Improved Technologies for Processing Shea Butter: Research, Design, and Repercussions

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In partnership with Burn Design Lab, Burro, and the UD ETHOS Program
Background: Shea

- Shea fruit is referred to as “women’s gold” as women are primarily the “beneficiaries” of the shea industry.
- 16 million rural shea collectors and processors in Africa¹
- 10% of 600,000 tonnes collected annually gets processed into handcrafted shea butter¹
- Shea butter can be used in cosmetics (locally or globally) and used to cook

Going North

4 weeks in the north to better understand the shea butter process and answer unknowns
Primary Processing

Collect Fruit → De-pulp → Boil Nuts

Store Nuts ← Sort Nuts ← Dry Nuts

Secondary Processing

Sort Nuts → Wash Nuts → Dry Nuts → Crush Nuts → Roast Nuts

Cool and Package ← Boil to Purify ← Separate Butter ← Knead Paste ← Mill into Paste
Secondary Processing

Crushing and Milling can be done either by traditional methods or by machine.
<table>
<thead>
<tr>
<th>Step</th>
<th>Process</th>
<th>Traditional Time</th>
<th>Improved Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Crushing</td>
<td>~2.5 w-hrs</td>
<td>~0.5 w-hrs</td>
</tr>
<tr>
<td>5</td>
<td>Milling</td>
<td>~3.25 w-hrs</td>
<td>~0.5 w-hrs</td>
</tr>
<tr>
<td>6</td>
<td>Roasting</td>
<td>~1.75 w-hrs</td>
<td>?</td>
</tr>
<tr>
<td>7</td>
<td>Kneading</td>
<td>~2.25 w-hrs</td>
<td>?</td>
</tr>
</tbody>
</table>

Oftentimes, this new technology is bought by men who then charge women to use their machines.

* w-hrs = woman-hours

**Prior Work on Gendered Technology Impacts**

From case studies in Ethiopia, Ghana, and Tanzania concerning the adoption of agricultural technologies¹

<table>
<thead>
<tr>
<th>Right</th>
<th>Definition</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use</td>
<td>The right to use and physically operate the technology</td>
<td>Most likely to be upheld be both parties</td>
</tr>
<tr>
<td>Management</td>
<td>The right to make decisions how, when, and where to apply the technology</td>
<td>Typically controlled by men</td>
</tr>
<tr>
<td>Fructus</td>
<td>The right to control outputs and profits generated by the use of technology</td>
<td>Sometimes held by women below a monetary threshold, context/location specific</td>
</tr>
<tr>
<td>Alienation</td>
<td>The right to sell, lease, or give away the technology</td>
<td>Held predominantly by men</td>
</tr>
</tbody>
</table>

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Questions to Answer

- What are women currently using to roast?
- What are the “pain points” for roasting?
- What do women want in an improved roaster?
- What can they afford?

Improved Roaster Design

Pot and Paddle

Drum
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Improved Roaster Design

Burns
Smoke
Heat
Labor
Time
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Time

= ?
GHC
Observations Summary

- Identified target market as women in co-
- Technology should be developed for specific contexts in collaboration with the end users
- Balance between collaboration and exploitation
- Potential impacts of the technology should be thoroughly assessed
Acknowledgements

- The University of Dayton ETHOS Center for providing both funding and this amazing opportunity
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Questions?