DEM Project Option #2: Improved Solar Dryer Trays

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Research:

Kenya has a very dry, hot climate in the north and northeast parts of the country. Therefore, we think that these solar dryers would work best there, as it isn’t humid. These solar dryers work like a natural convection oven. The sun heats the air inside the dryer, and as the hot air rises, it draws in cool air to the bottom of the dryer. This process continually happens, and therein dries the food inside.

Definition of the Problem:

We are tasked with creating a tray to be used in a solar food dryer that meets HESE’s requirements.

Questions:

What materials are available for us to work with?
How much do these materials cost?
What are the preferred dimensions of the tray?
What are the European standards that the tray has to meet?
How can we get the right amount of hot air to pass through the tray?
Is it an updraft solar dryer or a directly heated solar cabinet dryer?

Essential Requirements:

It may cost no more than ten dollars.
The tray must be easily cleanable.
The materials used to make the tray must be readily available.
The tray must allow the fruits and vegetables to dry, by allowing hot air to pass through it.
The tray must fit the dimensions of the solar dryer.
The tray must fit EU standards.
The tray must be safe for holding food.
The tray should be porous, to allow heat flow.
The trays must be able to hold a piece of fruit that is up to \( \frac{1}{4} \) inch thick.

http://climatetechwiki.org/technology/jiqweb-edf


http://solarcooking.wikia.com/wiki/Solar_food_drying