

Hand Drilling Cluster Group

Linking stakeholders and sharing experiences on hand drilling approaches and technologies in sub-Saharan Africa and beyond.

Second Year

We are now into the second year of the Rural Water Supply Network (RWSN) Hand Drilling Cluster Group and newsletter. Realization of the potential for manual drilling technology is growing steadily within some organizations. This edition brings you an update from UNICEF-funded work in Niger for domestic wells, and some insights into the benefits of accessible water for productive use in Nicaragua. Thanks to all of you who sent information for this newsletter.



Hand Percussion Drilling in Lalawa, Niger
(Photo: Enterprise Works/VITA)

In Brief

UNICEF **Nigeria** have just commissioned a study on Cost-Effective Boreholes (CEB). Hand drilling is one of the key areas that will be investigated. On a recent visit, the RWSN CEB flagship captain was informed that manual drilling continues to grow in popularity in Nigeria. It is apparently even squeezing out mechanized drilling in Edo State.

New video clips on **Baptist Drilling** are available on <http://www.youtube.com/user/allandelaurell>.

In **Nicaragua**, families have installed 100 water supply systems (hand drilled well, casing and pump) for less than US\$ 100 each with the “water club approach”. See www.emas-international.de for further details.

Emas pump installed in a 1.5 inch (38mm) diameter casing and 30 m deep borehole



What is manual drilling?

Hand, or manual drilling are techniques which rely primarily on human energy. Methods include hand augering, hand percussion, hand sludging, rota-sludge, pounder drilling, baptist and EMAS drilling as well as wash-boring or jetting. Hand drilling is more affordable than most machine operated drilling, can be undertaken by small enterprises but is only viable in certain hydrogeological formations.

Rural Water Supply Network

This newsletter is produced by the Rural Water Supply Network (RWSN). For more information visit <http://www.rwsn.ch> or contact, Kerstin Danert on kerstin@danert.com. We publish three newsletters per year and are looking for contributions.

Domestic and Productive Wells

Manual drilling is branching out to provide water wells for domestic use in Niger and enabling small scale farmers to improve food security in Nicaragua.

Artisans provide 39 hand drilled wells for domestic use in Niger

As a continuation of its work in Niger, Enterprise Works/VITA supported local artisans to complete 39 hand drilled wells for domestic use in 26 villages in Matameye. The project was undertaken in collaboration with local government and financed by UNICEF Niger. **AGCM de Maradi** manufactured the rope pumps which were installed on all of the wells. The drilling was undertaken by three local enterprises: **Entreprise Ruwa Ruwa Pompo, Oumarou Abdou Forage and Madayana Moudi**, who have from five to twenty years of experience in manual drilling. They used the hand auger, hand percussion and rota-sludge techniques depending on the formation. Ten wells were drilled to a depth of 20-25m while the rest were less than 20m. Four sites were relocated as hard rock was encountered which could not be drilled manually.



Village meeting in Halbaous to prepare for the project

Thousands of hand drilled wells are used for small-scale irrigation in Niger. The recent project is another step towards demonstrating the viability of hand drilled wells installed with locally manufactured pumps for domestic water supplies in the country.

Each village contributed 10,000 CFA (US\$ 24) towards the installation, provided local materials as well as labour, and set up a management committee. The commune mayors were particularly enthusiastic about the simplicity of the rope pump. Most repairs can be undertaken by the users. **Sadé Ismaila**, an artisan trained in rope pump installation and maintenance, will undertake repairs that are beyond the capability of the users. For further information, visit <http://www.enterpriseworks.org/>



Rope pump in use in Dasga Haoussa

Smallholder incomes in Nicaragua are higher if water is available

The approach of CESADE (Centro de Estudios y Acción para el Desarrollo) in Nicaragua is centered on low cost technologies. Over the last 3 years, CESADE has undertaken data collection and analysis of costs, benefits and impacts of their approaches. It has found that soil improvement alone through rehabilitation and organic agriculture can double or treble yields in three to four years. Access to a water well on the farm can double this again. From a study of 1,806 samples, farm incomes were 10% to 93% higher for farms of 7ha or less when they had access to water on the farm.

This finding has built more confidence in CESADE's "water package", which includes hand drilled wells, the rope pump, and low pressure drip irrigation, particularly for the smaller farms. Studies have shown that when equipped with water wells, they tend to irrigate small 'patios', which are essentially kitchen gardens that tend to be the domain of women. For smaller farms, these patios generate a significant part of household income. CESADE have found that under the right conditions, a patio of 1,800m² with a well, pump, rudimentary low pressure irrigation system, groundwater of less than 10m can easily produce an annual gross income of US\$3,500 at an investment cost of US\$837 and recurrent annual cost of US\$760 (excluding labour of 3 hours per day). For more information, contact cesade@nicarao.org.ni