ETHOS Conference 1-26
- 130-3pm - Cookstoves 101

- 1/2 world = cook w/ biofuel
  - causes 3x more death than HIV/AIDS
  - 4.3 mil/yr
- households = spend 30-50% income to pay

- Climate: clean cooking can save 1-3 tonnes CO_2/stove/yr.
  - 25% Black Carbon emissions
  - Faster acting C-cycle
  - More effective to remove this than CO_2

- WATER Boiling Test

- "Just because a stove works well in lab doesn't mean it'll perform in actual use.

- Kitchen Performance Test = Field test in real-world setting.

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- RBF = Result Based Financing

When testing: Fuel use
emissions
safety
Durability

* Research ISO process
  - Standard for clean cooking & solutions ISO-TC-285
- Tier 4 = Best, Tier 0 = Worse
  * Photo in phone.

- Consumer Preferences in regard to What the User Wants. - Photo in phone will attach.
  - "Market research informs consumer education needs
  - Teach about burner.
- When using a stove & monitoring, don't rely solely on sensors but need human interaction

- Look into Kelpie Wilson online - IBI Board Member

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ETHOS

- GENDER Can Make a difference when pertaining to Key Role strategies.
  - Photo in Phone.
- Monitor & Evaluate
  - Photo in phone.
- IN THIS sector - Take advantage of successful distribution channels - May be ETHOS can help Facilitate that.
- Emission Testing Protocols:
  Generally: Could use fume hoods within lab!
  - Need specialized instrument For Field analysis.
    Dean mentioned $100 tool.

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STOVES 101 330-5:00

Dan Sweeney - MIT? Look - Stove Production 5 up!

- Affordability & Accessability Needed if want to successfully implement.
- Evaluation Criteria for Fuels: Usability, Performance, Affordability and Scalability.

"If you don't pre-dry your fuel, you waste it."

?- Can Biochar be used to Filter exhaust from cook stove burners?

- Photo of Parameters of stove Production in phone
- Make stoves people want to use & Can use - also repair!

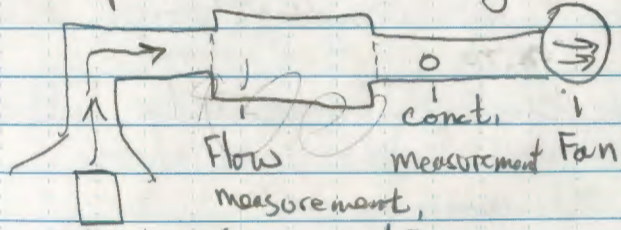
Scale: 1 square = _____

- Dale Andreatta

- EFF. Measurement
  - Thermal - energy into pots
  - Fuel use - fuel needed for job
  - Cost

Pollutants
- CO
- Particulate matter
- P.M. 2.5 - matter smaller than 2.5 microns

For pollutant Measuring method



- Look into LEMS & PEMS LAB & Portable emissions

- clean burning stoves (Dean Still) & Sam Aprovecho.org - Free design book.

- Need temps @ 609°C to burn CO.
  - What does this mean for low temp biochar production in Ag Sense?

- Mixing is the most important part of reducing emissions.

"umbrella fan" - heat driven fan?
- natural draft
- near Combustion

- Control Rate of reaction. Solid → gas.

- By combining TLUD w/ Rocket you can make a "Side TLUD" That has consistent emissions.
- Kirk's TLUD = cleanest + easiest with most Control.

Ethos

- 930 -

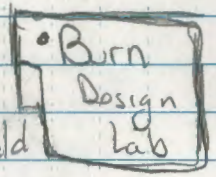
challenges of Running a Stove Lab:

- It's important to Follow-up with Clients
  - check for proper methods
  - Get Feedback.

- Find Manner to test air From chimney as well as Air that is "rogue" and coming From out stove.

- High Altitude Testing stoves in Bolivia → le paz to be exact.

- What is your Goal?
  P.A.D.S = IMPACT
  Performance in the Field
  Accessability
  Durability
  Scale



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? = is it possible to incorporate biochar + cook stove performance - efficiency

A Lab @ UW: clean cookstoves.
Http.// clean cookstoves. UW. EDU

- Design around Purpose.

1-27 Adoption Studies
- Consider Seasonal Affects.
- When going to implement a new design, do "pilot" trial w/ a few (say 10 out 100) to get an idea.
- Consider what the concerns are for the people.

SUM - Stove Use Monitor
SUMS - Stove Use Monitoring System

+ Colorado State University - Honduras
+ SRI RAMACHANDRA University - India

* mjohnson@berkeley air. edu
  - Contact on Air Data Collection Methods

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Paul Anderson NFP
"Dr. TLUD" Juntos Energy Sol.

? - How can you design a dual purpose cookstove + biochar producer? Does it lose efficiency on either purpose?

- Stove Team International

- Julie Walkin
  OSU - Running Program that works in Cuba, Guatamala,
  - IE3 Global internships
  - OSU and/or UW

- Jonne Gross @ OSU
  Ecuadorian learning program.

Practical Action Design

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Dan WHF - International Life Line

? → What can be done with a Community Based Organization + Biochar production/app.?

- Cookstove needs by Women of the house - Uganda
  - High heat (~5 kW)
  - Visible Flames
  - Uses Collected Firewood
  - Compatibility w/ pots/pans

- General Needs
  - low cost
  - reliable supply chain
  - High quality control & precision
  - Shipped flat to reduce price.

- Think about logistical aspects of local production. Where can I get supplies, local railroads, Supply trains, Access, Affordability

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psanders.ilfu.

PAUL ANDERSON

- Scale-Up TLUD
  - DrtLud.com

* Sonoma Biochar Initiative
  - Research

- Utilize Smoke Rounds to visually see Air Move.
  - Holland Safety equipment.

- TLUD - Biochar Ecosystem.
- BANGALADESH BIOCHAR INITIATIVE

- The "Akha - Agriculture - Friendly Stove."

THIS GUY!

- Julien WINTER
  BANGALADESH Ag Research group.

- Be Sure to not Cause a problem: Wood IS LIMITED!
- By producing TLUD - you increase demand for wood.

?- Can you Make a TLUD w/ Water Capture + Distillation chambers.

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Stephen Joseph
- Journal/Review on affects of Biochar + biota.

- Jim Archuleta
  - Biochar Fella.

Scale: 1 square = _____