

**Centennial Honors College  
Thomas E. Helm Undergraduate Research Day 2024**

**ABSTRACT**

Major: Agriculture

Poster

Faculty Mentor(s): Winthrop Phippen

---

**Evaluation of Indigo (*Indigofera suffruticosa* Mill.) Lines for Biomass and Seed Production**

**Caleb Mahr**

---

Guatemalan Indigo (*Indigofera suffruticosa* Mill.) has tremendous potential as an environmentally friendly crop producing a natural blue dye from the indican found in the leaves. Indigo is an environmentally friendly alternative to the current synthetic process which utilizes toxic chemicals to create a blue pigment. Indigo plants have exhibited additional benefits to human and soil health by fixing atmospheric nitrogen and carbon while suppressing parasitic nematodes. While there are many benefits to growing indigo for indican, indigo has seen diminished commercial production since its discovery due to cheaper synthetic sources.

This study was initiated to identify indigo varieties for increased leaf biomass and seed production, in addition to uniformity for commercial cultivation. Agronomic traits were assessed to aid future breeding programs and discover trait correlations in commercial, breeding, and landrace lines. Data was collected for the number of branches, plant height, plant width, stem thickness, stem weight, total seed weight, thousand seed weight, and leaf biomass.

Significant positive correlations were observed between leaf biomass and several other agronomic traits. While the breeding and commercial lines produced the most leaf biomass, a promising landrace line (LR085) was identified as possible candidate for future breeding programs. Identifying promising new lines furthers efforts towards natural, sustainable dye production.