A portable rainwater harvesting with very low cost

A portable low cost technique for rain water harvesting has been innovated by Dr. Mita Tarafder, a Chief Scientist of CSIR-NML, Jamshedpur. Using this portable rain water harvesting system it is possible to collect thousand litres of rain water for drinking (after purification) as well as for other purposes.

Rainfall in Jamshedpur varies between 1200 millimeters to 1400 millimeters between July to September. For a 10 square metre catchment area, it is possible to harvest 120,00,000 litre water every season. Similarly in the drought prone area, the average rainfall is between 750 mm to 1100 mm. Considering the lowest rainfall data, using the same 10 square metre catchment area, it is possible to harvest 75,00,000 litre water (drinking water for 37,50,000 people) every season

A team of volunteers associated with Relearn Foundation visited a village of Jharkhand to discuss about issues related to Waste Management, Sanitation, Composting, Relevance of education, Absence of students from schools and higher dropout rates. Through this survey it was revealed that the village does not have water supply facilities and the hand pumps are not very effective. Due to unavailability of water they have issues of sanitation and fall sick frequently. Annexure I presents the report of Relearn Foundation. Dr Mita is the founder trustee of this foundation and to solve this water problem she came up with the innovative idea of portable rainwater harvesting system.

In the month of July, Dr. Mita was invited by an organization "Bhododaya" to install the system at Baghmundi in Purulia district of West Bengal. The organization Bhododaya is involved in construction of a school in this remote area. The school is running in a house now and it is supported by Relearn Foundation. The water for the construction work was carried by people from nearby sources which is more than a mile away. To solve the water problem in the school building construction site, since the location gets good amount of rain, the system was installed by Dr Mita and her team (Illustration I). The internet search revealed that this is the first portable rainwater harvesting system and there is no such system available in India and in other counties currently.

The basic construction of this system is very simple; it consist of a tarpaulin, a pipe & attachment system of the pipe, eight bamboo poles and one drum with tap to collect the water. A hole is made in the middle of the tarpaulin and the pipe is attached with it. Then the pipe is connected to the drum. The drum has to be kept on elevated place so that buckets can be easily filled up. The tarpaulin is fixed using bamboo poles in such a way that the water flow is centrally directed (Illustration II).

It was highlighted that innovation can be done through implementation of simple ideas and using readily available fixtures like the piping system attached to the tarpaulin. Dr Mita mentioned in a news article that attaching wheels with suitcases is a recent innovation and this simple innovation freed ourselves from hauling heavy luggage (Illustration III). .

Construction of traditional rain water harvesting along with ground water recharging is expensive and needs funding support for implementation in rural areas.

The advantage of this portable rainwater harvesting are as below:

- Zero engagement of space for rainwater harvesting
- Easy water supply for construction sites
- Easy water supply for mobile food stalls
- Easy water supply for camping
- Low cost and portable
- Protection of roof tops from rainwater damage
- Tarpaulin shade can be used for conducting activities like meetings, indoor games, coaching etc

It is planned to make an improved and sturdy design for mass scale production and installation of this system in areas which do not have piped water supply.

Illustration I: Simple portable rainwater harvesting system installed at Baghmundi, Purulia District of West Bengal

