

It's me Sabina Khanal; student of Environmental Science recently associated to Niva Rain, water solution for better living, Siddharth Sadak, Dallu Awas, Kathmandu-15, Nepal. I want to express my gain knowledge to manage the water in an agricultural field to enhance the crop Yield. As world is going towards the water scarcity day by day induced by global climate change that directly threatens food security. At present if not given a due consideration for its solution it will take a disasters very soon in near future and the problems derived are even more complex in environmental aspect. For the high yield of crop production there is a dire need to reforms in water management system from base root. There are many options to manage water for agricultural production. Among them best option in my opinion is to manage the water that is naturally available either it may be rainwater or the wastewater after used.

Collection of rainwater where it falls is another strategy for sustainable management of water availability in nature. Ironically, water used is often highest in those places where rainfalls the least and where there is high demand of water consumption in various sectors. For this case it is necessary to catch the rain where it falls for water management. This process of harvesting water where it falls not only provides water in scarcity but also provide qualitative water for irrigation. Depending upon the budget available, system structure differs from one another. Simply, we can construct a patch of pond nearby the agricultural farms collecting water from the road itself, household drainage carrying water during rainfall and many other sources of rainwater depending upon area. Due consideration must be given during construction of collection chamber/pond to prevent water loss from evaporation, infiltration, seepage and so on. During construction period the pond should be constructed in a manner that base of pond should be well-shield from red clay which prevents water seepage to ground.

Other options might be, growing of plants around the collection chamber/pond that provides shade for reducing water from evaporation. All these strategy will be well-adapted with a proper placement of plants, trees, and water sources can turn into a water efficient system. Irrigation provision with salty water hampers the crop production reducing soil quality. Such damage soil can be improved through the rainwater irrigation as rainwater flushes salts and chemicals out, allowing for long-term health and soil vitality. So, rainwater harvesting is a basic need to increase crop yields in agricultural sectors. Following chart will explain itself many more options for Rain water (RW) management.

