



Irrigation in the Near East

Rapidly expanding demand for food in North Africa and the Near East is not being matched by growth in its agricultural production. Each year, countries of the region - stretching from Morocco to Afghanistan - import agricultural products worth some \$30,000 million. Over the past 40 years, net imports of cereals have risen from 6.5 million tons to around 55 million tons, or about one-fifth of world cereal imports. The main constraint on increases in farm output is water - home to 6.2% of global population, the Near East possesses just 1.5% of the planet's renewable fresh water resources, making it the world's most water-scarce region. To guarantee its food security, FAO says, agricultural development efforts must focus on increasing the efficiency of water management systems and increasing water productivity - in other words, on getting "more crops per drop".

Through FAO's Special Programme for Food Security, our Land and Water Development Division (AGL) is helping farmers in Sudan, Syria and Yemen do just that. In Syria, where food production is limited by low rainfall and frequent drought, irrigation forms the backbone of the government's strategy for sustainable agricultural development and national food security. Thanks to subsidies on irrigation equipment and free access to water, irrigated farmland has grown steadily from just over 540,000 ha in 1970 to nearly 1,250,000 ha in 2001. However, modern sprinkler and trickle irrigation is used on less than 10% of this area - the rest is under conventional surface irrigation with an overall water-use efficiency of less than 50%.

Groundwater levels. "The increase in the irrigated area and the loss of large quantities of water through traditional methods of application have led to shortage of water and an alarming drop in the groundwater level," AGL reports. "This trend is impacting productivity, increasing pumping costs and reducing farmers' income." Under a two-year project, FAO helped Syria's Ministry of Agriculture demonstrate improved irrigation technology and management techniques to farmers in four regions of Syria that are hardest hit by groundwater shortages.



The project provided sprinkler and drip irrigation systems for 100 ha of farmland, and conducted intensive training in their installation and use for 2,750 farmers and 250 technicians and extensionists.

Results were encouraging: overall water savings ranged from 20% to more than 50%, with drip irrigation being the most efficient and cost-effective. Farmers also reported savings in labour and pumping costs, and higher crop productivity. The project also revealed "technical and institutional factors" that constrained the full potential of the new technologies. They included: the shape of many traditional farm plots (long and narrow) which was unsuitable for sprinkler systems, the varying quality of irrigation equipment available locally, and the reluctance of farmers to bear the real costs of water use. AGL says lessons learned from the project will help Syria implement a new national programme aimed at modernizing its irrigation network. The programme provides loans to farmers for purchase of drip and sprinkler systems, encourages the private sector to manufacture improved irrigation equipment, and introduces new regulations for water usage in agriculture.

Meanwhile, in Yemen, another FAO project is installing some \$80,000 worth of irrigation equipment at demonstration sites in areas where overuse of tubewells - which extract water from depths of more than 60 m - has also led to an alarming decline in groundwater levels. As in Syria, AGL reports, "only a limited portion of this water is used effectively for crop production, the

rest being lost to evaporation and deep percolation. Because most renewable water resources have already been harnessed for use, the only viable option left is the improvement of the management of the available resources, through the introduction of adequate technologies and management tools".

Cost recovery. The project aims at developing models of irrigated agriculture that can be used as the basis for national measures promoting efficient groundwater use and irrigation systems. Working with local farmers, the project is testing sprinkler irrigation and improved surface irrigation methods, introducing on-farm water management tools and cash crops, and training 55 extensionists. It will also address the lack of incentives for farmers to conserve water and of national regulations and policies for sustainable use of water resources - among its strategies are creation of water users' associations, a scheme for cost recovery and a revolving credit fund.

Finally, in Sudan, better water use and management are seen as critical to increasing agricultural production and improving rural incomes. Although Sudan is rich in natural resources, and has the potential to become a food-surplus country, most agriculture is rainfed and highly dependent on the vagaries of the extremely volatile rainfall. Under FAO's Special Programme for Food Security, AGL is helping to introduce and demonstrate low-cost flood irrigation and traditional rainwater harvesting techniques in areas with rainfall of between 350 to 800 mm a year. By improving water management, the project will support intensification and diversification of local cropping systems.