



Cook Test Poste Metier School Kitchen, Poste Metier, Haiti

Report by ODRINO:
Organization for Integrated Rural Development in Northwest Haiti

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ODRINO

Organization for Integrated Rural Development
in Northwest Haiti

Testing

Date: February 23, 2016

Cooks: Mme. Alcères Jean-Louis (maiden name Marise Julien)
Mme. Wilson Guerrelus

Test Monitors : Lisa Lagato
Katherine Ross

Location: *Poste Metier School Kitchen, Poste Metier, Northwest Haiti (5eme Rural Section of Port-de-Paix)*

Methodology: Direct comparison of the InStove 60 Liter Stove and the traditional outdoor, three-stone fire. Equal amounts of food started at the same time.

Food Cooked: 1-1/2 marmites (12 pounds) of dried split peas
6 marmites (38 pounds) of bulgur wheat
Small amount of cooking oil, quantity not recorded
Water: 6 gallons

Cooking method: Split peas were boiled until they were cooked and then the bulgur wheat was added.



Cooks Alcères Jean-Louis (left) and Mme. Wilson Guerrelus (right).



An ODRINO engineer weighs wood for use in the testing.

Cooking Method



Traditional Open-Fire



InStove 60 Liter Stove

Fuel Type



Large-diameter wood

Unsustainably harvested, expensive, not always available for purchase.



Gathered biomass

Sustainably harvested, freely available, includes bark, sticks, small branches

Fig. 1.1: Results

	Traditional Open Fire	InStove 60 Liter Stove	% Change
Cooking time (min)	188	185	-1.60%
Fuel Use	55.5 Pounds (25.17 Kg)	8.5 pounds (3.86 kg)	-84.69%
Fuel type	High-Quality Dried wood, purchased from market.	junk wood (low quality) and branches	n/a
Fuel Cost	\$17. 50/week	\$2.00/week	-89.58%
Smoke ¹	See Below	See Below	See Below
Heat ²	See Below	See Below	See Below
Safety ³	See Below	See Below	See Below

1. Smoke:

InStove 60L: Negligible

Traditional method: Oppressive. The test monitors were not used to the smoke: they had to sit outside and keep moving their chairs as the wind changed because they could not stay inside the kitchen and could not understand how the Haitian cooks could stand being inside the kitchen (Hint: in a poor place like Haiti, there are a lot of poor people without options and they have to do what they have to do). For the record, when you mention smoke the cooks at *Poste Metier School* smile and say they don't have smoke anymore.

2. Heat:

InStove 60L: Negligible

Traditional method: Turn your body sideways to full extension, grimace, and reach out as far as you can to stir the pot staying as far away as you can. They have the place where they cook on three rocks half in and half out of the kitchen because of heat and smoke. If there is blowing rain it is hard to keep the fire going and stay out of the rain and cook.

3. Safety:

InStove 60L: No observed outstanding problems. Boiling water is up above the level that a child could get into.

Traditional method: Large pot is perched precariously on three rocks. If someone bumps the pot, they or someone else is going to get badly burned which happens often in this country. Down on the ground where an unsupervised child could wander in and get hurt or worse.

Comments:

- 1) The cooks and school administration were very gracious but didn't understand at first why we would want to revert back to cooking on three rocks again even for a test.
- 2) **Assembly:** The stoves were assembled by local people without supervision and put into service without supervision (I could not get there soon enough to suit them and show them so they asked permission and then just figured it out and went on with it). Everything is

intuitively designed and put together so that people even in Haiti can figure it out on their own and make it go.

- 3) **Shipping:** Depending on the shipping method (ours comes ashore on lighters because there is no dock) the stoves were rolled, thrown, and not treated very nicely before we got them. We packed clothing around the stove in all the empty spaces in the box and think that helped stoves arrive in our community without damage even under the special (extreme) conditions they encountered in shipping to us.
- 4) **Opportunities for Allied Technologies**
 - a. Lisa (test monitor) observed that the split peas could be cooked in about half the time if they had a **pressure cooker**. This would save time especially with harder beans and we would like to try this. But the wood use is already so minimal that the further savings would probably not be very cost effective.
 - b. We would also like to try the **Autoclave** with the InStove for the sterilization of surgical instruments and supplies for our organization's hospital and some select medical clinics to evaluate how it works. Propane is expensive and hard to come by, especially after natural disasters.
 - c. We have a friend who burns at least **120 kg per day** of high quality firewood powering the boiler for a dry cleaning/pressing business in town. He would save *more wood in a day than the school kitchen does in a week* if he could use this technology. If it could be demonstrated that an InStove could make the steam needed, this would be a market that the operators could either pay for the unit outright up front, or get one on credit and pay it back with the savings they make each week with the wood.
- 5) **Cook Preference:** When they use the kitchen for camps and are frying chunks of pressed plantain, the cooks prefer to use the traditional method, but on everything else they prefer to use the InStove.
- 6) **Community Education opportunity:** Soon after the school started using the InStove 60, some of the school teachers inquired as to whether there was something suitable that they could use personally at their houses.
- 7) **Installation:** We looked at getting elbows to vent the smoke outside, but the way the chimneys are inside the building near the edge, the smoke is drawn out and does not present a problem in the kitchen. We are going to leave the chimneys like they are for now.
- 8) **Modification:** Initially there was a smoke problem from one of the InStove units which turned out to be a grate that would not seat properly in the firebox. Trimming the grate and putting it in its proper position eliminated the smoke problem. The incorrectly seated grate also caused that InStove to take almost twice as long to cook as the correct InStove. Once the grate problem was corrected, both stoves gave identical performance.
- 9) **Fuel Cost versus Availability:** The cost of firewood is one factor, but the problem here in this deforested land is that sometimes it is the availability of the wood that is the problem more than the price. The school staff report using whatever junk wood they can find including bark to fuel the InStove. They say anything that will burn works and said you can run it even on waste paper. We gave the cost of the wood but this is theoretical for the InStove because we have been using junk wood and branches cleaned up from the yard of the church and shop compounds and this doesn't cost anything. (See "Fuel Type" image below.)

10) **Size:** Considering the size of the pots and the safety of the cooks, we think that the 60 liter size is best suited for most locations because you have to pick up the pot out of the stove when the food is done and it is heavy. Although InStove makes a larger, 100 Liter Stove, this pot might be too heavy for the cooks.

Conclusion:

Every rural school in Haiti with a feeding program would benefit from this technology because of the huge savings in wood use. The other benefits are extra but the wood savings is enough to make this worthwhile. The other schools in the area are now jealous.

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