

Evaporative Cooling in Gambia

Qasid Safir initially looked into the potential of implementing small scale groundnut oil expelling as a of generating income in Gambia following a visit to the country. He has seen the video produced by Practical Action on oil processing in Malawi and followed this up with further enquiries on the subject.

“The sad situation in the Gambia, due to the lack of local industries, where there is unbelievable unemployment rates and basic food products are too expensive for the common man to live comfortably. I hope this project with your help will go some way in reversing this trend.”

“I send my friend in Gambia to speak to CGC in Banjul. They said they initially process Gambian groundnuts and then send it to Europe for further processing to be resold back to the Gambia and elsewhere! For obvious reasons they were very quick in dismissing the idea of setting up a small scale groundnut oil processing plant in the Gambia.”

“However Enterprise Works in the US were very useful. They said they also were no longer involved in cooking oil pressing anymore. However they gave me a contact for a manufacturer and supplier of manual ram presses in Dakar, Senegal.”

“I sent one of my friends (Amadu) from Gambia to visit the contact in Senegal (Assaine). He was show the press in action, how to operate it and maintain it. It cost 175000 CFA which is reasonable (£200). “

“On returning Assaine offered to send a member of his family to stay in Gambia for some time to teach Gambians how to run the plant if we chose to buy the ram press.”

Technologically the idea was sound but Qasid found that the economics for small scale oil production did not fit the situation in Gambia. As a result of this Qasid decided to change the technological focus to ceramic coolers as he thought they has

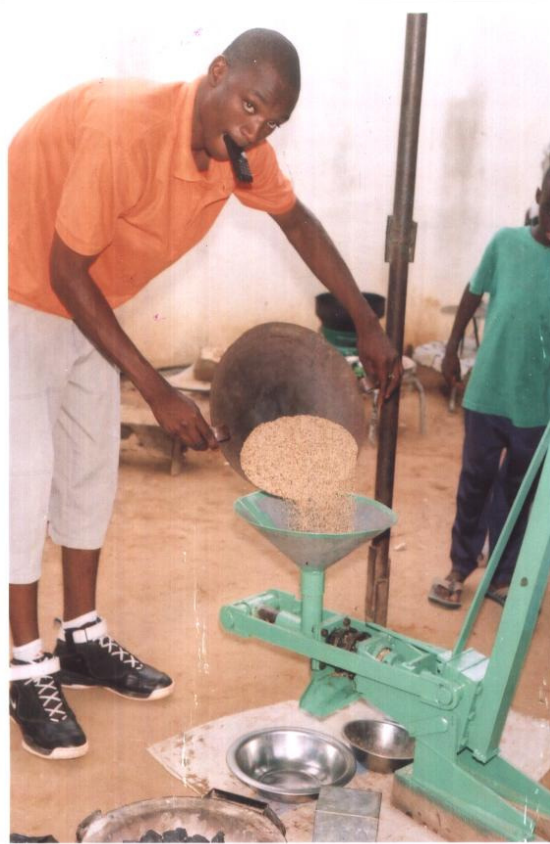


Figure 1 Amadus visit to Dakar to see the Ram Press



Figure 2 The ram press

Ceramic coolers project in Gambia

The pots have been trialled by the University of Gambia – Research and Innovation department.

Tested the cooler and tomatoes stayed fresh for 18 days in a more humid condition.



Figure 3 Experiment tomatoes. Cold tomatoes: The University of The Gambia science club examine the tomatoes kept in the desert fridge.

The project then looked at the production side and has been working with potters who can produce the coolers and is linking up with the Department of Community Development who has been promoting a clay steamer design with potters. They are intending to use the existing market structure and sell the coolers in the local markets.



Figure 4 Training potters - Fridge manufacturers in training: The potters learn how to make the desert fridge

“In parallel, they are trialling the cooler with a small number of farmers to see what their reaction is and to see if there is a measurable impact on their income. The aim is to have some farmer (10 or so) with coolers and without coolers as a control group.”



Figure 5 Bufaloto Villagers: The group gather around the desert fridge

Findings to date

There were issues with firing the ceramic pots as a supervisor / consultant had different ideas to the local producers which were not compatible with the local circumstances.

Let the locals do it their way, and better not to have an "expert"

They were firing with a combination of cow dung and wood which in some respects is not efficient but helped to regulate the firing process so that the pots did not get overfired and break. The "expert" thought this was not a good approach and so made changes that produced a lot of failures and eventually the potters went back to their own production method.

Better not to have an expert as this can complicate matters as when they were working with potters who were told a different way of firing their pots by the expert but it did not work and they were asked to replicate a pot design from an "expert" but it was not suitable for their production methods and found it difficult to replicate and was unnecessary.

Transportable coolers were not required as the marketplace was locked and secure so items could be left in the market. Farmers did not need to transport their coolers and domestic family users also did not move their pots from the home.

Leakage of water into the storage area was overcome by the production technique which is commonly used in which "grog" old crushed clay is mixed into the new clay. The larger the pieces of crushed clay the more porous the pot so the outer pot uses larger pieces while the inner pot uses finer powdery "grog".

There was some seed funding from *Humanity First* that were looking for potential to scale up to a national level in Gambia and potentially internationally in West Africa as they operate in 10 countries in West Africa.. Also working with *Students in Free Enterprise*.

