**About Us**

W.E. Do Good (World Entrepreneurs Do Good) is a collaboration between business and engineering students from SDSU whose goal is to solve the economic and social problems of the global poor.

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**Background**

- 70% of Ethiopia relies on small-scale agriculture
- One of the most abundant grains harvested is teff
- Poverly-stricken Ethiopian villages have no electricity and can’t afford proper tools for harvesting
- Teff harvesting is time consuming and inefficient
- Harvesting requires entire village including children who are pulled from school.
- Current method is unsanitary involving dirt, sand, and cow dung.

**Project Description**

The vision of W.E. Do Good is to create a low-cost, high impact Teff thresher. The project will use the previous version and improve upon it. The newly designed thresher will be more affordable for small farmers in Ethiopia. It will be human powered, requiring no fuel or electricity and will simultaneously remove teff from the stock and filter out large debris. It will also be portable and easy to use under a variety of field conditions. The design must be capable of being locally manufactured and repaired with off-the-shelf components. The end result will help reduce poverty and increase self sustainability by increasing teff yields and reducing harvesting time.

**Project Goals**

- Use an alternative power source to eliminate the use of a bike
- Redesign the thresher to increase the amount of teff pulled from the plant
- Change the design of the sieve to increase efficiency and decrease loss
- Add a chain tensioner to reduce slack and to easily adjust gear ratios
- Add wheels and a handle to the teff thresher for easy transportation
- Redesign each component to be more accessible to change or fix if necessary

**Prototype Testing Goals**

**Teff Throughput**

- Complete Threshing: 12.15 g/kg
- Original: 10.25 g/kg
- Our Prototype: 13.50 g/kg

**Threshing Efficiency**

- Complete Threshing: 57%
- Original: 65%
- Our Prototype: 85%

**Power Input**

- Complete Threshing: 0 W
- Original: 4 W
- Our Prototype: 3 W

**Drive System**

- Treadle eliminates the need for a bicycle
- Wide step allows for two users to pedal and feed
- Reduced to single chain
- 3:1 gear ratio increases thresher to 200 rpms
- Sprocket mounts offer quick interchangeability

**Thresher**

- Six bars increased to eight bars
- L-shape improves grain separation
- Alternating screws comb through middle of teff stock
- Angled rasps bars even contact and minimizes destruction of teff stock
- Thinner material saves weight and reduces costs

**Sieve**

- Fine vinyl mesh improves filtration and reduces costs
- Coarse metal mesh protects vinyl
- Nylon Rollers on bumpy surface reduces friction while increasing agitation
- Notched arm allows quick removal of tray

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![Mechanical Teff Thresher Development](image-url)