**NutraMaize Phase II STTR REU Year 1 Request**

**NutraMaize Phase II STTR REU Projects**

**Benefits to Students (Planning on 2) Recruited:**
- Exposure to small business, technology transfer, SBIR/STTR program, and maize breeding for commercialization.

**REU Project 1: Sets of orange corn breeding and genetic lines will be evaluated for carotenoid levels and color in several ways.**
- Carotenoid and color composition will be measured.
- A series of analyses that may involve several types of analytical equipment will be conducted. This would include visual color score, colorimetric analysis, RGB, and High-Performance Liquid Chromatography (HPLC).
- Perform these phenotypic characterizations on common and unique sets of breeding and genetic lines.
- Perform correlation analysis of the output from the different pieces of equipment and visual score using excel and JMP.
- Perform single factor analysis of variance to search for QTL controlling the traits measured using Excel and JMP.

**Why perform these analyses?**
- These will be useful in facilitating and expediting our breeding for darker orange color and higher total carotenoids.

**REU Project 2: Sets of orange corn breeding and genetic lines will be evaluated for kernel composition in several ways.**
- Characterize texture and kernel hardness by kernel dissection to quantify hard vs soft endosperm using ImageJ software.
- Quantify amylose and amylopectin, total starch, zein protein composition in maize kernels by wet Chemistry.
- Characterize pasting properties of corn flour from different breeding lines using a Rapid Visco-Analyzer for elucidating multiple quality indicators.

**Why perform these analyses?**
- These will help us to identify orange corn breeding lines that are desirable/favorable to produce grits and tortillas.

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