

WIU CENTENNIAL HONORS COLLEGE
Thomas E. Helm Undergraduate Research Day 2023

Abstract

Poster

Major: Agriculture

Faculty Mentor(s): Winthrop Phippen

Indigo (*Indigo suffruticosa*) Germination to Improve Commercial Viability

Charlie Weishaar

Guatemalan Indigo (*Indigo suffruticosa*) is being grown as a regenerative rotational crop that is used to produce natural plant-based dyes rather than the harmful synthetics seen within the current fashion and textile industries today. Knowledge of Indigo germination rates will benefit the quality and improve crop yields and enable large scale field plantings.

This study was initiated to increase seed germination protocols and rates among Guatemalan Indigo and to find a commercially viable way to do so while fighting against disease pressures. Multiple lab studies were conducted on (*Indigo suffruticosa*) variety H022-TF01 with five different treatment exposures. The five treatments consisted of methods ranging from mechanical scarification (blender protocol, sander), sterilization, dry heat, freezing, soaking, and boiling water. We tested four replicates at various time rates and temperatures for each treatment.

The dry heat method at 80°C for 30 minutes resulted in the highest average germination rates of 83%. Trials showed that the dry heat method was the only treatment that resulted in higher germination rates compared to no treatment with an average of 64% germination. Dry heat at 90°C through all time intervals (30 minutes, 1 hour, and 2 hours) showed no results higher than 34% germination. Methods of mechanical scarification (blender protocol, sander), sterilization, freezing, soaking, and boiling water resulted in average germination rates less than no treatment.

Testing germination rates of Indigo will allow for a commercially viable protocol to be created. This should allow producers to direct seed indigo rather than costly transplant production.