

ALLELOPATHIC EFFECTS OF SERICEA LESPEDEZA ON PRAIRIE SPECIES

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Abstract Sericea lespedeza (*Lespedeza cuneata*) is an aggressive invasive plant, considered a “noxious weed” in some states. Sericea lespedeza may also be allelopathic. To examine possible allelopathy of lespedeza, selected seeds (*Sorghastrum nutans*, *Rudbeckia hirta*, *Monarda citriodora*, and *Cassia fasciculata*) were tested for germination and growth when grown with sericea lespedeza leaf extract. To test germination, seeds were exposed to lespedeza leaf extract or to deionized water. Growth experiments involved a factorial design with two soils (soil in which lespedeza had grown, soil with no lespedeza) and two extract treatments (extract, no extract). Germination was analyzed using t-tests and growth was analyzed using a two-way ANOVA using soil and extract as main effects. Extract treatment slowed, but did not inhibit, *Sorghastrum* germination. The extract treatment also significantly decreased *Sorghastrum* root growth. Both root and shoot growth of *Monarda* were also reduced in the presence of the extract. For plant growth tests, only *Sorghastrum* and *Monarda* showed significant effects. *Sorghastrum* showed a significant interaction of soil by extract on root biomass, and a marginally significant effect on shoot biomass. *Sorghastrum* had uniformly low biomass in lespedeza soil regardless of extract treatment, whereas *Sorghastrum* from lespedeza-free soil had higher biomass for the no-extract group, and biomass comparable to that of the plants grown in the lespedeza soil for the extract group. In *Monarda*, the extract reduced root and shoot biomass. These results suggest that chemicals present in sericea lespedeza litter depress the growth of *Sorghastrum nutans* and *Monarda citriodora*, and may also exert a similar effect upon other prairie species. .