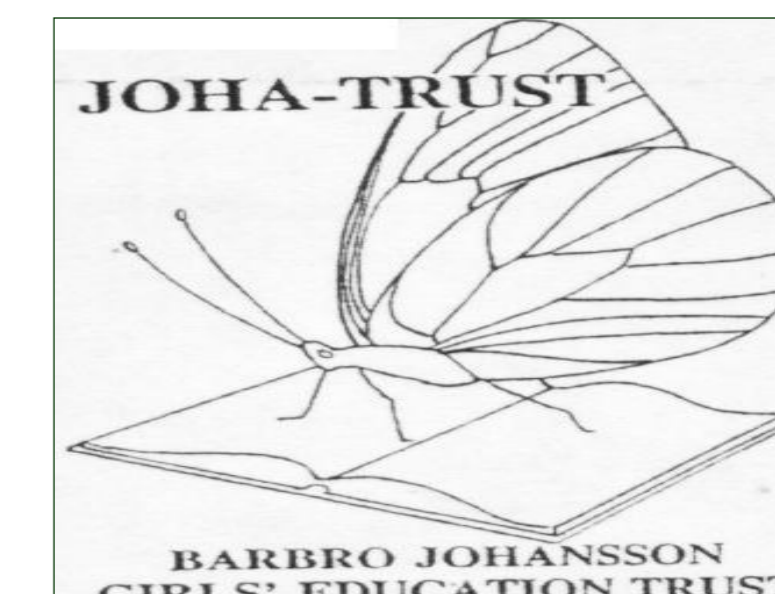




Non-Electric Fridge



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Introduction:

In many parts of the country, the main problem that face the indigenous people is a modern way of food storage. They do not have enough skills for preserving their food as the results they end up being rotten and dumped.

The main cause of food rotting is the attacking of the fungal and bacteria in the food. Now, we are introducing the simple and low-priced fridge which can be accessible by all people regardless of their purchasing ability.



Methods: Non electric fridge is simple refrigerator that runs without electricity and it is made up of local materials, which consist of one earthenware pot set inside another pot, with a layer of wet sand in between (Mohammed Bahr Abbess).

Components: 2 large unglazed gardening pots, 2 small unglazed gardening pots, 2 Silver/reflective Plates, 2 polystyrene circular discs (can cut them yourself), Bendy shower pipe, 3 Clear see-through pipe, 5kg of wet sand, 1 bucket/basin of water, 1m of wicking material, 1 wet cloth, 1 solar panel water fountain

We set up the project in dry, ventilated space for the water to evaporate effectively towards the outside.

How to assemble

Obtain two large unglazed pots; one pot must be smaller than the other.

Check that the smaller pot fits inside the larger.

Fill in any holes at the base of the pot, if you leave the holes open, the water will enter the inner pot, making the fridge in effective.

Fill the base of the larger pot with coarse sand, only to a height that will ensure the smaller pot fits even in height with the larger pot.

Place the small pot into the large pot; arrange its base flat on top of the lower layer of sand.

Fill around the space between the small pot and large pot with sand: fill it almost all the way, except for leaving a gap at the top.

Pour cold water over the sand, until the sand is completely soaked and unable to take any more water. As you pour, do so gradually in order to give the water time to soak into.

