Seed Pressing and Biodiesel Production in Burkina Faso: The Burkina Faso Team: a subset of the Energy Group's Biodiesel Project

Meagan Miller
SEED PRESSING AND BIODIESEL PRODUCTION IN BURKINA FASO

The Burkina Faso Team: a subset of the Energy Group’s Biodiesel Project

Meagan Miller
The Biodiesel Project

- **Objective:** Create and maintain a process for sustainable energy that is not only ecologically effective, but also economical and practical

- **Methods:** Seed Pressing
  Biodiesel Production

- **Client:** Matt Walsh, SIM

Mahadaga, Burkina Faso
Application

- **What**: Oil extraction
- **How**: Jatropha seed pressing
- **Why**:
  - Jatropha oil $\rightarrow$ lamps and cooking stoves
  - Biodiesel conversion $\rightarrow$ fuel oil for generators and vehicles
  - Production byproduct $\rightarrow$ soap production
Jatropha Oil Extraction
Seed Pressing
Seed Pressing
Press Cake
History

- Press & engine September 2012

- Planned a site team visit for January 2014

- Michael Hahn August 2013
Site Team Visit Goals

- Determine why the press is not running properly
  - Pressing Techniques?
  - Parts?
  - Seeds?

- Leave the press operational
  - Consistently pressing Jatropha seeds without jamming

- Assess production capabilities in Mahadaga
Research

- Press Parameters
  - RPM
  - Restriction size
  - Depth of screw
  - Ring order
  - Feed rate

- Seed Treatments
  - Hull content
  - Moisture content
  - Cooking
Proposed Solutions

- Designed two prototypes
- Planned a new ring order
- Ordered new parts
- Developed seed treatment plan
Site Team Visit Challenges

- New problem
- Conducted 30 tests
- Press jamming
- Little oil yield
- Tensioned engine
- Limited seed supply
- Tested cottonseed
Proposed Solutions

- Prototype rings
  - Seed treatment
    - Moisture
    - Pre-heating
    - De-hulling
- New parts
- New ring order
Findings & Accomplishments

- Operational press
- Correct ring order
- Optimal screw depth
Findings & Accomplishments

- Designed and produced new oil and press cake trays
Findings & Accomplishments

- A lot of experience pressing and unjamming the press
Findings & Accomplishments

- A vision for future work in Mahadaga
Future Work

- Methanol production
- Oil filtration
- Small press
- Hand press
- Cottonseed
- Seed moisture content
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Questions?