Engineering Leadership and Development Project Baobab Processing Machine

Overview
Currently the baobab processing machine version 2 is not running continuously. In turn, the motor overheats causing the pulp and seeds to jam inside heart. This will result in a loss of powder from heart, resulting in product and money lost.

Objectives
To control the in-feed of baobab with a food processing auger, to prevent jamming and ensure the fruit is separated and processed efficiently. The machined auger needs to be small, transportable, safe, and easy to use.

Approach
- Customer needs and requirements were assessed from direct contact through email with the CO-OP in Benin Africa as well through our sponsor
- Concept generation and selection was done by using an existing auger from the Food Science department and talks with other food processing professors
- Conducted a review search for relevant patents, existing products and processes
- Meetings were setup weekly with the sponsor to gather data for the project and to keep them updated
- Multiple prototypes were created with a result in two to choose from for the final design
- CAD models were created for both prototypes which allowed an easier construction process
- Testing was done on the auger to ensure it would help control the in feed and output in to the heart
- Validation was done by weighing post processed baobab after timed experimental runs
- We performed several variations of experiments holding one of the 2 parameters, RPM and auger exposure area constant, while varying the other until an optimum combination was determined.

Outcomes
Finally, the outcomes for this project show that the needs of the sponsor were meet
- With an initial budget of $1,000 the construction of the auger was approximately $500.00 which includes time, materials, and labor
- As a result of the project the sponsor will save $600.00/machine by avoiding jamming and destruction of the V4 heart with the auger design
- The auger will reduced set up, and assembly time being that it is a simple machine and light weight
- The auger will be implemented in future designs as well as sent to Benin Africa to be used on the constructed V4 models to alleviate jamming in the heart