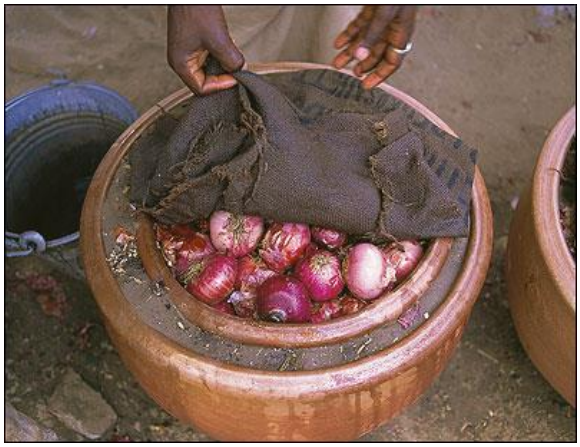
FROM NIGERIA THE POT-IN-POT
A REFRIGERATOR THAT RUNS WITHOUT ELECTRICITY

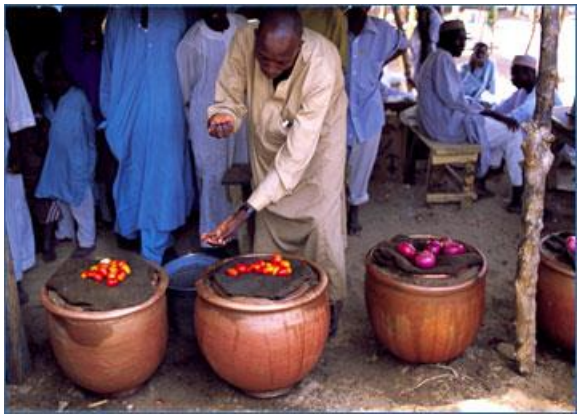
Designed in 1995 by Mohammed Bah Abba, a Professor in Nigeria, the Pot-in-Pot cooling system helps farmers by reducing food spoilage and waste, increasing their income and limiting the health hazards of decaying foods.

Since ancient times some populations used fridges made out of clay, but this extraordinary invention was forgotten. Mohammed Bah Abba recovered the ancient technology to create the fridge Pot-in-Pot, known in Arabic as Zeer.

The fridge is composed by two pots of clay, of the same shape but of different sizes, placed one inside the other. The space in between the two containers is filled with sand which is simply humidified with water. Food is placed inside the pot that is in the interior, covered with a lid or a humid piece of cloth. The fridge Pot-in-Pot has to stay in a dry and ventilated place. The laws of thermodynamics take care of the rest. When humidity evaporates from the sand, it dissipates the heat of the internal container, cooling the content inside of it. The only maintenance required is to add water to the sand, twice a day.



According to *Science in Africa*, each device can store 12kg of vegetables, keeping them fresh for up to 20 days and its production cost is approximately of 1,4 USD. Sold for between US$2 for the smaller pot-in-pots and US$4 for the bigger version, the pot-in-pot stays affordable, while the proceeds from sales help finance manufacturing and distribution costs.



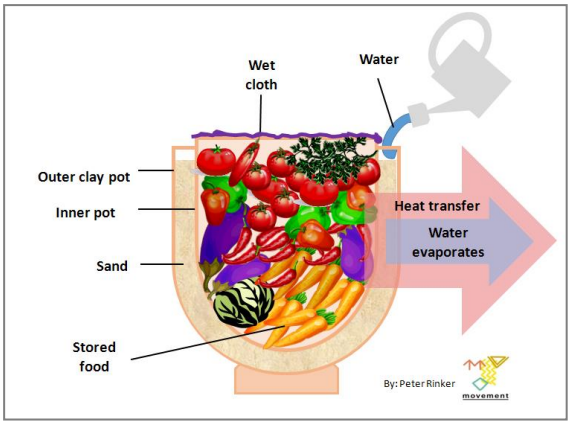
Pot-in-pot refrigeration has multiple positive impacts on the population that uses them beyond the simple ability to keep food fresh for longer periods of time and decreasing instances of food-related disease. In particular the Pot-in-pot refrigeration:

- Increases diet variety because food is available for longer into the year;
- Increases profits from food sales because farmers are able to sell their produce on demand;
- The production of the pots generates job opportunities and farmers are able to increase profits at market, slowing the move into cities.
- It allows to store vaccines and medicines that would otherwise be unavailable in areas without refrigeration facilities.

Abba has been able to distribute pot-in-pots in 11 northern Nigerian states and to plan their promotion in other countries such as Cameroon, Niger, Chad and the Democratic Republic of Congo. Abba has also been asked to adapt his cooling device in Eritrea, to preserve insulin vials for diabetic patients in remote rural areas, as well as in India, Haiti and Honduras.

In 2000 Mohammed Bah Abba won the ROLEX Awards for Enterprises. In 2001 the Pot-in Pot fridge was awarded by the Shell Competition for Sustainable Development.

Due to its simplicity and effectiveness this old technique reinvented by Mohammed Bah Abba has attracted the attention of many qualified international organizations and specialized magazines. Wikipedia dedicated to the Pot-in-Pot cooling system a page containing many interesting information and indications for its production. WikiHow and Appropedia also present interesting technical information and the sequence of steps for the production of the Pot-in-Pot. The international organization Practical Action has developed studies and guides for the production of this refrigerator that does not need power to operate.



To know more

Rolex Awards

Article in Wikipedia.org

Article in Appropedia.org

Article in Wikihow.com

Article in innov8tiv.com

Ashoka

Practical Solutions for sustainable communities

Article in permaculturenews.org

Article in gonebuzzin.com

Article in bigsolar.url.tw

Article in offgridders.wordpress.com