Making every drop count
Using "pitcher watering technique" in semi-arid area

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The semi-arid area of district Dera Ismail Khan (DI Khan) is mostly inhabited by rural communities caught in a vicious cycle of extreme poverty. Most of the communities in the project area are dependent on natural resources, which are decreasing rapidly due to shortage of water and overexploitation. Water availability is the single most prominent and limiting factor in increasing agricultural production, vegetation cover and rural household incomes in the area. The main source of water is the seasonal rain on hilltops that flows down to the lowlands in summer. The villagers redirect this water for farming and drinking purposes through a centuries-old system of canals and micro dams called "Rod Kohi" (*rod* means the bed of the main stream and *kohi* means mountain). In recent years, the changing climate led to less and unpredictable rainfall resulting in vast areas and local population facing drought.

Given the above situation, the community felt the need for innovative ways to grow plants. The project introduced the Participatory Technology Development (PTD) approach in 10 villages. The communities considered a number of options including planting of suitable fodder trees and grasses in their own Agri-land, top working or budding of improved variety on local fruit and forest plants, establishing nursery of selected varieties of fodder tree, etc. Women opted to experiment on "pitcher watering technology", for growing plants with a minimum amount of water in their courtyards. The community focused on "*Ber*", as these provide nutritious and marketable fruit, fodder and firewood. 18 women began experimenting and planted 157 saplings in their courtyards. They also took the responsibility for the maintenance of experiment on a regular basis. The initial cost for planting one tree was about Rs.58 including the cost of a pitcher and a grafted sapling. It took almost a day to plant a tree by one person.

Pitcher Watering Technology

The "pitcher watering technology" was used in the early twentieth century in desert and semi-desert climates to grow wild tree groves and provide drinking water for thirsty travelers. Pitcher irrigation experiments were also conducted in the Thal desert in Pakistan and other parts of world. The basic technique is to partially bury a pitcher made of clay in the soil in a relatively shaded area and fills it with water. The water percolates to the surrounding soil and reaches the roots of the plant. Since the pitcher technique originates from desert soil, where capillary action is much faster, modification was made to make a hole in the pitcher on the side facing the plant so that it becomes easier for the water to seep out. In addition, the pitcher area not facing the plant was painted to avoid percolation in the other direction. An added advantage of this experiment is that it complements the local culture and reintroduces the centuries-old practice of growing trees in household compounds.

The results were very encouraging. After 12 months, 70% plants had survived and were growing faster than those planted without

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A Sustainable Livelihood Option

- One *ber* tree can produce 40-50 kg of fruit per year; the market price per kg ranges between Rs.15-20.
- Houses in DI Khan generally have large courtyards; therefore each household can plant 4-5 trees.
- The process is cheap and technically convenient.
- *Ber* grows locally so there are no ecological barriers. However, the farmers need grafted plants.
- The tree provides fodder for livestock and fuel for domestic use. The fruit is a source of nutrition for children.
- The *ber* flora can be an excellent source of highly priced honey in local and larger markets.

a pitcher. The interest groups observed the differences and shared with other farmers. Now they are willing to try this technique on other plants due to the following reasons:

- This technique saved 90 percent of water as compared to traditional irrigation methods.
- Farmers could implement this activity themselves with no technical assistance.
- The material required for this technique is locally available.

When the trees start bearing fruits, women may explore the option for honeybee keeping, as experienced successfully in district Karak.

"Now we have plants in our houses without much effort for watering as one pitcher can provide water to the plant for 3 to 4 days. A green courtyard delights our heart and gives us hope in the destitution we live in." Nazira BiBi, Kot Musa, DI Khan.