

Application of tetrazolium chloride for determining viability of *L. cuneata* seed

Carson Harris

*Fairmount College of Liberal Arts & Sciences
Applied Sciences Poster Presentation*

Abstract: *Lespedeza cuneata* is an introduced species to tall-grass prairies of the Midwest region that classifies as invasive due to the harmful effects it creates to native prairies. When a plant invades a habitat it reduces the abundance and diversity of native plants and can create a detrimental impact on ecosystems. Invasive species such as *L. cuneata* rely on soil seed banks in which hundreds of seeds can remain viable for years. Increased knowledge of seed persistence in soil seed banks will improve the awareness of potential spread. The aim of this research was to determine a quick and effective germination technique to a specific seed (*L. cuneata*). The Tetrazolium test (TZ) delivers the viability of the *cuneata* seeds by displaying quick estimates of seeds' germinability through the process of dehydrogenase catalysis. The colorless triphenyl tetrazolium chloride solution turns into a red dye, formazan. Living tissues of seeds that absorb tetrazolium chloride will be stained red, while dead tissues will retain their natural color. In order to use TZ assay, the seeds of both the chasmogamous (CH) and cleistogamous (CL) variants of *L. cuneata* must be scarified, stained, and then incubated. Experimentation on CH and CL seeds shed new light on key differences between the two in regard to viability and opened the door for more testing. The results yielded both viable and nonviable seeds for each variant, CL at 28 viable and 7 abnormal; CH at 10 viable, 26 abnormal seeds. This indicates that TZ is the appropriate method for determining germination rates and can pave the way for invasive research and appropriate monitoring programs for eradication means.

Faculty Mentor: *Gregory Houseman*