The introduction of non-native species can have a profoundly detrimental effect on native ecosystems composition. This is being seen in the tallgrass prairies of Kansas as a result of the introduction of Lespedeza cuneata (sericea). This plant is able to form dense monocultures that greatly reduce native species cover where it invades. One proposed explanation for this invasive success is that sericea produces allelopathic chemicals that suppress native species. We tested this hypothesis in a greenhouse experiment in which a native plant, Sorghastrum nutans (Indian grass), was grown with sericea and alone. Three different treatments were factored among the pots. Field soil with a history of either sericea or native plants was collected. This was done to determine if sericea alters the soil through microorganisms or through an accumulation of chemicals. In half of the pots, this soil was autoclaved to eliminate microorganisms. Microorganisms affect the nutrient acquisition and disease in plants, so an alteration in that community could affect growth. Additionally, an extract was made from mature sericea, and applied to half of the treatments. The extract may contain an allelopathic chemical, and if present, may alter biomass of native plants. After twelve weeks plants were collected, dried and biomass recorded. Preliminary analysis indicates that the soil history and microorganisms have an effect on Indian grass. This suggests that sericea may be able to change the soil microbial communities over time, leading to long-term negative effects on the native plants of Kansas.