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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.



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.



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 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.



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

Item	Unit	Quantity	\$/Unit	
Black Paint	Pint	5	\$ 4.99	\$ 24.95
Yellow Paint	Pint	2	\$ 3.99	\$ 7.98
Nuts and Bolts	lb	1	\$ 4.00	\$ 4.00
Angle Iron	ft	16	\$ 1.00	\$ 16.00
3/8" Rebar	ft	7	\$ 0.40	\$ 2.80
1/8" Sheet Metal	Sq. Ft.	32	\$ 3.72	\$ 118.91
20 Ga. Sheet Metal	Sq. Ft.	32	\$ 1.29	\$ 41.18
1/8" Expanded Metal	Sq. Ft.	24	\$ 1.13	\$ 27.09
John Deere sieves	-	-	Donated	-
Total				\$242.91

Final Design

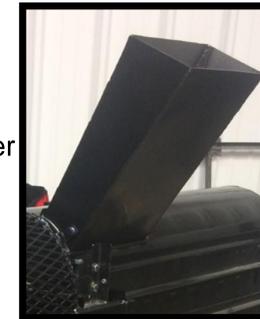
Sieve Design

- The sieve was cut down from a John Deere combine made to 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

