

## **The Wadi Programme: Rural Development through Farming Systems Approach**

### **1. Background**

Notwithstanding the tradition of having trees on farmland and awareness among farmers about the benefits of tree-based farming systems, acceptance of agroforestry in the country remained low for a long time. Extension efforts to promote agroforestry failed to evoke the desired impact among farmers. It became evident that providing extension information alone was inadequate to create interest on agroforestry as there are several other requirements. This is clearly demonstrated by the success of a tree-based programme that has been implemented in several parts of the country. Known as the wadi (orchard) programme, this comprehensive approach to rural development was designed and implemented by the BAIF Development Research Foundation, a Pune-based organisation. Besides the physical unit of the farm, the wadi programme addresses a number of issues that have an indirect bearing on farm productivity.

### **2. Concept description**

The wadi concept is a holistic development approach that takes into account all aspects of rural life. This concept can be viewed from different levels or perspectives. Viewed through a wide angle, it covers the development of a designated area of land and its inhabitants in the form of a *wadi cluster*. It has dimensions of farm production, natural resource management, social mobilisation and economic upliftment. From an individual farm perspective, it is a tree-based farming system, more specifically a *wadi system*, in which the physical unit interacts with other production components of the farm such as annual crop fields and livestock. At the level of the physical land unit, the *wadi plot* is an agri-horti-forestry arrangement of beneficial plant species. The wadi programme is a development strategy aimed at smallholders in dry areas who cannot take the risk of investing in high-input intensive agriculture because of poor land quality and limited water availability.

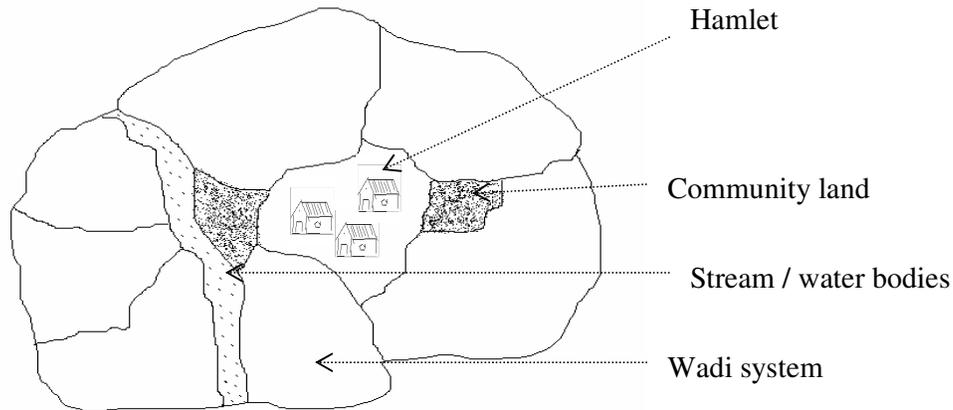
#### **2.1 Wadi cluster**

Activities in the broader framework of the wadi concept can be for natural resource management, adoption of sustainable farming practices and the overall socio-economic elevation of rural communities. Individually farmers may construct water conservation structures within their farms, but the benefits can be manifold if this is taken up as a community initiative. Hence area-based treatment, as in watersheds or comparable large land areas, is advocated in wadi programmes for soil and water conservation. Not only this ensures uniformity and contiguity in the measures implemented, but also makes sure that plots of common and community land in the locality are also treated. Other examples of community action are: water bodies and waterways developed to harness rain water, coordinated effort by neighbouring farmers to control pests and diseases and cooperative marketing to realise better prices for the produce.

Another feature of the wadi concept is the empowerment of people through social mobilisation and capacity building to address issues beyond farming. This can be seen in the formation of people's organisations that assume the responsibility of managing local

issues. Efforts are also made to create opportunities for people, especially women, to work together as small groups and earn additional income. Other key components of the wadi programme are community health, drinking water and sanitation. Thus, at the macro-level, the wadi programme is an approach to comprehensive rural development through a farming system approach.

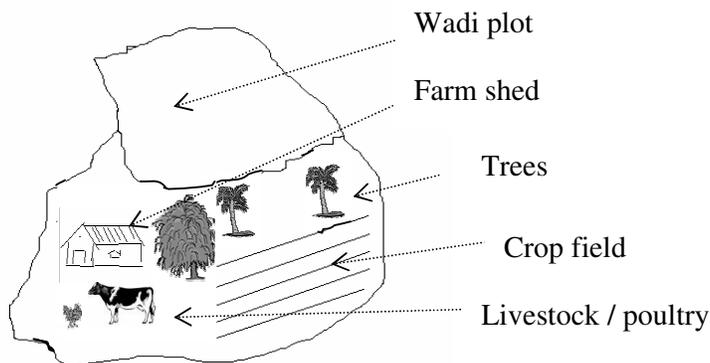
**Figure 1.** A portion of a wadi cluster



## 2.2 Wadi system

The influence of other enterprises of the farmer on the tree-based system is given due recognition in the wadi concept. Whereas the interaction among the components in most agroforestry systems is in the tree-crop interface, it happens in many different ways in wadi. For example, the fodder from the forestry species in the wadi is used as fodder for livestock and the dung or farmyard manure is returned to the interspaces where annual crops are grown. Similarly, there is interaction among the wadi and non-wadi land in sharing labour and inputs. Incorporation of these factors in the design and execution is a major reason for the success of the wadi programme. The wadi system also includes activities such as production of seedlings or grafts in nurseries and post-harvest handling of processing and marketing of produce.