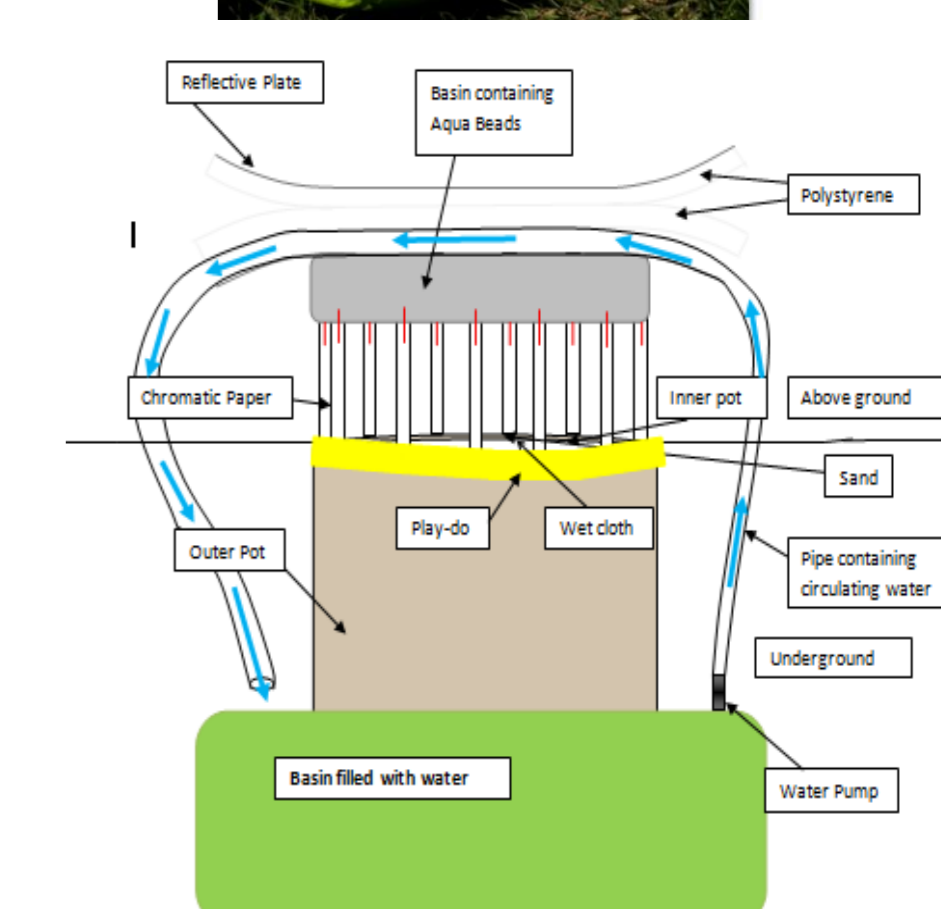
Place the metal or wood contraption on top of the sand that is in the middle of the two pots. The metal or wood will hold the plates.

Take two reflective plates, one plate turn upside down and place it onto the wood contraption. Another silver plate turn the right way up and place it on the two sheets of polystyrene material. The reflective plates maintain the internal heat.

In between the two plates, put one of the clear pipes, curl it and tape it down, so that there are two ends at Opposite sides of the plate.

Attach the water tank onto one end of the pipe so that, water will circulate the pipe and end up in the basin of water.

Put the flesh vegetables and beverages in the small pot and cover the pots completely with a wet cloth and a clay plate.



Results:

Non electric fridge worked efficient under dry, ventilated space; in addition to that, 99% of the items kept in the inner pot stayed fresh for more than two weeks. It produced the temperature of about 19 degree centigrade up to fourteen degree centigrade. In general, this device is very effective; it can maintain food hygiene standards and overall health are improving.

To give an idea of performance, spinach that would normally wilt within hours, it will last around twelve days in the pot, and items like tomatoes and peppers that normally struggle to survive few days, now last three weeks.

Meat can stay fresh in non electric fridge without rotting for about 14 days, where as okra, guavas and carrots can maintain freshness for about 17 days. Water and other liquids can be kept at 15°C. It is possible to store sorghum and millet grains in the inner pot, which protects against humidity and stops fungi growth.



FOOD/ITEM	SHELF LIFE WITHOUT NON- ELECTRIC FRIDGE	SHELF LIFE WITH NON- ELECTRIC FRIDGE
Tomatoes 6	2 days	20 days
Egg plant 2	1 2days	21 days
Meat 1kg	< 1 day	14 days
Carrot 8	4 days	20 days
Okra 10	4 days	17 days
Guavas 9	2 days	20 days
Spinach	Within hours will wilt	12 days
Peppers 10	2 days	20.days

Conclusions:

The first hypothesis stated that; the non electric fridge will solve the problem of food rotting in a community or situation without electricity. This hypothesis was supported, due to the introduction of simple technology which will motivate people who live in a situation without electricity to make use of this device at lowest price.

The second hypothesis stated that; the non electric fridge will make people to afford its price. This is due to the availability of the materials, which were found within our environment, and all these materials are local and are of low price. As result, poor families with no means of preserving their crops/ food, they can preserve their food at very low price, hence, improve their everyday lives standards.

The results are conclusive, due to the acceptance of hypothesis, where by this device gave a clear picture of how it works, when different items are kept inside it, and all these items are kept fresh for longer period of time without rotting.

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Further information:

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