



## Rain water harvesting in PLI area

Munawar Khan Khattak<sup>1</sup>

The Project for Livelihood Improvement (PLI) is working in Daman area of district DI Khan where the communities use flood and rain water for irrigation as well as drinking purposes. The *Rudh Kohi* irrigation system is an excellent example of a century old water resource use system for seasonal irrigation. The floodwater is diverted from the streams to the fields through construction of temporary diversion bunds and conveyance channels. The *Rudh Kohi* area is divided into three zones, i.e. upstream, midstream and downstream. According to a technical study conducted by NWFP Agriculture University with the assistance of PLI, the upstream communities receive flood water in eight years out of ten, the midstream communities in five years while the downstream communities are most deprived receiving flood water only in two years out of ten. Thus downstream (tail end) receives occasional flood flows resulting in acute water deficiency in summers with very little crop production. The downstream communities are very poor and mainly depend on livestock rearing. There are areas in the downstream where people have no rights in the *Rudh Kohi* irrigation system and mainly depend upon very low rainfall (maximum 200mm). In these areas there is a limited scope of crop production; except during occasionally good rainfall years, these lands are maintained as rangelands and used for livestock grazing. Unfortunately, the rangelands are depleted and overstocked, the grass cover is nominal and very few scattered fodder trees exist. In some areas thorny shrubs have invaded the rangeland replacing the natural vegetation. Climatically the area falls in the subtropical thorn forest zone which is characterized with low annual average rainfall, very hot summers with desiccating



hot winds and cold winter. The temperature in June crosses 48° Celsius and the minimum temperature in January may occasionally go below zero degrees Celsius.

These contextual details lead us to the fact that the downstream areas in *Rudh Kohi* belt need additional efforts for developing natural resources, particularly the perennial vegetation on which livestock depend. Efficient use of rainwater was identified as one means to ensure resource optimization. The communities with the support of partner NGOs identified and prioritized the following issues:

- Green fodder shortage for livestock
- Land in abundance but unproductive
- Water scarcity (low rain fall, lack of access to flood water)
- No communal rangeland management
- No share of tenants in trees production

<sup>1</sup>NRM Coordinator PLI

After discussing different options with the communities, it was decided that the project will demonstrate rainwater harvesting techniques for growing different species of forest and fruit trees in the downstream. The project established four demonstration sites by applying rainwater harvesting techniques covering about 200 acres. At each site, a water harvesting model for establishment of fodder trees, a silvo-pastoral system, fruit orchards (grafted *Ber*), a fodder / agriculture crops production (Agro-forestry) system and a water



pond were demonstrated. The species tried on these sites are continuously under observation to compare their performance with and without water harvesting techniques.

Two types of water harvesting techniques are applied according to the terrain. On gentle slopes, hillside ditches are used. On leveled land, roaded catchments are applied for rainwater harvesting. The fodder/fruit trees species planted in mixtures include *Acacia*



*nilotica* (Kiker), *Acacia albida* (white Kiker), *Zizyphus mauritiana* (Local Ber), *Tamarix aphylla* (Kagal), *Azadirctia indica* (Nim), *Zizyphus Jojuba* (Grafted Ber). The best time of plantation in the project area is monsoon which is then followed



by cold season when chances for mortality of young sapling are reduced.

By promoting the rainwater harvesting techniques, PLI intends to achieve the following objectives:

- Overcome water shortage through different means which will encourage the communities to grow fodder/ fruit trees even with less water availability during rainfall.
- Growing fodder/ fruit trees as an economic activity (fruit and fodder) to improve livelihoods of the rural communities.
- Ensure that maximum unused land becomes productive. PLI under its rights-based approach intends to secure an equal share for tenants in trees production through establishing terms of partnership (ToP) between the owners and tenants that describe the roles, responsibilities and share in benefits.