Illustration II: Simple portable rainwater harvesting system

एनएमएल

सिर्फ 500 रुपये खर्च कर बचाया जा सकता है बारिश का हजारों लीटर पानी

डॉ मीता ने बनाया पोर्टेबल रेन वाटर हार्वेस्टिंग

संदीप सावर्ण @ जमशेदपुर

एनएमएल की सीनियर साइंटिस्ट डॉ मीता तरफदार ने वर्षा जल संरक्षण के लिए एक अनोखी तकनीक की इजाद की है. उन्होंने पोर्टेबल रेन वाटर हार्वेस्टिंग सिस्टम तैयार किया है. जिसके जरिये सिर्फ 500 रुपये खर्च कर हजारों लीटर वर्षा का जल बरबाद होने से बचाया जा सकता है. दरअसल, डॉ मीता तरफदार ने पिछले दिनों पुरुलिया के दो गांव का दौरा किया था. इस दौरान वहां देखा कि एक स्कूल का निर्माण हो रहा था और गांव में पानी की काफी किल्लत होने की वजह से स्कूल निर्माण के लिए करीब एक किमी से अधिक दूरी से पानी ढोकर लाया जा रहा था. जबकि वहां कई दिनों तक अच्छी बारिश भी हुई. इसके बाद उन्होंने इनोवेटिव आइडिया का इस्तेमाल किया. तारकोलिन का तिरपाल खरीदा. उसे कुछ बांस के सहारे गांव में बांधा गया. तिरपाल में एक छेद तक उसमें पाइप लगाया गया. उस पाइप का एक छोर ड्रम में लगा दिया गया. साथ ही तिरपाल को इस एंगल पर बांधा गया था कि बारिश का पानी आसानी से जमा होकर ड्रम में पहुंच जाये. इस सिस्टम को पुरुलिया के दो गांव में इंस्टाल भी किया गया है. जिसके जरिये लाखों लीटर बरबाद होने वाले जल को संरक्षित किया जा रहा है. इसे तीसरे प्रयोग के रूप में बारीडीह में भी लगाया जायेगा. डॉ तरफदार ने कहा कि ऐसी बात नहीं है कि इनोवेशन हमेशा टेक्निकल ही हो. कई बार सिंपल व छोटे-छोटे प्रयोग कर भी बड़े कार्य किये जा सकते हैं. कहा कि सूटकेस में चक्का लगाने का इनोवेशन करीब 10 साल पूर्व हुआ था. लेकिन इस वजह से लोगों को अपने भारी सूटकेस ढोने से मुक्ति मिल गयी. डॉ मीता तरफदार ने बताया कि रेन वाटर हार्वेस्टिंग के पारंपरिक मॉडल को तैयार करने में काफी खर्च हो जाता है. उन्होंने बताया कि गांव में बरबाद होने वाले जल को संरक्षित कर उसका खेती समेत कई अन्य चीजों में इस्तेमाल किया जा सकता है. आने वाले दिनों में ड्रम में जाने वाले पाइप को जमीन के भीतर ले जाने की तैयारी की गयी है, ताकि जलस्तर में कमी ना हो.

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https://epaper.prabhatkhabar.com/c/41909736

Illustration III: News article published on the portable rainwater harvesting system

Annexure I

Report on Awareness Program on Waste Management and Sanitation by Relearn Foundation (NGO Darpan ID: JH/2017/0115958)

Date: 23rd April, 2019.

Topic of the discussion: Waste Management, Sanitation, Composting, Relevance of education, Absence of students especially boys from schools and higher dropout rates.

Location of discussion: Turi Village, Hari Mandir, Near Anganwadi which is run by Rina Naik.

People who participated in the talk: Anganwadi incharge, and children of ages of 3 years to class 11 from the Anganwadi and from the local schools.

Method: It was a general discussion as it allowed for a more open exploration of social topics and because often in a modulated focus group discussion it is observed that the frame of references of the researcher can be limiting in exploration of issues at hand which would aid us in designing our programs as per our beneficiary.

Objectives:

- To set up initiation dialogue between benefactor and beneficiary.
- To understand the various problems faced by the village women and girls.
- To have own understanding about the magnitude of the issue and calculate ways by which we can help the villagers.
- Set up introductory dialogue between Turi, Tetla gram and Relearn Foundation.

Observations:

- No waste management system.
- Toilets are there but with faulty infrastructure such as no doors in some and no proper septic tank.
- Lack of water facilities. Due to unavailability of water they have issues of sanitation and fall sick frequently. Children present had dirty hands and faces were smeared with mucus and torn clothes.
- The vicinity we visited was clean. There was no garbage anywhere. There were livestock such as goats and chicken roaming freely.
- Lack of transport connectivity with the nearest urban center which is Jamshedpur.
- Children, specially boys have high rate of absenteeism. We talked with a boy who had left school as per Rina however he said he had not dropped out, just was not going to school that day and we had a talk with him. He said, he had to do household chores which is why he could not attend school. “lakdi kaat raha tha, isilia nahi ja paya school.”
- The residents are very suspicious of outsiders who come in. However the Anganwadi coordinator talked to us.

Reported by: Ms Pritha Dhali, M.Phil Student, IIT Mumbai