

## **Irrigation in Morocco: Impressions of an Asian Visitor**

The conference on farmer-managed irrigation systems held in May this year in Rabat, Morocco, has provided some opportunities to get a glimpse of irrigation practices in a semidry North African setting. The field excursion in particular, was a fascinating experience for a visitor from the more humid environs of South Asia. The annual rainfall in most irrigated areas I visited in Morocco was around 250 mm, while in the so-called 'dry zone' of Sri Lanka it is over five times as much.

It may be mentioned that it is not only the farmer-managed systems which were covered during the field program but the Computer-Managed Systems (CMS) as distinct from the FMIS, and the high-tech overhead irrigation structures built with the support of the World Bank and other international agencies. It is needless to say how impressive these modern structures are. In particular, the large-scale drip irrigation systems were found side by side with farmer-managed gravity irrigation systems, where water-use

efficiency was much below that under drip irrigation. Nevertheless, the questions of economic viability and sustainability of these systems were not certain. If the drip systems -- due to their higher water-use efficiency and economies of scale -- prove to be more successful, then the very survival of farmer-managed small systems will be in question.

The land tenure situation was also quite interesting in the Moroccan setup, compared with the multiplicity of small farms in the South Asian context. The Moroccan experience -- where larger holdings lie side by side with the small ones without any visible competition -- is in itself an interesting situation. In a country like Sri Lanka, there are still regulations in force to prevent land consolidation by the richer farmers and financiers. It appears that this problem has not assumed serious proportions in the Moroccan context.

The groundwater irrigation systems at the periphery of surface irrigation canal networks constitute another interesting development witnessed in some areas. This may perhaps provide an answer to the universal phenomenon of water scarcities in the tail-end areas. This approach to conjunctive water use certainly has many applications in both major and minor irrigation areas of Sri Lanka. Other than its technical aspects, the farmer cooperation witnessed in some of these areas is a remarkable achievement. In particular, the effectiveness of traditional leadership in such cooperative ventures is quite remarkable.

There was an interesting blend of both old and young farmers in the leadership hierarchy.

One of the most interesting features of Moroccan irrigation is the survival of the ancient irrigation technologies. In particular, the *quanats* and *quattras*, which tap groundwater from the foothills of the neighboring mountain ranges, provide an interesting adjustment to an arid climate setting. Although such systems are common to most semiarid lands, they are certainly fascinating irrigation technologies for a visitor from the Asian region. Nevertheless, the sustainability of such systems in the modern context has to be further investigated.

A final question which remained in my mind was that if irrigation and land use adjustments could make even a semiarid environment productive -- such as sub-Saharan Morocco -- why could not the same thing be done in a more humid and greener environment as the dry zone of Sri Lanka?

On returning home, I asked some of my agricultural colleagues: If there are water shortages for high water-consuming crops, why cannot we turn to olives, citron and the like? The visit to Morocco has more firmly established in my mind the view that the problem with Sri Lanka's dry zone is not actually a physical shortage of water, but a maladjustment of its land use.

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