

THESIS

**PROSPECTS OF DRIP IRRIGATION SYSTEM FOR POTATO CROP
AND ITS ADOPTION UNDER LOCAL ENVIRONMENT**



Acc. No.
17255

SUBMITTED BY

Hafiz Abdul Shakoor
2009-PG-WRM-17

For The Degree of

MASTER OF SCIENCE

IN

WATER RESOURCES MANAGEMENT

CENTRE OF EXCELLENCE IN WATER RESOURCES ENGINEERING
University of Engineering and Technology, Lahore, Pakistan

2014

ABSTRACT

Drip system, being the most efficient irrigation technology, uses less irrigation water and produces more yield as compared with conventional irrigation (flooding) methods. The prevailing water scarcity and increasing demand of food in the country due to rapid growth of population can only be tackled through promulgation of this technology. However, the farmers are reluctant to adopt this technology even on subsidized rates, particularly in the potato growing areas. The Sahiwal Division contributes about 74% of the Punjab's production of potato. Therefore, this study was carried out on farmer's field in Sahiwal District to compare the benefits of drip and furrow irrigation methods for potato crop. The study revealed that drip irrigation method saved 50.37% of irrigation water and produced 21.25% more yield as compared to that of furrow irrigation method. The higher water productivity (14.52 Kg/M³) was obtained in drip irrigation system than furrow irrigation method (5.94 Kg/M³). Soil samples were collected and analyzed before sowing and after the harvest of crop to monitor the effect of low quality tubewell irrigation water on soil salinity build-up. A minor increase in soil salinity was observed under drip irrigation system showing that sustainable potato crop yields may be obtained with better soil and crop management practices even by using marginally fit tubewell water for irrigation purpose. Cost benefit analysis (CBA) at 12% discount rate (IRR = 25.52%, B/C ratio = 1.46) indicates that the investment made on drip system for potato crop is profitable at whole sale and farm gate price of Rs. 10.125 and 9.27 per Kg, respectively. Payback period of about four years was expected to earn back the initial investment made on drip system. The general perception of the farmers that potato cannot be grown profitably under drip irrigation system was proved to have no sound basis as

potato crop sown under drip irrigation system responded satisfactorily towards meeting optimum water requirements. High initial investment cost can, however, be reasonably minimized for enhancing adoptability and affordability by small farmers through encouragement of private sector for production of drip system components locally, allowing farmers for purchasing of system components available in the local market, at least, to the extent of their contribution towards system cost, development of professional skills and assured availability of backup support to the farmers.