The video (see [youtube.com/mubahilshakir](https://www.youtube.com/mubahilshakir) - "[Desert Fridge Project Promo](#)") which was made during the pilot project in January, and press release from the University of Swansea.

Following on from Qasid's comments about portable coolers Practical Action provided alternative designs that may be more suitable to portable applications one of which came from another project



The photograph is from a student who was involved in Practical Action's Sustainable Design Award. She developed a small portable version and took it out to Namibia, she has gone on to develop her own website www.emilycummins.co.uk explaining about her work.



Swansea University
Prifysgol Abertawe

For immediate release: 6th March 09

Swansea University student strengthens Gambian farming future

Qasid Ahmad, a first-year mechanical engineering student at Swansea University has recently visited The Gambia to implement an innovative desert fridge scheme that helps subsistence farmers with no electricity store food to sell at a later date.

The desert fridge project allows farmers in very hot countries, who previously lived on a 'sell now or not at all' existence, to store food for up to 18 days in a very simple fridge made of readily available and locally sourced materials.

Originally the idea of a teacher in Nigeria who had never taken the technology outside of his country, Qasid, 19 originally of London, spotted the desert fridge online after returning from teaching Maths in The Gambia during a gap year with international aid agency Humanity First. He immediately thought of how useful it would be for farmers he had met on his travels.

Qasid said, "The genius of the idea is in its simplicity and the availability of the materials to the people who need it. The desert fridge is made from two clay pots, one inside another, and with a layer of wet sand between the two, which insulates the inner pot. When the water evaporates, it acts much like human perspiration, and lowers the temperature of the inner pot."

A few months after finding out about the fridge, Qasid started University and visited the Fresher's Fair, and came across the Students in Free Enterprise, or SIFE, stall that promised to help students with ideas for enterprising projects. The desert fridge project was accepted, and he was put in touch with Corina Edwards, the University's Entrepreneurship Development Officer – who helped him get the project off the ground and provided him with access to important resources.

Corina said, "Qasid's desert fridge idea was a strong one, and he was clearly passionate about it, so we funded him to attend a SIFE meeting in Cologne in Germany.

"Whilst travelling to the meeting, he discovered by chance that there was a competition to pitch your project idea to the SIFE panel – and win €250 in sponsorship, as well as free mentorship from SIFE experts. So en route to the competition he prepared his pitch – and came back with the first prize!"

Following the win, Qasid's confidence grew, and he took the project further with the aid of the sponsorship money, contacting an old colleague in the School where he had taught in The Gambia and arranging for a prototype made. Reports back were very positive with the pot maker mentioning how surprised he was at the low temperature he could feel on the inside of the fridge.

A friend at the University of The Gambia's science club also agreed to trial the desert fridge scientifically. They bought fresh local tomatoes and kept them in the desert fridge, checking them and taking a photo everyday at one o'clock. They also took the temperature daily – both outside, and within the clay pot.

Qasid explained, "The results were astounding, much better than we'd dared hope for! The desert fridge showed that the fresh produce could be kept for at least 18 days before becoming inedible, and the temperature within the pot was at least 10° cooler than outside."

With the backing of these good results, support from Swansea University's Department of Research and Innovation, and £500 sponsorship from Humanity First, Qasid flew to The Gambia on New Year's Day this year to further the project. His cousin, Mubahil Shakir, a budding documentary maker who had also been funded by the charity accompanied him. Deciding on a remote village called Bafuloto, where villagers most needed help of the desert fridge to store their farming community's produce, Qasid and a team of volunteers had 30 fridges made to share between ten farmers. The team also set up a workshop incorporating a play by local school children to teach the farmers how to use the pots and demonstrated the advantages of using them.

The villagers were quick to realise the benefits of the desert fridges –pointing out that they could increase the profitability of farmer's crops by reducing wastage, increase trade for local clay pot manufacturers, and increase food production and consumption.

Qasid concluded, "The communities farmers reported that they would often waste up to 40% of their fresh produce, and had no choice but to sell it for rock bottom prices, as business men knew that they had no method of storing the quickly rotting goods. Now that they have the desert fridge technology, they can keep the produce fresh until there is a demand for it at market – and make a better profit and waste less food.

"There is so much potential for the desert fridge, that after seeing the results of the project, Humanity First is intending to role it out across not just The Gambia, but many other countries in West Africa, which is fantastic news.

"I intend to return this April in order to analyse the results of the pilot project, and to work on developing the scheme further. The main challenge now is to disseminate the technology. The more people who know about the desert fridge, the more potential there is to revolutionise rural communities in developing countries around the world."

If you would like to sponsor Qasid for the return to Gambia and help to expand the project internationally please contact qasidsafir@gmail.com.

Documentary

See a brief clip of the documentary at [http://www.youtube.com/watch?v= NHUq0g9IO8](http://www.youtube.com/watch?v=NHUq0g9IO8)

SIFE

SIFE is an international organisation that mobilizes university students around the world to make a difference in their communities while developing the skills to become socially responsible business leaders. Visit www.sife.org for further information.

Humanity First

Humanity First is an international aid agency that provides aid and assistance to those in need irrespective of race, religion or politics from registered offices now in 28 countries. HF has been working on projects in 35 countries across 6 continents. Visit www.humanityfirst.org.uk for further information.