

TRANSFORMING ORGANIC MATERIAL IN THE HIGHLANDS OF SOUTHERN PERU



THE ANDEAN ALLIANCE FOR SUSTAINABLE DEVELOPMENT

Clinical Advisor: Brittany Nelson-Cheeseman

Sponsors: Aaron Ebner and Kat Gordon



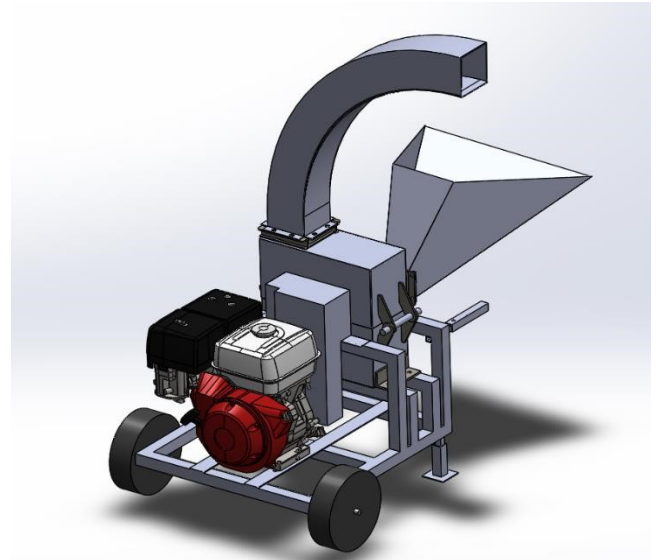
Hunter Hill (left), Timothy Clifford, Michael Miller, Rachel Lee (right)

Project Summary:

Due to significant reduction in the number of livestock being raised within the Sacred Valley of Peru, a shortage of organic fertilizer for produce farmers has emerged. Recently, chipped maize and quinoa stalks have been introduced as a substitute, as opposed to purchasing costly fertilizer. Current methods to cut the stalk are either too time consuming or expensive. To allow organic farmers to benefit from this resource, we will construct a machine that is more accessible, safe, and lightweight than current chipping methods within the Sacred Valley.

Design Goal:

To design, test, and build a machine that provides Peruvian farmers the option to re-use their corn and quinoa stalks for fertilization, as well as compost and animal feed. This machine will be implemented on a demonstration farm owned by AASD, to demonstrate to the community a more economic and sustainable farming method available in the Sacred Valley of Peru.



Design Constraints:

- Selected design shall utilize materials and manufacturing processes accessible in the Sacred Valley of Peru.
- Device shall be powered by a Honda Gx390 motor currently owned by highland farming community members.
- Device shall chop organic material into 1 +/- 0.25" chips.
- Machine weight shall not exceed the carrying capacity of two men (~150 lbs).
- Final machine dimensions shall not exceed 6 ft by 4 ft for ease of transportation via flatbed truck
- Chipper output chute shall deliver chips to a height between 50 inches and 70 inches off the ground into the back of a flatbed truck
- Machine shall be coated in an oil-based finish to protect the machine from debris, temperature fluctuation, and precipitation.