

SAWA PGD Fellow	:	Umme Fatima Romana Afroj
Institution	:	IWFM, BUET
Designation	:	
Title	:	Effect of Water Pricing in Minor Irrigation on the Water Use by the Farmers
Email	:	

Water pricing policy, as a strategy for water demand management, aims at water conservation and consequently increases water productivity in agriculture. In this study an attempt was made to understand why a certain pricing system has been adopted by the farmers and pump owners and how this pricing system affected the on-farm water use by the farmers and the water productivity.

The study was conducted in 11 villages of two upazilas: Kaliakair upazila and Gazipur Sadar upazila of Gazipur district during the Boro season of 2009. Eight DTWs were selected of which four were under an area based pricing system and four were under a time based pricing system. Eight STWs were selected of which two were under an area based pricing system, two were under a time based pricing system and four were under a diesel based pricing system. The study has been conducted on the basis of both qualitative and quantitative data as per requirements of the study. Field measurements of water status were taken to know about on-farm water use by the farmers. PRA tools were applied to collect the primary data on use of energy (electricity or diesel), operating hours, costs and benefits, choice of pricing systems of different schemes, etc. Using FAO software CROPWAT (FAO, 1998) reference crop evapotranspiration (ETO) was calculated to find out the crop water requirement and subsequently water use efficiency.

The results of the study show that irrespective of the type of scheme (STW or DTW), water use and water use efficiency depend upon the type of the farm (high land or low land) and pricing system. The water use is higher in high land (average 105%) and area based pricing system (average 37%), compared to low land and quasi volumetric pricing system. It is evident that the water use efficiency is 96% higher in low land and 38% higher in quasi volume based pricing system compared to high land and area based pricing system. Farmers are more judicious in their use of irrigation in quasi volume based pricing system.

Water productivity in kg per m<sup>3</sup> of water used in low land is 81% (DTW) and 109% (STW) higher compared to that of high land. The reason is that low lands use less amount of water compared to high land and rice production is almost the same for low land and high land. The cost of irrigation is different in different pricing systems and is dependent on water use by the farmers, source of energy, pricing system, distribution system, pump capacity, land alignment, distance of land from the tube-well, etc. In diesel based pricing systems of STW, the cost is very high compared to others. Average cost in area based pricing of DTW is Tk.7940/ha and Tk.4940/ha for STW for all types of land. But in a quasi volume based pricing system cost is not uniform for all types of land (low land or high land) and location of farm (near and far from the tube-well). So, in low land and near to the tube-well, average irrigation cost is Tk.9254/ha (DTW) and Tk.10550/ha (STW) in time based pricing, and Tk.13109/ha (STW) in diesel based pricing. In low land and far from the tube-well, average irrigation cost is Tk.16873/ha (DTW) and Tk.15826/ha (STW) in time based pricing, and Tk.21410/ha (STW) in diesel based pricing. In high land and near to the tube-well, average irrigation cost is Tk.17599/ha (DTW) and Tk.21648/ha (STW) in time based pricing, and Tk.23530/ha (STW) in diesel based pricing.

In high land and far from the tube-well, average irrigation cost is Tk.33900/ha (DTW) and Tk.32472/ha (STW) in time based pricing, and Tk.39958/ha (STW) in diesel based pricing. Profit varies due to variation in irrigation pricing, system of pricing, command area, canal maintenance cost, tube-well maintenance cost, etc. In time based pricing system profit per ha is 204% (DTW) and 330% (STW) higher compared to area based pricing system and 75% (STW) higher compared to diesel based pricing system.

Regarding choice of pricing systems, most of the farmers like area based pricing system, because it is simple to understand. Most of the managers like time based pricing system because it is more profitable and management is easier. Some pump owners of STW like diesel based pricing system because the fuel cost is not borne by them. Moreover, in this system the shortage in supply of electricity was not a problem.