, an aqueous leaf extract was applied to five different plants: Portulaca oleracea, Taraxacum officinale, Trifolium repens, Cnicus benedictus, and Asclepias curassavica, both before and after germination. A control group, treated with water, was also used for comparison. In addition, two of the above test species were exposed to ground Ailanthus altissima roots. Plant growth was recorded after fourteen days of experimentation. The control group produced an average of nine pods with plant growth. The plants that had the leaf extract applied before germination produced an average of seven pods with plant growth. When the extract was applied after germination, the average number of pods with plant growth was approximately eight. The groups tested with ground roots showed an average of three pods of plant growth. The leaf extract was effective in some groups, but overall results were inconclusive. The groups treated with ground roots showed more potential as the source of an allelopathic chemical and need further testing in order to determine efficacy as an herbicide.

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