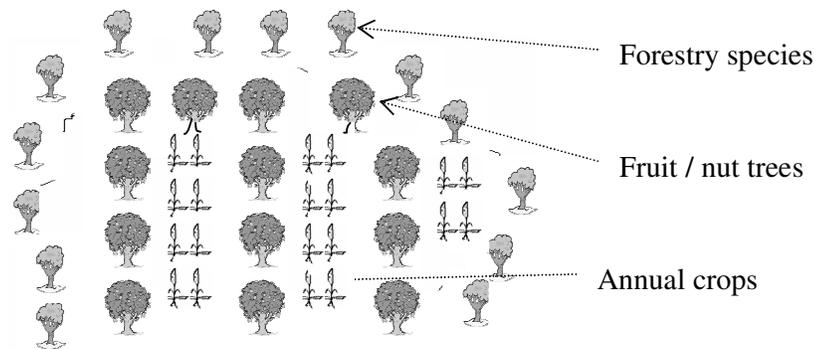
**Figure 2.** Components of a wadi system



### 2.3 Wadi plot

The wadi plot has agricultural, horticultural and forestry species in 0.4-1.0 ha of land. The arrangement of these species generally centres around the horticultural component where trees like mango, cashew and amla are planted at their recommended spacing, which ranges from 10 x 10 m to 6.0 x 6.0 m. As intercrops are grown in the interspaces of trees, their yield is additional and not at the expense of fruit / nut yield of the horticultural crops. The third component of the wadi system is forestry species like subabul and gliricidia. These multipurpose trees are planted at relatively close spacing along the border of the designated wadi plot. The shift from the rainfall-dependent single crop to at least three species in the wadi enhances the ecological sustainability of the farm. At the same time, the product diversity in the form of food, fodder, fuelwood and small timber increases the economic sustainability of the farmer.

**Figure 3.** Part of a wadi plot



### 3. The keys to success

Well over 50,000 farmers in the states of Gujarat, Karnataka, Maharashtra, Rajasthan and Uttar Pradesh have developed more than 30,000 ha of land under wadi. The background of most of these farmers is remarkably similar: their farms became fragmented through division among the children; continuous cultivation rendered the land low in fertility; and unpredictable rainfall resulted in repeated crop failures. The culmination of these events was their migration to work as labourers to earn a livelihood. Their turnaround success story has a similarity as well: participating in a project to develop their land under wadi, they received inputs such as grafts, seeds and manure besides guidance on improved farming practices; the returns during the first few years were from the crops grown in the tree interspaces, yet it was more than what they earned as labourers; their toil paid off when the fruit / nut trees started bearing and they now look forward to a bright future.

It is necessary to note that the background of the wadi farmers is a key factor in the success of this programme. Their past failures had created disenchantment with the land and their association with it lasted for only a few months, sometimes weeks, in a year. The introduction of the tree-based system made them realise that their land is a valuable resource. As a result, they built a permanent relationship with their land and devoted more time and energy towards its development. There are many instances where farmers moved their home from the village hamlet to the wadi plot, a clear indication of their affinity to the land they own.

## BAIF-Wadi

Wadi may not be the best option for irrigated fertile land where 2-3 crops are raised successfully every year. It is an ideal system for land of marginal fertility and limited water. Additionally, the fact that the people who usually adopt wadi had lived for generations in an environment surrounded by trees, make it easier to convince them of the benefits. Considering their lack of resources to invest, wadi farmers are initially provided input support together with technical information on improved farming practices. Eventually, however, they create a productive resource where the major input is their own labour.

Another factor to be included in wadi programming is the simultaneous planning and implementation of all wadi plots in a cluster so that there is uniformity in tree stands, soil conservation measures and water resource development. The emergence of wadi plots and the associated development activities in a compact cluster transform the existing community fellowship into greater synergy and group dynamism that is focussed towards well-defined goals. The benefit of this community mobilisation continues even after the initial phase of wadi establishment in managing and solving problems as and when they arise.

The long gestation period of perennial crops in the wadi (E.g. mango, cashew) can be reduced to about four years by the use of grafts or other vegetative propagation practices. But four years is also a relatively long period of time for small farmers, so alternative sources of income have to be included. Raising intercrops with improved cultivation practices is one avenue of income generation. Interestingly, the wadi approach opens up opportunities for a number of local enterprises like nurseries to produce grafts / seedlings, dairy / goat husbandry and compost making. Complementing the primary intervention of wadi, these allied activities widen the sources of income for the rural population. At the same time, critical inputs such as planting material and compost become locally available at a reasonable price.

The product range of the wadi system opens up possibilities of value addition through forward linkages. Therefore, while planning a wadi programme, it is essential to build in post-production strategies and linkages for processing and marketing. Some of these activities are ideally suited for women and can be made use of for their empowerment. Thus, the development spectrum of wadi includes rural non-farm activities like tailoring and small-scale processing for the empowerment of women.