**Introduction**

Much of Africa’s natural forest resources are being harvested at alarming and unsustainable rates. This deforestation is largely due to the high demand for wood and charcoal to meet the continual energy requirements of many developing countries.

Biofuel briquettes made from agricultural by-products have shown promise as an alternative fuel source. They have not been implemented throughout developing countries due largely in part to the limited effectiveness of biofuel briquettes compared to wood and charcoal, and also in part due to difficulties in starting up cottage industries.

This project focuses on the development and testing of improved briquetting recipes and processes so that they may be more easily implemented by entrepreneurs in developing countries.

**Client**

We are working with Matt Walsh with Open Door Development (ODD), based in Mahadaga, Burkina Faso. We will soon be delivering the results of our research and designs so that they may begin production and sale in Burkina Faso.

**Results**

We’ve identified four by-products that can be used as ingredients that are readily available to ODD and can be obtained easily throughout Burkina Faso. These ingredients are peanut hulls, rice hulls, sawdust, and jatropha press cakes. We have tested combinations of the first three, but have not obtained jatropha press cakes. We plan to use sunflower seed press cakes as an alternative, believing that it will have similar properties.

We have had mixed success with pressing certain ingredients, especially rice hulls, but have found that fermenting the rice hulls for a week prior to pressing allows them to break down and press together better.

- We have performed various qualitative tests on our briquettes to obtain a better understanding of the process.
- We performed burn testing by heating a pot of water atop three rocks that reflect the heat back in.
- This has shown us that with the right recipes and conditions, briquettes can be easily burned to produce heat.
- We have yet to perform precise, extensive testing to compare recipes, but we are confident that we can find viable results.

**Press Designs**

Up until this point, we’ve been using our prototype press with a hydraulic press to create small numbers of briquettes at a time. This lets us perform rudimentary testing on the briquettes for qualitative research.

We’ve recently completed designs for a new press that can produce many more briquettes in much less time. We’re sending this design to Open Door Development to be built and tested.

By our calculations, this press will be able to press briquettes at approximately 3000 psi, which is within our range of required pressure.

**Conclusions**

Biofuel briquettes have been shown to be a promising solution to the problem of deforestation in many developing countries. If the practice can be refined and made practical enough for cottage industries then it has the potential to spread quickly across countless countries in Africa. Each member of Better Briquettes is committed to making this idea a reality and pursuing the improvement of biofuel briquetting practices.

**Further Information**

This project is not the only one working on the biofuel briquette solution. Those interested in learning more about biofuel briquettes should feel free to search online for how they are already in use in certain areas around the world.

For more information about our project within the Collaboratory, please contact Rodney Green at rgreen@messiah.edu or Dr. Vader at dvader@messiah.edu

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