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Water Pumping for Irrigation in Moroccan Oasis

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Abstract

Due to the shortage of irrigation water in the traditional “*khettaras*” system caused by drought, the farmers of the *Jorf* area have begun to pump the underground water either from communal or individual wells. Currently, the *Jorf* area has more than 240 pumping stations including 4 which belong to cooperatives.

A study was conducted in 2001 with the aim of diagnosing this new type of pumping in this area. A technical and economical assessment of the pumping was done after a survey of more than 50 pumping stations.

After a description of the traditional irrigation system of *khettaras*, three main pumping station types were identified. Their equipments were studied: engines and motors, pumps, energy, accessories. The way of maintenance and the conception of these pumping stations were criticized.

Using data from the survey, an economical assessment was conducted. Several options were compared. The estimate of the pumping cost according to the total manometric head TMH showed that the use of butane gas mixed with gasoil is less expensive than the use of pure gasoil, but generates more breakdowns of the engine and that an appropriate electric installation is more economic than engine powered one. Energy saving possibilities was also identified and can be used by the farmers to improve their energy efficiency while pumping water for irrigation.

The maintenance quality and the follow-up of a pumping station affects its performances and therefore the cost of pumping. It is important to provide farmers with technical advice to help them making right decisions. Their organisation in cooperatives and associations facilitates extension activities.

Keywords: Irrigation, oasis, water pumping