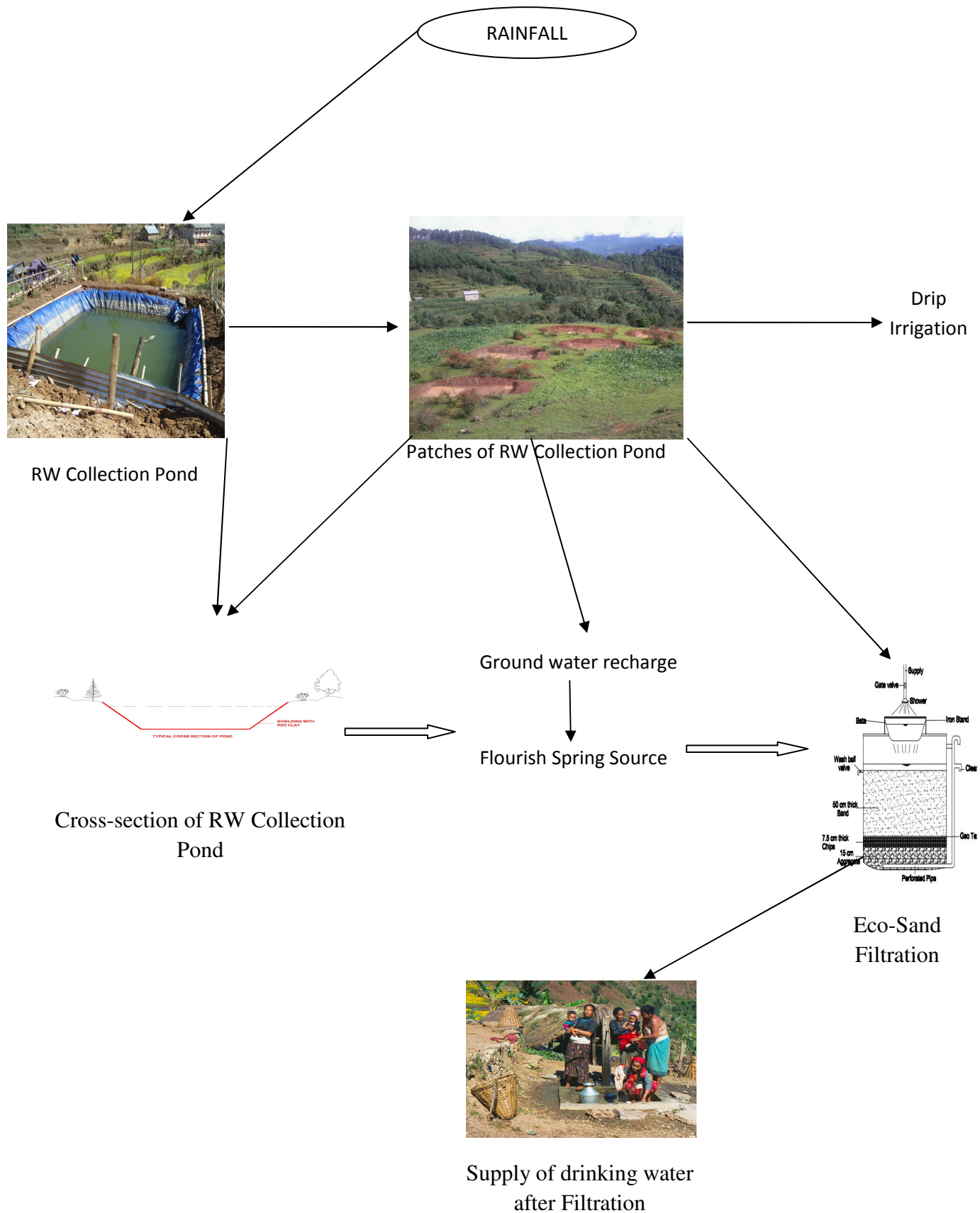
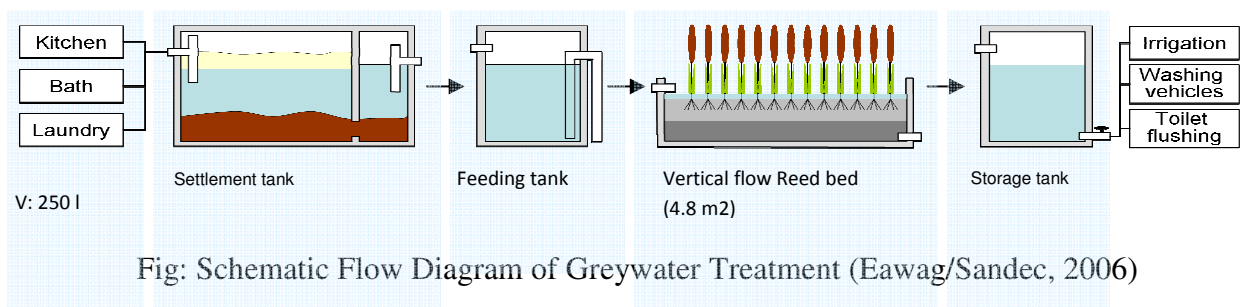


Chart Showing the RW Management both in agricultural field and drinking purposes for Farmers

Management of waste water is another best option for water management. As 80% of household water consumed per day is wasted if we are able to manage this water in agricultural field, production will also increase in one hand and on the other hand our waste carried to drainage basin will also be utilized. Wastewater is a rich source of plant food nutrients that would benefit from the undersupplied nutrients in fertilizers to increase the crop yields. For this we need to construct a decentralized waste water treatment (DEWATs) plants for both gray water and black water depending upon budget available in a community to provide the water at field in large amount. If budget is minimum then we can only construct grey water treatment plants. It is cost effective in economic point of view for supplying irrigation water. Once it is constructed maintenance cost is limited or simply we can say maintenance cost is negligible.

Here is the pictorial form of grey water treatment plants in individual household. Such system can be constructed in community level to supply the water in large amount in order to flourish agri-products.



This is a good example taken from demonstration of house called Eco home built in November 2002 located in Dallu Residential Area in Kathmandu City which adopted several approaches for sustainable water management and can have firsthand experience on several technologies. Eco-home produces about 250 litres/day of greywater where separate plumbing system has been fixed to separate greywater and black water. The greywater is collected in a two chambered settling tanks (500L) for sedimentation of larger particles. From here, water passes to a 200L feeding tank from where a siphon device feeds water intermittently into the vertical subsurface flow bed of the constructed wetland (Reed Bed Treatment System) for further treatment. The treated water is collected into an underground tank of 2,000L (Figure 1). Even though the

monthly water demand is about 13650 litres, it needs only 8,400L of clean drinking water due to installation of grey water treatment unit and dry toilet. Treated greywater is being used for toilet flushing (Eco-home has one flush toilet beside dry toilet), cleaning vehicles and gardening (Niva Rain). Such system can be taken as the source of inspiration and if constructed in community level scarcity of water would reduced in some extent.