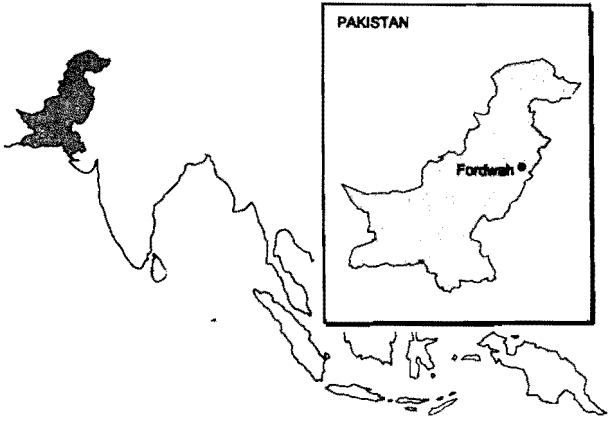

The Introduction of an Irrigation Management Information System in the Punjab, Pakistan: A Pilot Study in the Fordwah Branch Canal

The Indus Basin Irrigation System in Pakistan is one of the largest contiguous irrigation systems in the world. Annually, some 130 billion m^3 of surface water is diverted to 44 canal commands, covering an irrigated area of more than 14 million ha. In addition to that, groundwater, which has increasingly become an important source for irrigation, contributes presently an estimated 46 billion m^3 (or 35% of the canal diversions) to the irrigation supplies in the Indus Basin, through private and public tubewells.

Despite the spiraling contribution of groundwater to irrigation, water remains a scarce commodity in rural

Pakistan, where cropping intensities are estimated to be around 125 percent, as opposed to the originally envisaged 50-75 percent of design values. The demand for canal water is tremendous, particularly in the hot kharif (summer) season, as farmers favor canal water because of its low price and good quality. The irrigation agency has to increasingly deal with localized demands from farmers to satisfy actual crop water requirements, infringing on the (still valid) system objective of distributing water equitably. The effect of this on actual water distribution patterns in the Punjab has been described by various authors (see, for instance, Bhutta and Vander Velde 1992).

It is argued here that in a situation where the demand for canal water is as high as it is and where an equitable water distribution is evermore difficult to achieve, there is a need to have accurate, easily accessible information available to managers on actual water deliveries. This information can be used to evaluate past water deliveries (vis-à-vis targets), to support decisions for future operations and to detect possible physical or other constraints to water distribution.

In recent years, a number of computer-based management information systems have been developed in the field of irrigation. These tools aim to help irrigation managers process and analyze large numbers of data, that are often otherwise not used, and to convert them into meaningful indicators. However, few of these information systems have been adopted by irrigation agencies and are now routinely used by managers.

In 1993, the International Irrigation Management Institute (IIMI) in Pakistan and the Punjab Irrigation and Power Department (PID) have launched a pilot study in the Fordwah Branch Canal (Punjab), to test the feasibility of the real-time implementation of an Irrigation Management Information System (IMIS). Managers and researchers have jointly improved the existing data collection system in an administrative irrigation unit of 67,000 ha. Moreover, the inflow into this unit has stabilized in 1994, providing local managers with a more predictable water supply.

Both partners are evaluating the utility of this tool through a Planning Group, which coordinates irrigation management research in the Punjab Irrigation and Power Department. Based on the results of the pilot study, recommendations will be made to the Department regarding application of this tool to larger areas in the Punjab.

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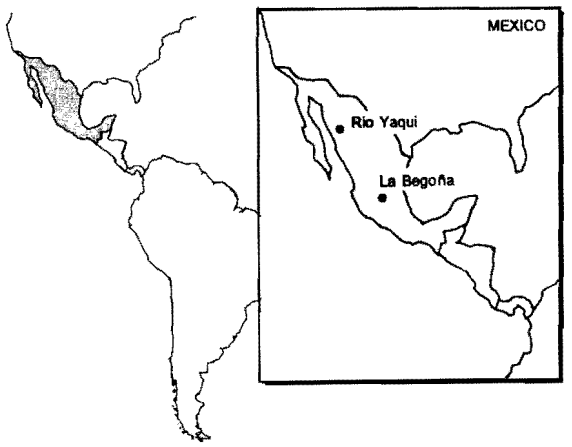

Manual Operation and Water Distribution in Two Mexican Irrigation Districts

In this article, we discuss the manual methodology used for operation and water distribution at two main irrigation canals in Mexico: the Right Bank Main Canal (RBMC) of Irrigation District No. 085 (La Begoña) and the "Canal Alto" of Irrigation District No. 041 (Rio Yaqui). Both canals are currently being studied using hydraulic simulation techniques.

In 1990, the Government of Mexico, began an irrigation district transfer project through the National Water Commission (CNA). At present, almost all economically sound irrigation districts have been transferred to user associations. To consolidate the transfer project, the CNA, in collaboration with Mexican and international research institutes and universities, is developing research and technological projects.

The Right Bank Main Canal of Irrigation District "La Begoña"

The Begoña District is in central Mexico at 1,754 msl. The Right Bank Main Canal is a concrete-lined canal, 20 km long with 28 reaches, which supplies water to 7,800 ha. The reaches vary in length from 300 m to 1.6 km. The canal has 70 turnouts to secondary canals and farm outlets, with a