Agriculture and irrigation in arid lands : From a viewpoint of sustainability (4)

Part 4: Rain-fed Agriculture in Syria

The basic problems facing agriculture in Syria are the extreme instability of agricultural output due to dependence on rainfall, and the lack of adequate agricultural infrastructure, for example, irrigation facilities. To resolve these problems many irrigation plans have been proposed and some facilities have been constructed. However, due to technical problems such as soil property and salinization, aggravated by lack of funding, irrigated land only accounts for around 20% of the total cultivated land. It is therefore important to seek methods of agricultural development which make the best use of low rainfalls. Methods of rainwater utilization are not standardized nation-wide. They differ from region to region reflecting prevailing natural conditions.

Terraced fields in mountain areas along the Mediterranean can only use relatively high rainfall efficiently, but they also prevent soil erosion on the slopes. The stone walling skills are traditional and, little by little, these terraces were constructed manually many years ago. Easier parts were terraced first, followed by successively difficult areas. In order to minimize the efforts involved in stone walling and to maximize the beneficial effects, it is considered that the regional topography and water courses were observed in amazing detail by these early stone wallers. Investigating old terraced fields, one cannot help being surprised to see how well the micro-topographic conditions prevailing on the slopes were utilized. New stone walls created by machines following plans look beautiful, but it is said that they are much more fragile when compared with traditional stone walls. The mechanization of terrace building should be promoted, without forgetting the skills nurtured in the traditional stone walling process.

There are reasonably good levels of precipitation in the plains along the border with Turkey and efficient farming is possible by rotating crops and by introducing fallow. Although rainfall is limited, it is possible to use water efficiently by making the best use of the micro- topographic conditions. If 50% of the land surface is covered with stones, rainfall on the other 50% of the land is calculated as double. Also, under and between large stones, fertile soil is likely to be formed due to the activity of microorganisms encouraged by the micro-climatic conditions. Therefore, depending on conditions, some stones are removed and trees are planted for fodder to make the area a grazing field, or stones are put together to make square fields and crops such as grapes are planted. In these cases, stones have important water and soil retentive functions and also serve as windbreaks. However, recent large scale projects using machinery have tended to eliminate both stones and fertile soil. Moreover, due to the introduction of tractors, "gamble agriculture" which counts on occasional rain has become possible, and soil erosion and desertification in semi-arid areas have been accelerated. The shift from manual labour to the use of machines is considered to be exerting negative effects on the sustainability of agriculture. In the future, mechanization of agriculture should be planned on a regional basis, taking into account the unique conditions that pertain to each area. It should also take advantage of the benefits bestowed by existing agricultural methods.

Terraced fields

Vineyards