

HAOCHEN BAI, The Linsly School, Wheeling, WV, 26003. Evaluation of allelopathic effects of suspensions of black walnut (*Juglans nigra*), Japanese knotweed (*Fallopia japonica*), and slender speedwell (*Veronica filiformis*) on seedlings of five species of garden plants (carrot, dandelion, lettuce, collard green and kale).

Plants use different strategies to compete with each other including the allelopathic effect, which helps one plant gain advantage over others by chemically inhibiting their growth. While allelopathic effects of Black Walnut are well-known, the purpose of this study is to also evaluate possible allelopathic effects of two common invasive species, Japanese knotweed and slender speedwell. To determine whether their foliage has allelopathic effects, filtered homogenates of dried leaves of black walnut, Japanese knotweed and slender speedwell were prepared and used as the water source in germination experiments. Seeds of five common garden plants (carrot, dandelion, lettuce, collard green, and kale) were placed in standard germination chambers (layers of paper towels in plastic petri dishes) and measured for germination rate and shoot and root elongation at regular intervals. Black walnut homogenate significantly reduced shoot and root growth (t-tests) of all five species of garden seeds. Japanese knotweed and slender speedwell homogenates did not show a negative effect on any of the garden seeds. In fact, these homogenates significantly enhanced shoot growth (t-tests) when compared to the distilled water control. Thus, the experiment supports the hypothesis that Japanese knotweed and slender speedwell foliage do not contain allelopathic chemicals that inhibit growth of other plant's seedlings. It is uncertain if the homogenates provided growth-enhancing nutrients not available in the distilled water. The experiment confirms previously published research that determined the allelopathic effects of black walnut extracts. Recent research shows juglone, the growth-inhibiting compound involved, inhibits RNA polymerase II and genetic transcription.