

How to make fuel-efficient stoves

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GOAL promotes the use of fuel-efficient stoves (FES) for use by all circle participants in the cooking demonstrations and at home (see NIPP article in *SSMJ* 6 (4) 90). The main reasons why they are beneficial are:

- They reduce the amount of fuel needed and thus the cost of fuel for the household, thus freeing up money to be spent on other items (e.g. an extra type of food from the market, more seeds for the micro-garden).
- Due to the reduced need for fuel there is a decreased impact on the environment, particularly on deforestation in the area.
- The reduced need for fuel also means less time is spent foraging for firewood, a job that frequently falls to women or children.
- In areas where there are tensions between population groups (refugees and hosts, two tribes within an area etc.) the reduced use of resources can help ease tensions

Often communities have their own methodology for constructing FES. So the first step is to investigate what local methodology is used to build FES. This will incorporate only locally-available resources and use techniques of which the community is already aware. This methodology should be used for the NIPP circle project.

FES can be designed for use with different types of fuel; charcoal needs one opening at the front, wood needs one at the front and one at the back.

Below is an example as to how to construct FES, based on a local design – see Figure 1.

Materials

- Well fermented clay soil - this should have been dug



Figure 1. Construction of Fuel-Efficient Stoves – training in Twic County, Warrap State (credit Frank Okello)

and fermented for at least 3 days. The purpose of fermenting the clay soil is to avoid the stove cracking in the process of drying and using it.

- Dried grass - this is spread on the ground to cover the base of the stove so it does not stick to the ground. The grass also helps the FES from coming into contact with dust and dirt.
- Cow dung - this helps to fill the cracks in the stove.
- Water - required for mixing the clay (+ a jerry can for fetching water)
- Hoe for mixing the clay.

Methodology

The site chosen should be flat to provide a level base.

- Draw a line around the outside of the household's cooking pot to determine the size of FES required.
- Cover the circle with grass and then fill the circle with clay to a depth of around 4cm (the base of the stove).
- Build up the walls of the FES using clay until it is about 15-20 cm high, leaving either one hole in the side to allow charcoal to be put in, or two holes (one on each side) to allow wood to be used as the fuel.
- Make a depression on each side of the stove to make handles for carrying the stove.
- Build a platform across the top of the stove and ensure there are several good size holes in this, to enable the heat to rise through the holes when cooking.
- Build up from the platform another 10cm to provide the base for the cooking pot to sit on.
- Allow to dry and then use cow dung to fill in the cracks and any gaps that appear on the stove. It can be used for cooking 1-2 days after construction, provided it has dried.