Background and Problem Statement
- The Purdue Utility Program has introduced a multi-grain thresher that will allow the people to have an affordable means of mechanized threshing.
- The team has been encouraged to come up with ideas to better the multi-grain thresher design overall.
- Currently the thresher makes use of a screen in order to separate the grain from materials other than grain (MOG).
- The current design with the positioned feed chute forces materials across top of cylinder.
- The frame on the thresher is not well suited for uneven terrain.
- Inadequate shielding for protection for drive belts.

Impact on Society and Sustainability
- The thresher will allow the people of Cameroon an affordable means for mechanized threshing.
- The thresher will allow small farmers to have less labor dealing with manually threshing grains.
- As the name suggests, the thresher will be able to be used in many different grain crops.
- Many of the materials on this thresher are able in Cameroon and can be reproduced once in Cameroon.
- Allow more sustenance farmers to become productive.

Project Goals
- Improve features of the multi-grain thresher.
- Come up with an adjustable sieve to eliminate different screens.
- Relocate feed chute to opposite side of cylinder cover.
- Widen base frame for thresher for added stability.
- Improve shielding for better protection against moving parts of thresher.

Alternative Solutions
Due to the constraints that were given, having to fit a possible sieve mechanism into the existing thresher, the problem arises of how to be able to adjust the sieve for different types of grain.

Option 1: Use of Graduated Sieve Settings.
- Uses a gradual click-like setting that advanced or retracted with a handle to adjust sieves.

Option 2: Limit Adjustment for two Settings.
- Uses a lever that would be moved into one of two positions for either corn or soybeans.

Option 3: Variable Adjustment Sieve “Selected”
- Uses the existing sieve adjustments with the incorporation of a 3/8” bolt to adjust the sieves to any setting, fully open to closed.

Cost Analysis
- With the major donation of the John Deere sieve from a local farmer, the project relied upon the other materials for the improvements.
- With the list of the metals and hardware that was used, the improvements were able to be made for well under $300.

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Final Design
- The sieve was cut down from a John Deere combine and fit the thresher, with easy adjustment.

Feed Chute Positioning
- The feed chute was moved to the opposite side of the cylinder cover to use the cylinder to help feed the material.

Widened Base Frame
- The Base frame was widened out to 36” in order to help with the stability of the thresher.

Improved Shielding
- Heavier shielding made out of 1/8” expanded metal protecting the operators from belts and pulleys.